

Oracle® Application Express

API Reference

Release 4.1

E21676-04

April 2012

Oracle Application Express API Reference, Release 4.1

E21676-04

Copyright © 2003, 2012, Oracle and/or its affiliates. All rights reserved.

Primary Author: Drue Swadener

Contributors: Marco Adelfio, Drue Baker, Carl Backstrom, Christina Cho, Steve Fogel, Michael Hichwa, Terri Jennings, Christopher Jones, Joel Kallman, Sharon Kennedy, Syme Kutz, Sergio Leunissen, Anne Romano, Kris Rice, Marc Sewtz, Scott Spadafore, Scott Spendolini, Jason Straub, and Simon Watt.

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this is software or related documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, the following notice is applicable:

U.S. GOVERNMENT RIGHTS Programs, software, databases, and related documentation and technical data delivered to U.S. Government customers are "commercial computer software" or "commercial technical data" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, the use, duplication, disclosure, modification, and adaptation shall be subject to the restrictions and license terms set forth in the applicable Government contract, and, to the extent applicable by the terms of the Government contract, the additional rights set forth in FAR 52.227-19, Commercial Computer Software License (December 2007). Oracle America, Inc., 500 Oracle Parkway, Redwood City, CA 94065.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Xeon are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Opteron, the AMD logo, and the AMD Opteron logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

This software or hardware and documentation may provide access to or information on content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services.

Contents

Preface	xvii
Topic Overview	xvii
Audience	xix
Documentation Accessibility	xix
Related Documents	xix
Conventions	xx
 What's New in this Document	xxiii
Oracle Application Express API Reference Updates for Release 4.1	xxiii
 1 APEX_APPLICATION	
Referencing Arrays	1-3
Referencing Values Within an On Submit Process	1-4
Converting an Array to a Single Value	1-5
HELP Procedure	1-6
STOP_APEX_ENGINE Procedure	1-8
 2 APEX_APPLICATION_INSTALL	
Package Overview	2-2
Import Script Examples	2-4
CLEAR_ALL Procedure	2-7
GENERATE_APPLICATION_ID Procedure	2-8
GENERATE_OFFSET Procedure	2-9
GET_APPLICATION_ALIAS Function	2-10
GET_APPLICATION_ID Function	2-11
GET_APPLICATION_NAME Function	2-12
GET_IMAGE_PREFIX Function	2-13
GET_OFFSET Function	2-14
GET_PROXY Function	2-15
GET_SCHEMA Function	2-16
GET_WORKSPACE_ID Function	2-17
SET_APPLICATION_ALIAS Procedure	2-18

SET_APPLICATION_ID Procedure	2-19
SET_APPLICATION_NAME Procedure.....	2-20
SET_IMAGE_PREFIX Procedure.....	2-21
SET_OFFSET Procedure.....	2-22
SET_PROXY Procedure.....	2-23
SET_SCHEMA Procedure.....	2-24
SET_WORKSPACE_ID Procedure	2-25

3 APEX_COLLECTION

About the APEX_COLLECTION API.....	3-3
Naming, Creating and Accessing Collections	3-4
Naming Collections.....	3-4
Creating a Collection.....	3-4
About the Parameter p_generate_md5	3-5
Accessing a Collection	3-5
Merging, Truncating and Deleting Collections.....	3-7
Merging Collections	3-7
Truncating a Collection	3-7
Deleting a Collection.....	3-7
Deleting All Collections for the Current Application	3-7
Deleting All Collections in the Current Session.....	3-7
Adding, Updating and Deleting Collection Members	3-8
Adding Members to a Collection	3-8
About the Parameters p_generate_md5, p_clob001, p_blob001, and p_xmltype001	3-8
Updating Collection Members	3-8
Deleting Collection Members	3-9
Managing Collections.....	3-10
Obtaining a Member Count	3-10
Resequencing a Collection	3-10
Verifying Whether a Collection Exists	3-10
Adjusting a Member Sequence ID	3-10
Sorting Collection Members	3-10
Clearing Collection Session State	3-10
Determining Collection Status.....	3-11
ADD_MEMBER Procedure	3-12
ADD_MEMBER Function.....	3-14
ADD_MEMBERS Procedure	3-16
COLLECTION_EXISTS Function	3-18
COLLECTION_HAS_CHANGED Function.....	3-19
COLLECTION_MEMBER_COUNT Function.....	3-20
CREATE_COLLECTION Procedure.....	3-21

CREATE_OR_TRUNCATE_COLLECTION Procedure.....	3-22
CREATE_COLLECTION_FROM_QUERY Procedure	3-23
CREATE_COLLECTION_FROM_QUERY2 Procedure	3-24
CREATE_COLLECTION_FROM_QUERY_B Procedure.....	3-26
CREATE_COLLECTION_FROM_QUERYB2 Procedure.....	3-28
DELETE_ALL_COLLECTIONS Procedure	3-30
DELETE_ALL_COLLECTIONS_SESSION Procedure	3-31
DELETE_COLLECTION Procedure.....	3-32
DELETE_MEMBER Procedure	3-33
DELETE_MEMBERS Procedure	3-34
GET_MEMBER_MD5 Function	3-35
MERGE_MEMBERS Procedure	3-36
MOVE_MEMBER_DOWN Procedure.....	3-38
MOVE_MEMBER_UP Procedure.....	3-39
RESEQUENCE_COLLECTION Procedure.....	3-40
RESET_COLLECTION_CHANGED Procedure.....	3-41
RESET_COLLECTION_CHANGED_ALL Procedure.....	3-42
SORT_MEMBERS Procedure	3-43
TRUNCATE_COLLECTION Procedure	3-44
UPDATE_MEMBER Procedure	3-45
UPDATE_MEMBERS Procedure.....	3-47
UPDATE_MEMBER_ATTRIBUTE Procedure Signature 1.....	3-49
UPDATE_MEMBER_ATTRIBUTE Procedure Signature 2.....	3-51
UPDATE_MEMBER_ATTRIBUTE Procedure Signature 3.....	3-53
UPDATE_MEMBER_ATTRIBUTE Procedure Signature 4.....	3-55
UPDATE_MEMBER_ATTRIBUTE Procedure Signature 5.....	3-57
UPDATE_MEMBER_ATTRIBUTE Procedure Signature 6.....	3-59

4 APEX_CSS

ADD Procedure.....	4-2
ADD_FILE Procedure	4-3

5 APEX_CUSTOM_AUTH

APPLICATION_PAGE_ITEM_EXISTS Function.....	5-2
CURRENT_PAGE_IS_PUBLIC Function	5-3
DEFINE_USER_SESSION Procedure	5-4
GET_COOKIE_PROPS Procedure.....	5-5
GET_LDAP_PROPS Procedure	5-6
GET_NEXT_SESSION_ID Function.....	5-8
GET_SECURITY_GROUP_ID Function	5-9
GET_SESSION_ID Function.....	5-10

GET_SESSION_ID_FROM_COOKIE Function	5-11
GET_USER Function	5-12
GET_USERNAME Function.....	5-13
IS_SESSION_VALID Function.....	5-14
LOGIN Procedure.....	5-15
LOGOUT Procedure.....	5-16
POST_LOGIN Procedure.....	5-17
SESSION_ID_EXISTS Function.....	5-18
SET_SESSION_ID Procedure	5-19
SET_SESSION_ID_TO_NEXT_VALUE Procedure.....	5-20
SET_USER Procedure	5-21

6 APEX_DEBUG_MESSAGE

DISABLE_DEBUG_MESSAGES Procedure.....	6-2
ENABLE_DEBUG_MESSAGES Procedure.....	6-3
LOG_MESSAGE Procedure.....	6-4
LOG_LONG_MESSAGE Procedure.....	6-5
LOG_PAGE_SESSION_STATE Procedure	6-6
REMOVE_DEBUG_BY_AGE Procedure	6-7
REMOVE_DEBUG_BY_APP Procedure.....	6-8
REMOVE_DEBUG_BY_VIEW Procedure	6-9
REMOVE_SESSION_MESSAGES Procedure	6-10

7 APEX_ERROR

Package Overview	7-2
Data Types and Constants	7-3
Constants used for Result Types	7-4
t_error	7-5
t_error_result	7-6
Example of an Error Handling Function	7-7
ADD_ERROR Procedure Signature 1	7-9
ADD_ERROR Procedure Signature 2	7-10
ADD_ERROR Procedure Signature 3	7-11
ADD_ERROR Procedure Signature 4	7-13
ADD_ERROR Procedure Signature 5	7-15
AUTO_SET_ASSOCIATED_ITEM Procedure.....	7-17
EXTRACT_CONSTRAINT_NAME Function.....	7-18
GET_ARIA_ERROR_ATTRIBUTES Function	7-19
GET_FIRST_ORA_ERROR_TEXT Function	7-20
INT_ERROR_RESULT Function.....	7-21

8 APEX_INSTANCE_ADMIN

ADD_SCHEMA Procedure	8-2
ADD_WORKSPACE Procedure	8-3
GET_PARAMETER Function.....	8-4
GET_SCHEMAS Function	8-5
REMOVE_APPLICATION Procedure	8-6
REMOVE_SAVED_REPORT Procedure	8-7
REMOVE_SAVED_REPORTS Procedure	8-8
REMOVE_SCHEMA Procedure	8-9
REMOVE_WORKSPACE Procedure	8-10
SET_PARAMETER Procedure	8-11
TRUNCATE_LOG Procedure	8-12
Available Parameter Values	8-13

9 APEX_ITEM

CHECKBOX2 Function	9-2
DATE_POPUP Function	9-4
DATE_POPUP2 Function	9-6
DISPLAY_AND_SAVE Function	9-8
HIDDEN Function	9-9
MD5_CHECKSUM Function.....	9-11
MD5_HIDDEN Function	9-12
POPUP_FROM_LOV Function	9-13
POPUP_FROM_QUERY Function	9-15
POPUPKEY_FROM_LOV Function	9-17
POPUPKEY_FROM_QUERY Function	9-19
RADIOGROUP Function.....	9-21
SELECT_LIST Function.....	9-22
SELECT_LIST_FROM_LOV Function	9-24
SELECT_LIST_FROM_LOV_XL Function	9-25
SELECT_LIST_FROM_QUERY Function	9-27
SELECT_LIST_FROM_QUERY_XL Function.....	9-29
TEXT Function.....	9-31
TEXTAREA Function	9-32
TEXT_FROM_LOV Function	9-33
TEXT_FROM_LOV_QUERY Function	9-34

10 APEX_JAVASCRIPT

ADD_ATTRIBUTE Function Signature 1	10-2
ADD_ATTRIBUTE Function Signature 2	10-4
ADD_ATTRIBUTE Function Signature 3	10-5

	ADD_ATTRIBUTE Function Signature 4	10-6
	ADD_INLINE_CODE Procedure	10-7
	ADD_LIBRARY Procedure.....	10-8
	ADD_ONLOAD_CODE Procedure	10-9
	ADD_VALUE Function Signature 1	10-10
	ADD_VALUE Function Signature 2	10-11
	ADD_VALUE Function Signature 3	10-12
	ADD_VALUE Function Signature 4	10-13
	Escape Function.....	10-14
11	APEX_LANG	
	LANG Function.....	11-2
	MESSAGE Function.....	11-3
12	APEX_LDAP	
	AUTHENTICATE Function	12-2
	GET_ALL_USER_ATTRIBUTES Procedure	12-3
	GET_USER_ATTRIBUTES Procedure	12-5
	IS_MEMBER Function.....	12-7
	MEMBER_OF Function.....	12-9
	MEMBER_OF2 Function.....	12-10
13	APEX_MAIL	
	About Configuring Oracle Application Express to Send Email.....	13-2
	ADD_ATTACHMENT Procedure.....	13-3
	PUSH_QUEUE Procedure	13-4
	SEND Procedure	13-5
14	APEX_PLSQL_JOB	
	About the APEX_PLSQL_JOB Package.....	14-2
	JOBS_ARE_ENABLED Function	14-3
	PURGE_PROCESS Procedure.....	14-4
	SUBMIT_PROCESS Function.....	14-5
	TIME_ELAPSED Function.....	14-6
	UPDATE_JOB_STATUS Procedure	14-7
15	APEX_PLUGIN	
	Data Types	15-2
	GET_AJAX_IDENTIFIER Function.....	15-8
	GET_INPUT_NAME_FOR_PAGE_ITEM Function	15-9

16 APEX_PLUGIN_UTIL

DEBUG_DYNAMIC_ACTION Procedure.....	16-2
DEBUG_PAGE_ITEM Procedure Signature 1	16-3
DEBUG_PAGE_ITEM Procedure Signature 2	16-4
DEBUG_PROCESS Procedure	16-5
DEBUG_REGION Procedure Signature 1	16-6
DEBUG_REGION Procedure Signature 2	16-7
ESCAPE Function	16-8
EXECUTE_PLSQL_CODE Procedure.....	16-9
GET_DATA Function	16-10
GET_DATA2 Function	16-12
GET_DISPLAY_DATA Function Signature 1	16-14
GET_DISPLAY_DATA Function Signature 2	16-16
GET_PLSQL_EXPRESSION_RESULT Function	16-18
GET_PLSQL_FUNCTION_RESULT Function	16-19
GET_POSITION_IN_LIST Function.....	16-20
GET_SEARCH_STRING Function	16-21
IS_EQUAL Function	16-22
PAGE_ITEM_NAMES_TO_JQUERY Function	16-23
PRINT_DISPLAY_ONLY Procedure	16-24
PRINT_ESCAPED_VALUE Procedure.....	16-25
PRINT_HIDDEN_IF_READONLY Procedure.....	16-26
PRINT_JSON_HTTP_HEADER Procedure	16-27
PRINT_LOV_AS_JSON Procedure	16-28
PRINT_OPTION Procedure	16-29
REPLACE_SUBSTITUTIONS Function.....	16-30

17 APEX_UI_DEFAULT_UPDATE

ADD_AD_COLUMN Procedure	17-3
ADD_AD_SYNONYM Procedure.....	17-5
DEL_AD_COLUMN Procedure	17-6
DEL_AD_SYNONYM Procedure	17-7
DEL_COLUMN Procedure.....	17-8
DEL_GROUP Procedure	17-9
DEL_TABLE Procedure	17-10
SYNCH_TABLE Procedure	17-11
UPD_AD_COLUMN Procedure.....	17-12
UPD_AD_SYNONYM Procedure	17-14
UPD_COLUMN Procedure	17-15
UPD_DISPLAY_IN_FORM Procedure	17-17
UPD_DISPLAY_IN_REPORT Procedure	17-18

UPD_FORM_REGION_TITLE Procedure.....	17-19
UPD_GROUP Procedure	17-20
UPD_ITEM_DISPLAY_HEIGHT Procedure	17-21
UPD_ITEM_DISPLAY_WIDTH Procedure	17-22
UPD_ITEM_FORMAT_MASK Procedure	17-23
UPD_ITEM_HELP Procedure	17-24
UPD_LABEL Procedure.....	17-25
UPD_REPORT_ALIGNMENT Procedure.....	17-26
UPD_REPORT_FORMAT_MASK Procedure.....	17-27
UPD_REPORT_REGION_TITLE Procedure.....	17-28
UPD_TABLE Procedure.....	17-29

18 APEX_UTIL

CACHE_GET_DATE_OF_PAGE_CACHE Function	18-5
CACHE_GET_DATE_OF_REGION_CACHE Function	18-6
CACHE_PURGE_BY_APPLICATION Procedure	18-7
CACHE_PURGE_BY_PAGE Procedure	18-8
CACHE_PURGE_STALE Procedure	18-9
CHANGE_CURRENT_USER_PW Procedure	18-10
CHANGE_PASSWORD_ON_FIRST_USE Function	18-11
CLEAR_APP_CACHE Procedure	18-12
CLEAR_PAGE_CACHE Procedure	18-13
CLEAR_USER_CACHE Procedure.....	18-14
COUNT_CLICK Procedure	18-15
CREATE_USER Procedure	18-16
CREATE_USER_GROUP Procedure.....	18-19
CURRENT_USER_IN_GROUP Function.....	18-20
CUSTOM_CALENDAR Procedure.....	18-21
DELETE_USER_GROUP Procedure Signature 1	18-22
DELETE_USER_GROUP Procedure Signature 2	18-23
DOWNLOAD_PRINT_DOCUMENT Procedure Signature 1	18-24
DOWNLOAD_PRINT_DOCUMENT Procedure Signature 2	18-25
DOWNLOAD_PRINT_DOCUMENT Procedure Signature 3	18-27
DOWNLOAD_PRINT_DOCUMENT Procedure Signature 4	18-29
EDIT_USER Procedure.....	18-30
END_USER_ACCOUNT_DAYS_LEFT Function	18-34
EXPIRE_END_USER_ACCOUNT Procedure	18-35
EXPIRE_WORKSPACE_ACCOUNT Procedure.....	18-36
EXPORT_USERS Procedure	18-37
FETCH_APP_ITEM Function	18-38
FETCH_USER Procedure Signature 1.....	18-39
FETCH_USER Procedure Signature 2.....	18-42

FETCH_USER Procedure Signature 3.....	18-44
FIND_SECURITY_GROUP_ID Function	18-47
FIND_WORKSPACE Function	18-48
GET_ACCOUNT_LOCKED_STATUS Function.....	18-49
GET_ATTRIBUTE Function	18-50
GET_AUTHENTICATION_RESULT Function.....	18-51
GET_BLOB_FILE_SRC Function	18-52
GET_CURRENT_USER_ID Function.....	18-54
GET_DEFAULT_SCHEMA Function	18-55
GET_EDITION Function.....	18-56
GET_EMAIL Function.....	18-57
GET_FEEDBACK_FOLLOW_UP Function	18-58
GET_FILE Procedure.....	18-59
GET_FILE_ID Function.....	18-61
GET_FIRST_NAME Function	18-62
GET_GROUPS_USER_BELONGS_TO Function	18-63
GET_GROUP_ID Function	18-64
GET_GROUP_NAME Function.....	18-65
GET_HIGH_CONTRAST_MODE_TOGGLE Function.....	18-66
GET_LAST_NAME Function.....	18-67
GET_NUMERIC_SESSION_STATE Function	18-68
GET_PREFERENCE Function.....	18-69
GET_PRINT_DOCUMENT Function Signature 1	18-70
GET_PRINT_DOCUMENT Function Signature 2	18-71
GET_PRINT_DOCUMENT Function Signature 3	18-72
GET_PRINT_DOCUMENT Function Signature 4	18-73
GET_SCREEN_READER_MODE_TOGGLE Function	18-75
GET_SESSION_LANG Function	18-76
GET_SESSION_STATE Function.....	18-77
GET_SESSION_TERRITORY Function.....	18-78
GET_SESSION_TIME_ZONE Function.....	18-79
GET_USER_ID Function	18-80
GET_USER_ROLES Function.....	18-81
GET_USERNAME Function.....	18-82
HOST_URL Function	18-83
HTML_PCT_GRAPH_MASK Function.....	18-84
INCREMENT_CALENDAR Procedure.....	18-85
IR_CLEAR Procedure.....	18-86
IR_DELETE_REPORT Procedure	18-87
IR_DELETE_SUBSCRIPTION Procedure.....	18-88
IR_FILTER Procedure.....	18-89

IR_RESET Procedure	18-91
IS_HIGH_CONTRAST_SESSION Function.....	18-92
IS_HIGH_CONTRAST_SESSION_YN Function.....	18-93
IS_LOGIN_PASSWORD_VALID Function	18-94
IS_SCREEN_READER_SESSION Function	18-95
IS_SCREEN_READER_SESSION_YN Function	18-96
IS_USERNAME_UNIQUE Function.....	18-97
KEYVAL_NUM Function	18-98
KEYVAL_VC2 Function.....	18-99
LOCK_ACCOUNT Procedure	18-100
PASSWORD_FIRST_USE_OCCURRED Function.....	18-101
PREPARE_URL Function	18-102
PUBLIC_CHECK_AUTHORIZATION Function.....	18-104
PURGE_REGIONS_BY_APP Procedure	18-105
PURGE_REGIONS_BY_NAME Procedure.....	18-106
PURGE_REGIONS_BY_PAGE Procedure	18-107
REDIRECT_URL Procedure	18-108
REMOVE_PREFERENCE Procedure	18-109
REMOVE_SORT_PREFERENCES Procedure	18-110
REMOVE_USER Procedure.....	18-111
RESET_AUTHORIZATIONS Procedure.....	18-112
RESET_PW Procedure.....	18-113
SAVEKEY_NUM Function	18-114
SAVEKEY_VC2 Function	18-115
SET_ATTRIBUTE Procedure.....	18-116
SET_AUTHENTICATION_RESULT Procedure	18-117
SET_BUILD_OPTION_STATUS Procedure.....	18-118
SET_COMPATIBILITY_MODE Procedure	18-119
SET_CUSTOM_AUTH_STATUS Procedure	18-121
SET_EDITION Procedure	18-122
SET_EMAIL Procedure	18-123
SET_FIRST_NAME Procedure.....	18-124
SET_LAST_NAME Procedure	18-125
SET_PREFERENCE Procedure	18-126
SET_SECURITY_GROUP_ID Procedure.....	18-127
SET_SESSION_HIGH_CONTRAST_OFF Procedure	18-129
SET_SESSION_HIGH_CONTRAST_ON Procedure	18-130
SET_SESSION_LANG Procedure.....	18-131
SET_SESSION_LIFETIME_SECONDS Procedure	18-132
SET_SESSION_MAX_IDLE_SECONDS Procedure.....	18-134
SET_SESSION_SCREEN_READER_OFF Procedure.....	18-136
SET_SESSION_SCREEN_READER_ON Procedure	18-137

SET_SESSION_STATE Procedure	18-138
SET_SESSION_TERRITORY Procedure	18-139
SET_SESSION_TIME_ZONE Procedure	18-140
SET_USERNAME Procedure	18-141
SHOW_HIGH_CONTRAST_MODE_TOGGLE Procedure	18-142
SHOW_SCREEN_READER_MODE_TOGGLE Procedure	18-143
STRING_TO_TABLE Function	18-144
STRONG_PASSWORD_CHECK Procedure.....	18-145
STRONG_PASSWORD_VALIDATION Function	18-149
SUBMIT_FEEDBACK Procedure	18-150
SUBMIT_FEEDBACK_FOLLOWUP Procedure.....	18-152
TABLE_TO_STRING Function	18-153
UNEXPIRE_END_USER_ACCOUNT Procedure.....	18-154
UNEXPIRE_WORKSPACE_ACCOUNT Procedure	18-155
UNLOCK_ACCOUNT Procedure.....	18-156
URL_ENCODE Function	18-157
WORKSPACE_ACCOUNT_DAYS_LEFT Function.....	18-159

19 APEX_WEB_SERVICE

About the APEX_WEB_SERVICE API.....	19-2
Invoking a SOAP Style Web Service.....	19-3
Invoking a RESTful Style Web Service	19-5
Retrieving Cookies and HTTP Headers	19-6
Setting Cookies and HTTP Headers	19-7
BLOB2CLOBBASE64 Function	19-8
CLOBBASE642BLOB Function	19-9
MAKE_REQUEST Procedure.....	19-10
MAKE_REQUEST Function	19-12
MAKE_REST_REQUEST Function	19-14
PARSE_RESPONSE Function	19-16
PARSE_RESPONSE_CLOB Function	19-17
PARSE_XML Function	19-18
PARSE_XML_CLOB Function	19-20

20 JavaScript APIs

apex.event.trigger(pSelector,pEvent,pData)	20-4
apex.widget.initPageItem(pName,pOptions)	20-5
\$x(pNd)	20-6
\$v(pNd)	20-7
\$v2(pNd)	20-8
\$s(pNd, pValue, pDisplayValue, pSuppressChangeEvent)	20-9

\$u_Carray(pNd)	20-10
\$u_Narray(pNd)	20-11
\$nvl(pTest, pDefault)	20-12
apex.submit(pOptions)	20-13
apex.submit(pRequest).....	20-14
apex.confirm(pMessage, pRequest)	20-15
apex.confirm(pMessage, pOptions)	20-16
\$x_Style(pNd, pStyle, pString).....	20-17
\$x_Hide(pNd).....	20-18
\$x_Show(pNd).....	20-19
\$x_Toggle(pNd)	20-20
\$x_Remove(pNd)	20-21
\$x_Value(pNd,pValue)	20-22
\$x_UpTill(pNd, pToTag)	20-23
\$x_ItemRow(pNd,pFunc)	20-24
\$x_HideItemRow(pNd)	20-25
\$x_ShowItemRow(pNd)	20-26
\$x_ToggleItemRow(pNd)	20-27
\$x_HideAllExcept(pNd,pNdArray).....	20-28
\$x_HideSiblings(pNd).....	20-29
\$x_ShowSiblings(pNd).....	20-30
\$x_Class(pNd,pClass)	20-31
\$x_SetSiblingsClass(pNd, pClass, pNdClass)	20-32
\$x_ByClass(pClass, pNd, pTag).....	20-33
\$x_ShowAllByClass(pNd, pClass, pTag)	20-34
\$x_ShowChildren(pNd).....	20-35
\$x_HideChildren(pNd)	20-36
\$x_disableItem(pNd, pTest)	20-37
\$f_get_emptyys(pNd, pClassFail, pClass).....	20-38
\$v_Array(pNd).....	20-39
\$f_ReturnChecked(pNd).....	20-40
\$d_ClearAndHide(pNd)	20-41
\$f_SelectedOptions(pNd).....	20-42
\$f_SelectValue(pNd).....	20-43
\$u_ArrayToString(pArray, pDelim)	20-44
\$x_CheckImageSrc(pId,pSearch).....	20-45
\$v_CheckValueAgainst(pThis, pValue)	20-46
\$f_Hide_On_Value_Item(pThis, pThat, pValue)	20-47
\$f_Show_On_Value_Item(pThis, pThat, pValue)	20-48
\$f_Hide_On_Value_Item_Row(pThis, pThat, pValue)	20-49
\$f_Show_On_Value_Item_Row(pThis, pThat, pValue)	20-50
\$f_DisableOnValue(pThis, pValue, pThat)	20-51

\$x_ClassByClass(pNd, pClass, pTag, pClass2)	20-52
\$f_ValuesToArray(pThis, pClass, pTag)	20-53
\$x_FormItems(pNd, pType).....	20-54
\$f_CheckAll(pThis, pCheck, pArray).....	20-55
\$f_CheckFirstColumn(pNd).....	20-56
\$v_PopupReturn(pValue, pThat)	20-57
\$x_ToggleWithImage(pThis,pNd).....	20-58
\$x_SwitchImageSrc(pNd, pSearch, pReplace).....	20-59
\$x_CheckImageSrc(pNd, pSearch)	20-60
\$u_SubString(pText,pMatch)	20-61
html_RemoveAllChildren(pNd).....	20-62
\$v_IsEmpty(pThis).....	20-63
html_SetSelectValue(pId,pValue).....	20-64
addLoadEvent(pFunction)	20-65
\$f_Swap(pThis,pThat)	20-66
submitEnter(pNd,e).....	20-67
\$f_SetValueSequence(pArray,pMultiple).....	20-68
\$dom_AddTag(pThis, pTag, pText).....	20-69
\$tr_AddTD(pThis,pText)	20-70
\$tr_AddTH(pThis,pText).....	20-71
\$dom_AddInput(pThis,pType,pId,pName,pValue)	20-72
\$dom_MakeParent(p_Node,p_Parent)	20-73
\$x_RowHighlight(pThis, pColor).....	20-74
\$x_RowHighlightOff(pThis)	20-75
\$v_Upper(pNd)	20-76
\$d_Find(pThis,pString,pTags,pClass)	20-77
returnInput(p_R, p_D)	20-78
setReturn(p_R,p_D)	20-79
\$f_First_field(pNd)	20-80
GetCookie (pName).....	20-81
SetCookie (pName,pValue)	20-82

Index

Preface

Oracle Application Express API Reference describes the Application Programming Interfaces, referred to as APIs, available when programming in the Oracle Application Express environment.

Topics:

- [Topic Overview](#)
- [Audience](#)
- [Documentation Accessibility](#)
- [Related Documents](#)
- [Conventions](#)

Topic Overview

This document contains the following chapters:

Title	Description
APEX_APPLICATION	Use the APEX_APPLICATION package to take advantage of a number of global variables.
APEX_APPLICATION_INSTALL	The APEX_APPLICATION_INSTALL package provides a number of methods to modify application attributes during the Application Express application installation process.
APEX_COLLECTION	Use APEX_COLLECTION to temporarily capture one or more nonscalar values. You can use collections to store rows and columns currently in session state so they can be accessed, manipulated, or processed during a user's specific session.
APEX_CSS	The APEX_CSS package provides utility functions for adding CSS styles to HTTP output. This package is usually used for plug-in development.
APEX_CUSTOM_AUTH	Use the APEX_CUSTOM_AUTH package to perform various operations related to authentication and session management.
APEX_DEBUG_MESSAGE	The APEX_DEBUG_MESSAGE package provides utility functions for managing the debug message log.

Title	Description
APEX_ERROR	The APEX_ERROR package provides the interface declarations and some utility functions for an error handling function and includes procedures and functions to raise errors in an Application Express application.
APEX_INSTANCE_ADMIN	The APEX_INSTANCE_ADMIN package provides utilities for managing an Oracle Application Express runtime environment. Use the APEX_INSTANCE_ADMIN package to get and set email settings, wallet settings, report printing settings and to manage scheme to workspace mappings.
APEX_ITEM	Use the APEX_ITEM package to create form elements dynamically based on a SQL query instead of creating individual items page by page.
APEX_JAVASCRIPT	The APEX_JAVASCRIPT package provides utility functions for adding dynamic JavaScript code to HTTP output. This package is usually used for plug-in development.
APEX_LANG	Use APEX_LANG API to translate messages.
APEX_LDAP	Use APEX_LDAP to perform various operations related to Lightweight Directory Access Protocol (LDAP) authentication.
APEX_MAIL	Use the APEX_MAIL package to send an email from an Oracle Application Express application.
APEX_PLSQL_JOB	Use APEX_PLSQL_JOB package to run PL/SQL code in the background of your application. This is an effective approach for managing long running operations that do not need to complete for a user to continue working with your application.
APEX_PLUGIN	The APEX_PLUGIN package provides the interface declarations and some utility functions to work with plug-ins.
APEX_PLUGIN_UTIL	The APEX_PLUGIN_UTIL package provides utility functions that solve common problems when writing a plug-in.
APEX_UI_DEFAULT_UPDATE	You can use the APEX_UI_DEFAULT_UPDATE package to set the user interface defaults associated with a table within a schema. The package must be called from within the schema that owns the table you are updating.
APEX_UTIL	Use the APEX_UTIL package to get and set session state, get files, check authorizations for users, reset different states for users, and also to get and set preferences for users.
APEX_WEB_SERVICE	The APEX_WEB_SERVICE API allows you to integrate other systems with Application Express by allowing you to interact with Web services anywhere you can utilize PL/SQL in your application. The API contains procedures and functions to call both SOAP and RESTful style Web services.
JavaScript APIs	Use these JavaScript functions and objects to provide client-side functionality, such as showing and hiding page elements, or making XML HTTP Asynchronous JavaScript and XML (AJAX) requests.

Note: In release 2.2, Oracle Application Express APIs were renamed using the prefix `APEX_`. Note that API's using the previous prefix `HTMLDB_` are still supported to provide backward compatibility. As a best practice, however, use the new API names for new applications unless you plan to run them in an earlier version of Oracle Application Express.

Audience

Oracle Application Express API Reference is intended for application developers who are building database-centric Web applications using Oracle Application Express. The guide describes the APIs available when programming in the Oracle Application Express environment.

To use this guide, you need to have a general understanding of relational database concepts as well as an understanding of the operating system environment under which you are running Oracle Application Express.

See Also: *Oracle 2 Day + Application Express Developer's Guide*

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>.

Access to Oracle Support

Oracle customers have access to electronic support through My Oracle Support. For information, visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info> or visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs> if you are hearing impaired.

Accessibility of Code Examples in Documentation

Screen readers may not always correctly read the code examples in this document. The conventions for writing code require that closing braces should appear on an otherwise empty line; however, some screen readers may not always read a line of text that consists solely of a bracket or brace.

Accessibility of Links to External Web Sites in Documentation

This documentation may contain links to Web sites of other companies or organizations that Oracle does not own or control. Oracle neither evaluates nor makes any representations regarding the accessibility of these Web sites.

Related Documents

For more information, see these Oracle resources:

- *Oracle Application Express Release Notes*
- *Oracle Application Express Installation Guide*
- *Oracle 2 Day + Application Express Developer's Guide*
- *Oracle Application Express Application Builder User's Guide*

- *Oracle Application Express Administration Guide*
- *Oracle Application Express Migration Guide*
- *Oracle Application Express SQL Workshop Guide*
- *Oracle Application Express End User's Guide*
- *Oracle Database Concepts*
- *Oracle Database Advanced Application Developer's Guide*
- *Oracle Database Administrator's Guide*
- *Oracle Database SQL Language Reference*
- *SQL*Plus User's Guide and Reference*
- *Oracle Database PL/SQL Language Reference*

For information about Oracle error messages, see *Oracle Database Error Messages*. Oracle error message documentation is available only in HTML. If you have access to the Oracle Database Documentation Library, you can browse the error messages by range. Once you find the specific range, use your browser's "find in page" feature to locate the specific message. When connected to the Internet, you can search for a specific error message using the error message search feature of the Oracle online documentation.

Many books in the documentation set use the sample schemas of the seed database, which is installed by default when you install Oracle. Refer to *Oracle Database Sample Schemas* for information on how these schemas were created and how you can use them yourself.

For additional application examples, go to the Learning Library. Search for free online training content, including Oracle by Example (OBE), demos, and tutorials. To access the Oracle Learning Library, go to:

<http://www.oracle.com/technetwork/tutorials/index.html>

Printed documentation is available for sale in the Oracle Store at

<http://shop.oracle.com/>

If you already have a user name and password for OTN, then you can go directly to the documentation section of the OTN Web site at

<http://www.oracle.com/technology/documentation/>

Conventions

For a description of PL/SQL subprogram conventions, refer to the *Oracle Database PL/SQL Language Reference*. This document contains the following information:

- Specifying subprogram parameter modes
- Specifying default values for subprogram parameters
- Overloading PL/SQL subprogram Names

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
<i>italic</i>	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
<code>monospace</code>	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

What's New in this Document

This section provides an overview of updates made to this version of the Oracle Application Express API Reference.

See Also: For an overview of new features in Oracle Application Express, release 4.1, see "What's New" in *Oracle Application Express Application Builder User's Guide*.

Topics:

- [Oracle Application Express API Reference Updates for Release 4.1](#)

Oracle Application Express API Reference Updates for Release 4.1

The following APIs have been updated or added to the Oracle Application Express API Reference for Oracle Application Express, release 4.1:

- **APEX_APPLICATION**

The `APEX_APPLICATION` package is a PL/SQL package that implements the Oracle Application Express rendering engine. See "[APEX_APPLICATION](#)" on page 1-1.

The following procedure has been added to this API:

- **STOP_APEX_ENGINE Procedure**

This procedure signals the APEX engine to stop further processing and immediately exit to avoid adding additional HTML code to the HTTP buffer. See "[STOP_APEX_ENGINE Procedure](#)" on page 1-8.

- **APEX_ERROR**

The new `APEX_ERROR` package provides the interface declarations and some utility functions for an error handling function and includes procedures and functions to raise errors in an Application Express application. See "[APEX_ERROR](#)" on page 7-1.

- **APEX_INSTANCE_ADMIN**

The `APEX_INSTANCE_ADMIN` package provides utilities for managing an Oracle Application Express runtime environment. See "[APEX_INSTANCE_ADMIN](#)" on page 8-1.

The following procedures, functions, and parameters have been added to this API:

- **REMOVE_APPLICATION Procedure added**

This procedure removes the application specified from the Application Express instance. See "[REMOVE_APPLICATION Procedure](#)" on page 8-6.

- **Available Parameters for Instance Admin**

Additional parameters added for `APEX_INSTANCE_ADMIN.GET_PARAMETER` and `APEX_INSTANCE_ADMIN.SET_PARAMETER`. Parameters also added for

the following new fields In Instance Admin, under Instance Settings: SMTP Authentication Username, SMTP Authentication Password, Use SSL/TLS.

■ **APEX_UTIL**

The `APEX_UTIL` package provides utilities you can use when programming in the Oracle Application Express environment. See ["APEX_UTIL"](#) on page 18-1.

The following procedures and functions have been added to this API:

- **DELETE_USER_GROUP Procedure Signature 1**
This procedure deletes a user group by providing the primary key of the group. See ["DELETE_USER_GROUP Procedure Signature 1"](#) on page 18-22.
- **DELETE_USER_GROUP Procedure Signature 2**
This procedure deletes a user group by providing the name of the group. See ["DELETE_USER_GROUP Procedure Signature 2"](#) on page 18-23.
- **GET_HIGH_CONTRAST_MODE_TOGGLE Function**
This function returns a link to the current page that allows you to turn on or off, toggle, the mode. For example, if you are in standard mode, this function displays a link that when clicked switches high contrast mode on. See ["GET_HIGH_CONTRAST_MODE_TOGGLE Function"](#) on page 18-66
- **HOST_URL Function**
This function returns the URL to the Application Express instance, depending on the option passed. See ["HOST_URL Function"](#) on page 18-83.
- **IS_HIGH_CONTRAST_SESSION Function**
This function returns a boolean true if the session is in high contrast mode and returns a boolean false if not in high contrast mode. See ["IS_HIGH_CONTRAST_SESSION Function"](#) on page 18-92.
- **IS_HIGH_CONTRAST_SESSION_YN Function**
This function returns Y if the session is in high contrast mode and N if not in high contrast mode. See ["IS_SCREEN_READER_SESSION_YN Function"](#) on page 18-96.
- **REDIRECT_URL Procedure**
This procedure redirects the browser to a new URL. See ["REDIRECT_URL Procedure"](#) on page 18-108.
- **SET_SESSION_HIGH_CONTRAST_OFF Procedure**
This procedure switches off high contrast mode for the current session. See ["SET_SESSION_HIGH_CONTRAST_OFF Procedure"](#) on page 18-129.
- **SET_SESSION_HIGH_CONTRAST_ON Procedure**
This procedure switches on high contrast mode for the current session. See ["SET_SESSION_HIGH_CONTRAST_ON Procedure"](#) on page 18-130.
- **SHOW_HIGH_CONTRAST_MODE_TOGGLE Procedure**
This procedure displays a link to the current page to turn on or off, toggle, the mode. For example, if you are in standard mode, this function displays a link that when clicked switches the high contrast mode on. See ["SHOW_HIGH_CONTRAST_MODE_TOGGLE Procedure"](#) on page 18-142.
- **SET_COMPATIBILITY_MODE Procedure**

This procedure controls the compatibility mode of the Application Express runtime engine. Certain runtime behaviors are changed from release to release and if you desire a certain behavior in your application, you can control this via the compatibility mode attribute of an application. See "[SET_COMPATIBILITY_MODE Procedure](#)" on page 18-119.

- **APEX_JAVASCRIPT**

The APEX_JAVASCRIPT functions and objects are used to provide client-side functionality, such as showing and hiding page elements, or making XML HTTP Asynchronous JavaScript and XML (AJAX) requests. See "[JavaScript APIs](#)" on page 20-1.

The following procedure has been updated:

- **ADD_LIBRARY Procedure**

A new `p_key` parameter has been added to this procedure. See "[ADD_LIBRARY Procedure](#)" on page 10-8

- **APEX_PLUGIN**

The APEX_PLUGIN package provides the interface declarations and some utility functions to work with plug-ins. See "[APEX_PLUGIN](#)" on page 15-1.

The following data type has been updated:

- **t_region**

New parameters have been added to this data type. See "[Data Types](#)" on page 15-2.

- **APEX_PLUGIN_UTIL**

The APEX_PLUGIN_UTIL package provides utility functions that solve common problems when writing a plug-in. See "[APEX_PLUGIN_UTIL](#)" on page 16-1.

The following procedure has been updated:

- **PRINT_LOV_AS_JSON Procedure**

A new `p_replace_substitutions` parameter has been added to this procedure. See "[PRINT_LOV_AS_JSON Procedure](#)" on page 16-28.

- **APEX_WEB_SERVICE**

The APEX_WEB_SERVICE API allows you to integrate other systems with Application Express by allowing you to interact with Web services anywhere you can utilize PL/SQL in your application. See "[APEX_WEB_SERVICE](#)" on page 19-1.

The following procedures and functions have been updated:

- **MAKE_REQUEST Procedure**

A new `p_transfer_timeout` parameter has been added to this procedure. See "[MAKE_REQUEST Procedure](#)" on page 19-10.

- **MAKE_REQUEST Function**

A new `p_transfer_timeout` parameter has been added to this function. See "[MAKE_REQUEST Function](#)" on page 19-12.

- **MAKE_REQUEST_REQUEST Function**

A new `p_transfer_timeout` parameter has been added to this function. See "[MAKE_REQUEST Function](#)" on page 19-12.

APEX_APPLICATION

The APEX_APPLICATION package is a PL/SQL package that implements the Oracle Application Express rendering engine. You can use this package to take advantage of a number of global variables. [Table 1–1](#) describes the global variables available in the APEX_APPLICATION package.

Table 1–1 Global Variables Available in APEX_APPLICATION

Global Variable	Description
G_USER	Specifies the currently logged in user.
G_FLOW_ID	Specifies the ID of the currently running application.
G_FLOW_STEP_ID	Specifies the ID of the currently running page.
G_FLOW_OWNER	Specifies the schema to parse for the currently running application.
G_REQUEST	Specifies the value of the request variable most recently passed to or set within the show or accept modules.
G_BROWSER_LANGUAGE	Refers to the Web browser's current language preference.
G_DEBUG	Refers to whether debugging is currently switched on or off. Valid values for the DEBUG flag are 'Yes' or 'No'. Turning debug on shows details about application processing.
G_HOME_LINK	Refers to the home page of an application. The Application Express engine will redirect to this location if no page is given and if no alternative page is dictated by the authentication scheme's logic.
G_LOGIN_URL	Can be used to display a link to a login page for users that are not currently logged in.
G_IMAGE_PREFIX	Refers to the virtual path the web server uses to point to the images directory distributed with Oracle Application Express.
G_FLOW_SCHEMA_OWNER	Refers to the owner of the Application Express schema.
G_PRINTER_FRIENDLY	Refers to whether or not the Application Express engine is running in print view mode. This setting can be referenced in conditions to eliminate elements not desired in a printed document from a page.
G_PROXY_SERVER	Refers to the application attribute 'Proxy Server'.
G_SYSDATE	Refers to the current date on the database server. this uses the DATE DATATYPE.
G_PUBLIC_USER	Refers to the Oracle schema used to connect to the database through the database access descriptor (DAD).
G_GLOBAL_NOTIFICATION	Specifies the application's global notification attribute.

Topics:

- [Referencing Arrays](#)
- [Referencing Values Within an On Submit Process](#)
- [Converting an Array to a Single Value](#)
- [HELP Procedure](#)
- [STOP_APEX_ENGINE Procedure](#)

Referencing Arrays

Items are typically HTML form elements such as text fields, select lists, and check boxes. When you create a new form item using a wizard, the wizard uses a standard naming format. The naming format provides a handle so you can retrieve the value of the item later on.

If you need to create your own items, you can access them after a page is submitted by referencing `APEX_APPLICATION.G_F01` to `APEX_APPLICATION.G_F50` arrays. You can create your own HTML form fields by providing the input parameters using the format `F01`, `F02`, `F03` and so on. You can create up to 50 input parameters ranging from `F01` to `F50`, for example:

```
<INPUT TYPE="text" NAME="F01" SIZE="32" MAXLENGTH="32" VALUE="some value">

<TEXTAREA NAME="F02" ROWS=4 COLS=90 WRAP="VIRTUAL">this is the example of a text
area.</TEXTAREA>

<SELECT NAME="F03" SIZE="1">
<OPTION VALUE="abc">abc
<OPTION VALUE="123">123
</SELECT>
```

Because the `F01` to `F50` input items are declared as PL/SQL arrays, you can have multiple items named the same value. For example:

```
<INPUT TYPE="text" NAME="F01" SIZE="32" MAXLENGTH="32" VALUE="array element 1">
<INPUT TYPE="text" NAME="F01" SIZE="32" MAXLENGTH="32" VALUE="array element 2">
<INPUT TYPE="text" NAME="F01" SIZE="32" MAXLENGTH="32" VALUE="array element 3">
```

Note that following PL/SQL code produces the same HTML as show in the previous example.

```
FOR i IN 1..3 LOOP
APEX_ITEM.TEXT(P_IDX      => 1,
  p_value      =>'array element '||i ,
  p_size       =>32,
  p_maxlength  =>32);
END LOOP;
```

Referencing Values Within an On Submit Process

You can reference the values posted by an HTML form using the PL/SQL variable `APEX_APPLICATION.G_F01` to `APEX_APPLICATION.G_F50`. Because this element is an array, you can reference values directly, for example:

```
FOR i IN 1..APEX_APPLICATION.G_F01.COUNT LOOP
    http.p('element '||I||' has a value of '||APEX_APPLICATION.G_F01(i));
END LOOP;
```

Note that check boxes displayed using `APEX_ITEM.CHECKBOX` will only contain values in the `APEX_APPLICATION` arrays for those rows which are checked. Unlike other items (`TEXT`, `TEXTAREA`, and `DATE_POPUP`) which can contain an entry in the corresponding `APEX_APPLICATION` array for every row submitted, a check box will only have an entry in the `APEX_APPLICATION` array if it is selected.

Converting an Array to a Single Value

You can also use Oracle Application Express public utility functions to convert an array into a single value. The resulting string value is a colon-separated list of the array element values. For example:

```
http.p(APEX_UTIL.TABLE_TO_STRING(APEX_APPLICATION.G_F01));
```

This function enables you to reference G_F01 to G_F50 values in an application process that performs actions on data. The following sample process demonstrates how values are inserted into a table:

```
INSERT INTO my_table (my_column) VALUES  
APEX_UTIL.TABLE_TO_STRING(APEX_APPLICATION.G_F01)
```

HELP Procedure

This function outputs page and item level help text as formatted HTML and can be used to customize how help information is displayed in your application.

Syntax

```
APEX_APPLICATION.HELP (
    p_request          IN VARCHAR2 DEFAULT NULL,
    p_flow_id          IN VARCHAR2 DEFAULT NULL,
    p_flow_step_id     IN VARCHAR2 DEFAULT NULL,
    p_show_item_help   IN VARCHAR2 DEFAULT 'YES',
    p_show_regions     IN VARCHAR2 DEFAULT 'YES',
    p_before_page_html IN VARCHAR2 DEFAULT '<p>',
    p_after_page_html  IN VARCHAR2 DEFAULT NULL,
    p_before_region_html IN VARCHAR2 DEFAULT NULL,
    p_after_region_html IN VARCHAR2 DEFAULT '</td></tr></table></p>',
    p_before_prompt_html IN VARCHAR2 DEFAULT '<p><b>',
    p_after_prompt_html IN VARCHAR2 DEFAULT '</b></p>:&nbsp;  ',
    p_before_item_html IN VARCHAR2 DEFAULT NULL,
    p_after_item_html  IN VARCHAR2 DEFAULT NULL);
```

Parameters

[Table 1–2](#) describes the parameters available in the HELP procedure.

Table 1–2 HELP Parameters

Parameter	Description
p_request	Not used.
p_flow_id	The application ID that contains the page or item level help you want to output.
p_flow_step_id	The page ID that contains the page or item level help you want to display.
p_show_item_help	Flag to determine if item level help is output. If this parameter is supplied, the value must be either 'YES' or 'NO', if not the default value will be 'YES'.
p_show_regions	Flag to determine if region headers are output (for regions containing page items). If this parameter is supplied, the value must be either 'YES' or 'NO', if not the default value will be 'YES'.
p_before_page_html	Use this parameter to include HTML between the page level help text and item level help text.
p_after_page_html	Use this parameter to include HTML at the bottom of the output, after all other help.
p_before_region_html	Use this parameter to include HTML before every region section. Note this parameter is ignored if p_show_regions is set to 'NO'.
p_after_region_html	Use this parameter to include HTML after every region section. Note this parameter is ignored if p_show_regions is set to 'NO'.
p_before_prompt_html	Use this parameter to include HTML before every item label for item level help. Note this parameter is ignored if p_show_item_help is set to 'NO'.

Parameter	Description
p_after_prompt_html	Use this parameter to include HTML after every item label for item level help. Note this parameter is ignored if p_show_item_help is set to 'NO'.
p_before_item_html	Use this parameter to include HTML before every item help text for item level help. Note this parameter is ignored if p_show_item_help is set to 'NO'.
p_after_item_html	Use this parameter to include HTML after every item help text for item level help. Note this parameter is ignored if p_show_item_help is set to 'NO'.

The following example shows how to use the `APEX_APPLICATION.HELP` procedure to customize how help information is displayed.

Also, the help display has been customized so that the region sub-header now has a different color (through the `p_before_region_html` parameter) and also the ':' has been removed that appeared by default after every item prompt (through the `p_after_prompt_html` parameter).

In order to implement this type of call in your application, you can do the following:

- APEX APPLICATION 1-7**

STOP_APEX_ENGINE Procedure

This procedure signals the APEX engine to stop further processing and immediately exit to avoid adding additional HTML code to the HTTP buffer.

Note: This procedure raises the exception `apex_application.e_stop_apex_engine` internally. You must raise that exception again, if you use a WHEN OTHERS exception handler.

Syntax

```
APEX_APPLICATION.STOP_APEX_ENGINE
```

Parameters

None

Example 1

This example tells the browser to redirect to `http://apex.oracle.com/` and immediately stops further processing.

```
owa_util.redirect_url('http://apex.oracle.com');  
apex_application.stop_apex_engine;
```

Example 2

This example also tells the browser to redirect to `http://apex.oracle.com/` and immediately stops further processing. But, this time the code also contains a WHEN OTHERS exception handler which deals with the `apex_application.e_stop_apex_engine` used by `apex_application.stop_apex_engine`.

```
begin  
    ... code which can raise an exception ...  
    owa_util.redirect_url('http://apex.oracle.com');  
    apex_application.stop_apex_engine;  
exception  
    when apex_application.e_stop_apex_engine then  
        raise; -- raise again the stop APEX engine exception  
    when others then  
        ...; -- code to handle the exception  
end;
```

APEX_APPLICATION_INSTALL

The APEX_APPLICATION_INSTALL package provides a number of methods to modify application attributes during the Application Express application installation process.

Topics:

- [Package Overview](#)
- [Import Script Examples](#)
- [CLEAR_ALL Procedure](#)
- [GENERATE_APPLICATION_ID Procedure](#)
- [GENERATE_OFFSET Procedure](#)
- [GET_APPLICATION_ALIAS Function](#)
- [GET_APPLICATION_ID Function](#)
- [GET_APPLICATION_NAME Function](#)
- [GET_IMAGE_PREFIX Function](#)
- [GET_OFFSET Function](#)
- [GET_PROXY Function](#)
- [GET_SCHEMA Function](#)
- [GET_WORKSPACE_ID Function](#)
- [SET_APPLICATION_ALIAS Procedure](#)
- [SET_APPLICATION_ID Procedure](#)
- [SET_APPLICATION_NAME Procedure](#)
- [SET_IMAGE_PREFIX Procedure](#)
- [SET_OFFSET Procedure](#)
- [SET_PROXY Procedure](#)
- [SET_SCHEMA Procedure](#)
- [SET_WORKSPACE_ID Procedure](#)

Package Overview

Oracle Application Express provides two ways to import an application into an Application Express instance:

1. Upload and installation of an application export file via the Web interface of Application Express.
2. Execution of the application export file as a SQL script, typically in the command-line utility SQL*Plus.

Using the file upload capability of the Web interface of Application Express, developers can import an application with a different application ID, different workspace ID and different parsing schema. But when importing an application via a command-line tool like SQL*Plus, none of these attributes (application ID, workspace ID, parsing schema) can be changed without directly modifying the application export file.

As more and more Application Express customers create applications which are meant to be deployed via command-line utilities or via a non-Web-based installer, they are faced with this challenge of how to import their application into an arbitrary workspace on any APEX instance.

Another common scenario is in training classes, to install an application into 50 different workspaces, all using the same application export file. Today, customers work around this by adding their own global variables to an application export file and then varying the values of these globals at installation time. However, this manual modification of the application export file (usually done with a post-export sed or awk script) shouldn't be necessary.

In Application Express 4.0 and higher, the `APEX_APPLICATION_INSTALL` API is available. This PL/SQL API provides a number of methods to set application attributes during the Application Express application installation process. All export files in Application Express 4.0 and higher contain references to the values set by the `APEX_APPLICATION_INSTALL` API. However, the methods in this API will only be used to override the default application installation behavior.

Attributes Manipulated by `APEX_APPLICATION_INSTALL`

The table below lists the attributes that can be set by functions in this API.

Table 2–1 *Attributes Manipulated by the `APEX_APPLICATION_INSTALL` API*

Attribute	Description
Workspace ID	Workspace ID of the imported application. See GET_WORKSPACE_ID Function , SET_WORKSPACE_ID Procedure .
Application ID	Application ID of the imported application. See GENERATE_APPLICATION_ID Procedure , GET_APPLICATION_ID Function , SET_APPLICATION_ID Procedure .
Offset	Offset value used during application import. See GENERATE_OFFSET Procedure , GET_OFFSET Function , SET_OFFSET Procedure .
Schema	The parsing schema ("owner") of the imported application. See GET_SCHEMA Function , SET_SCHEMA Procedure .
Name	Application name of the imported application. See GET_APPLICATION_NAME Function , SET_APPLICATION_NAME Procedure .

Table 2–1 (Cont.) Attributes Manipulated by the APEX_APPLICATION_INSTALL API

Attribute	Description
Alias	Application alias of the imported application. See GET_APPLICATION_ALIAS Function , SET_APPLICATION_ALIAS Procedure .
Image Prefix	The image prefix of the imported application. See GET_IMAGE_PREFIX Function , SET_IMAGE_PREFIX Procedure .
Proxy	The proxy server attributes of the imported application. See GET_PROXY Function , SET_PROXY Procedure .

Import Script Examples

Using the workspace FRED_DEV on the development instance, you generate an application export of application 645 and save it as file f645.sql. All examples in this section assume you are connected to SQL*Plus.

Import Application without Modification

To import this application back into the FRED_DEV workspace on the same development instance using the same application ID:

```
@f645.sql
```

Import Application with Specified Application ID

To import this application back into the FRED_DEV workspace on the same development instance, but using application ID 702:

```
begin
  apex_application_install.set_application_id( 702);
  apex_application_install.generate_offset;
  apex_application_install.set_application_alias( 'F' || apex_application.get_
application_id );
end;
/
```

```
@f645.sql
```

Import Application with Generated Application ID

To import this application back into the FRED_DEV workspace on the same development instance, but using an available application ID generated by Application Express:

```
begin
  apex_application_install.generate_application_id;
  apex_application_install.generate_offset;
  apex_application_install.set_application_alias( 'F' || apex_application.get_
application_id );
end;
/
```

```
@f645.sql
```

Import Application into Different Workspace using Different Schema

To import this application into the FRED_PROD workspace on the production instance, using schema FREDDY, and the workspace ID of FRED_DEV and FRED_PROD are different:

```
declare
  l_workspace_id number;
begin
```

```

select workspace_id into l_workspace_id
  from apex_workspaces
 where workspace = 'FRED_PROD';
--
apex_application_install.set_workspace_id( l_workspace_id );
apex_application_install.generate_offset;
apex_application_install.set_schema( 'FREDDY' );
apex_application_install.set_application_alias( 'FREDPROD_APP' );
end;
/

@f645.sql

```

Import into Training Instance for Three Different Workspaces

To import this application into the Training instance for 3 different workspaces:

```

declare
  l_workspace_id number;
begin
  select workspace_id into l_workspace_id
    from apex_workspaces
   where workspace = 'TRAINING1';
  --
  apex_application_install.set_workspace_id( l_workspace_id );
  apex_application_install.generate_application_id;
  apex_application_install.generate_offset;
  apex_application_install.set_schema( 'STUDENT1' );
  apex_application_install.set_application_alias( 'F' || apex_application.get_
application_id );
end;
/

@f645.sql

```

```

declare
  l_workspace_id number;
begin
  select workspace_id into l_workspace_id
    from apex_workspaces
   where workspace = 'TRAINING2';
  --
  apex_application_install.set_workspace_id( l_workspace_id );
  apex_application_install.generate_application_id;
  apex_application_install.generate_offset;
  apex_application_install.set_schema( 'STUDENT2' );
  apex_application_install.set_application_alias( 'F' || apex_application.get_
application_id );
end;
/

@f645.sql

```

```

declare
  l_workspace_id number;
begin
  select workspace_id into l_workspace_id
    from apex_workspaces
   where workspace = 'TRAINING3';
  --

```

```
apex_application_install.set_workspace_id( l_workspace_id );
apex_application_install.generate_application_id;
apex_application_install.generate_offset;
apex_application_install.set_schema( 'STUDENT3' );
apex_application_install.set_application_alias( 'F' || apex_application.get_
application_id );
end;
/

@f645.sql
```


CLEAR_ALL Procedure

This procedure clears all values currently maintained in the APEX_APPLICATION_INSTALL package.

Syntax

```
APEX_APPLICATION_INSTALL.CLEAR_ALL;
```

Parameters

None.

Example

The following example clears all values currently set by the APEX_APPLICATION_INSTALL package.

```
begin
    apex_application_install.clear_all;
end;
```

GENERATE_APPLICATION_ID Procedure

This procedure generates an available application ID on the instance and sets the application ID in APEX_APPLICATION_INSTALL.

Syntax

```
APEX_APPLICATION_INSTALL.GENERATE_APPLICATION_ID;
```

Parameters

None.

Example

For an example of this procedure call, see ["Import Application with Generated Application ID"](#) on page 2-4 and [Import into Training Instance for Three Different Workspaces](#) on page 2-5.

See Also: ["SET_APPLICATION_ID Procedure"](#) on page 2-19, ["GET_APPLICATION_ID Function"](#) on page 2-11

GENERATE_OFFSET Procedure

This procedure generates the offset value used during application import. The offset value is used to ensure that the metadata for the Application Express application definition does not collide with other metadata on the instance. For a new application installation, it is usually sufficient to call this procedure to have Application Express generate this offset value for you.

Syntax

```
APEX_APPLICATION_INSTALL.GENERATE_OFFSET;
```

Parameters

None.

Example

For examples of this procedure call, see ["Import Application with Specified Application ID"](#) on page 2-4, ["Import Application with Generated Application ID"](#) on page 2-4, and ["Import into Training Instance for Three Different Workspaces"](#) on page 2-5.

See Also: ["GET_OFFSET Function"](#) on page 2-14, ["SET_OFFSET Procedure"](#) on page 2-22

GET_APPLICATION_ALIAS Function

This function gets the application alias for the application to be imported. This will only be used if the application to be imported has an alias specified. An application alias must be unique within a workspace and it is recommended to be unique within an instance.

Syntax

```
APEX_APPLICATION_INSTALL.GET_APPLICATION_ALIAS  
RETURN VARCHAR2;
```

Parameters

None.

Example

The following example returns the value of the application alias value in the `APEX_APPLICATION_INSTALL` package. The application alias cannot be more than 255 characters.

```
declare  
    l_alias varchar2(255);  
begin  
    l_alias := apex_application_install.get_application_alias;  
end;
```

See Also: ["SET_APPLICATION_ALIAS Procedure"](#) on page 2-18

GET_APPLICATION_ID Function

This function is used to get the application ID of the application to be imported. The application ID should either not exist in the instance or, if it does exist, must be in the workspace where the application is being imported to.

Syntax

```
APEX_APPLICATION_INSTALL.GET_APPLICATION_ID  
RETURN NUMBER;
```

Parameters

None.

Example

The following example returns the value of the application ID value in the APEX_APPLICATION_INSTALL package.

```
declare  
    l_id number;  
begin  
    l_id := apex_application_install.get_application_id;  
end;
```

See Also: ["SET_APPLICATION_ID Procedure"](#) on page 2-19,
["GENERATE_APPLICATION_ID Procedure"](#) on page 2-8

GET_APPLICATION_NAME Function

This function gets the application name of the import application.

Syntax

```
APEX_APPLICATION_INSTALL.GET_APPLICATION_NAME  
RETURN VARCHAR2;
```

Parameters

None.

Example

The following example returns the value of the application name value in the APEX_APPLICATION_INSTALL package.

```
declare  
    l_application_name varchar2(255);  
begin  
    l_application_name := apex_application_install.get_application_name;  
end;
```

See Also: ["SET_APPLICATION_NAME Procedure"](#) on page 2-20

GET_IMAGE_PREFIX Function

This function gets the image prefix of the import application. Most Application Express instances use the default image prefix of /i/.

Syntax

```
APEX_APPLICATION_INSTALL.GET_IMAGE_PREFIX  
RETURN VARCHAR2;
```

Parameters

None.

Example

The following example returns the value of the application image prefix in the APEX_APPLICATION_INSTALL package. The application image prefix cannot be more than 255 characters.

```
declare  
    l_image_prefix varchar2(255);  
begin  
    l_image_prefix := apex_application_install.get_image_prefix;  
end;
```

See Also: ["SET_IMAGE_PREFIX Procedure"](#) on page 2-21

GET_OFFSET Function

This function is used to get the offset value used during the import of an application.

Syntax

```
APEX_APPLICATION_INSTALL.GET_OFFSET  
RETURN NUMBER;
```

Parameters

None.

Example

The following example returns the value of the application offset value in the APEX_APPLICATION_INSTALL package.

```
declare  
    l_offset number;  
begin  
    l_offset := apex_application_install.get_offset;  
end;
```

See Also: ["SET_OFFSET Procedure" on page 2-22](#), ["GENERATE_OFFSET Procedure" on page 2-9](#)

GET_PROXY Function

This function is used to get the proxy server attribute of an application to be imported.

Syntax

```
APEX_APPLICATION_INSTALL.GET_PROXY  
RETURN VARCHAR2;
```

Parameters

None.

Example

The following example returns the value of the proxy server attribute in the APEX_APPLICATION_INSTALL package. The proxy server attribute cannot be more than 255 characters.

```
declare  
    l_proxy varchar2(255);  
begin  
    l_proxy := apex_application_install.get_proxy;  
end;
```

See Also: ["SET_PROXY Procedure"](#) on page 2-23

GET_SCHEMA Function

This function is used to get the parsing schema ("owner") of the Application Express application.

Syntax

```
APEX_APPLICATION_INSTALL.GET_SCHEMA  
RETURN VARCHAR2;
```

Parameters

None.

Example

The following example returns the value of the application schema in the APEX_APPLICATION_INSTALL package.

```
declare  
    l_schema varchar2(30);  
begin  
    l_schema := apex_application_install.get_schema;  
end;
```

See Also: ["SET_SCHEMA Procedure"](#) on page 2-24

GET_WORKSPACE_ID Function

This function is used to get the workspace ID for the application to be imported.

Syntax

```
APEX_APPLICATION_INSTALL.GET_WORKSPACE_ID  
RETURN NUMBER;
```

Parameters

None.

Example

The following example returns the value of the workspace ID value in the APEX_APPLICATION_INSTALL package.

```
declare  
    l_workspace_id number;  
begin  
    l_workspace_id := apex_application_install.get_workspace_id;  
end;
```

See Also: ["SET_WORKSPACE_ID Procedure"](#) on page 2-25

SET_APPLICATION_ALIAS Procedure

This procedure sets the application alias for the application to be imported. This will only be used if the application to be imported has an alias specified. An application alias must be unique within a workspace and it is recommended to be unique within an instance.

Syntax

```
APEX_APPLICATION_INSTALL.SET_APPLICATION_ALIAS(  
    p_application_alias IN VARCHAR2);
```

Parameters

[Table 2–2](#) describes the parameters available in SET_APPLICATION_ALIAS procedure.

Table 2–2 SET_APPLICATION_ALIAS Parameters

Parameter	Description
p_application_alias	The application alias. The application alias is an alphanumeric identifier. It cannot exceed 255 characters, needs to be unique within a workspace and, ideally, is unique within an entire instance.

Example

For examples of this procedure call, see ["Import Application with Specified Application ID"](#) on page 2-4, ["Import Application with Generated Application ID"](#) on page 2-4, ["Import Application into Different Workspace using Different Schema"](#) on page 2-4 and ["Import into Training Instance for Three Different Workspaces"](#) on page 2-5.

See Also: ["GET_APPLICATION_ALIAS Function"](#) on page 2-10

SET_APPLICATION_ID Procedure

This procedure is used to set the application ID of the application to be imported. The application ID should either not exist in the instance or, if it does exist, must be in the workspace where the application is being imported to. This number must be a positive integer and must not be from the reserved range of Application Express application IDs.

Syntax

```
APEX_APPLICATION_INSTALL.SET_APPLICATION_ID (  
    p_application_id IN NUMBER);
```

Parameters

[Table 2–3](#) describes the parameters available in SET_APPLICATION_ID procedure.

Table 2–3 SET_APPLICATION_ID Parameters

Parameter	Description
p_application_id	This is the application ID. The application ID must be a positive integer, and cannot be in the reserved range of application IDs (3000 - 8999). It must be less than 3000 or greater than or equal to 9000.

Example

For an example of this procedure call, see "[Import Application with Specified Application ID](#)" on page 2-4.

See Also: "[SET_APPLICATION_ID Procedure](#)" on page 2-19,
"[GENERATE_APPLICATION_ID Procedure](#)" on page 2-8

SET_APPLICATION_NAME Procedure

This procedure sets the application name of the import application.

Syntax

```
APEX_APPLICATION_INSTALL.SET_APPLICATION_NAME;(
    p_application_name IN VARCHAR2);
```

Parameters

[Table 2–4](#) describes the parameters available in SET_APPLICATION_NAME procedure.

Table 2–4 SET_APPLICATION_NAME Parameters

Parameter	Description
p_application_name	This is the application name. The application name cannot be null and cannot be longer than 255 characters.

Example

The following example sets the application name in APEX_APPLICATION_INSTALL to "Executive Dashboard".

```
declare
    l_name varchar2(255) := 'Executive Dashboard';
begin
    apex_application_install.set_application_name( p_application_name => l_name );
end;
```

See Also: ["GET_APPLICATION_NAME Function"](#) on page 2-20

SET_IMAGE_PREFIX Procedure

This procedure sets the image prefix of the import application. Most Application Express instances use the default image prefix of /i/.

Syntax

```
APEX_APPLICATION_INSTALL.SET_IMAGE_PREFIX(  
    p_image_prefix IN VARCHAR2);
```

Parameters

[Table 2–4](#) describes the parameters available in SET_IMAGE_PREFIX procedure.

Table 2–5 SET_IMAGE_PREFIX Parameters

Parameter	Description
p_image_prefix	The image prefix. Default is /i/.

Example

The following example sets the value of the image prefix variable in APEX_APPLICATION_INSTALL.

```
declare  
    l_prefix varchar2(255) := '/i/';  
begin  
    apex_application_install.set_image_prefix( p_image_prefix => l_prefix );  
end;
```

See Also: ["GET_IMAGE_PREFIX Function"](#) on page 2-13

SET_OFFSET Procedure

This procedure sets the offset value used during application import. The offset value is used to ensure that the metadata for the Application Express application definition does not collide with other metadata on the instance. For a new application installation, it is usually sufficient to call the `generate_offset` procedure to have Application Express generate this offset value for you.

Syntax

```
APEX_APPLICATION_INSTALL.SET_OFFSET(  
    p_offset IN NUMBER);
```

Parameters

[Table 2–6](#) describes the parameters available in `SET_OFFSET` procedure.

Table 2–6 *SET_OFFSET Parameters*

Parameter	Description
<code>p_offset</code>	The offset value. The offset must be a positive integer. In most cases you do not need to specify the offset, and instead, call <code>APEX_APPLICATION_INSTALL.GENERATE_OFFSET</code> , which generates a large random value and then set it in the <code>APEX_APPLICATION_INSTALL</code> package.

Example

The following example generates a random number from the database and uses this as the offset value in `APEX_APPLICATION_INSTALL`.

```
declare  
    l_offset number;  
begin  
    l_offset := dbms_random.value(1000000000000, 999999999999);  
    apex_application_install.set_offset( p_offset => l_offset );  
end/
```

See Also: ["GET_OFFSET Function"](#) on page 2-14, ["GENERATE_OFFSET Procedure"](#) on page 2-9

SET_PROXY Procedure

This procedure is used to set the proxy server attributes of an application to be imported.

Syntax

```
APEX_APPLICATION_INSTALL.SET_PROXY (  
    p_proxy IN VARCHAR2);
```

Parameters

[Table 2–7](#) describes the parameters available in SET_PROXY procedure.

Table 2–7 SET_PROXY Parameters

Parameter	Description
p_proxy	The proxy server. There is no default value. The proxy server cannot be more than 255 characters and should not include any protocol prefix such as http://. A sample value might be: www-proxy.company.com

Example

The following example sets the value of the proxy variable in APEX_APPLICATION_INSTALL.

```
declare  
    l_proxy varchar2(255) := 'www-proxy.company.com'  
begin  
    apex_application_install.set_proxy( p_proxy => l_proxy );  
end;
```

See Also: ["SET_PROXY Procedure"](#) on page 2-15

SET_SCHEMA Procedure

This function is used to set the parsing schema ("owner") of the Application Express application. The database user of this schema must already exist, and this schema name must already be mapped to the workspace which will be used to import the application.

Syntax

```
APEX_APPLICATION_INSTALL.SET_SCHEMA (  
    p_schema IN VARCHAR2);
```

Parameters

[Table 2–8](#) describes the parameters available in the SET_SCHEMA procedure.

Table 2–8 SET_SCHEMA Parameters

Parameter	Description
p_schema	The schema name.

Example

For examples of this procedure call, see ["Import Application into Different Workspace using Different Schema"](#) on page 2-4 and ["Import into Training Instance for Three Different Workspaces"](#) on page 2-5.

See Also: ["GET_SCHEMA Function"](#) on page 2-16

SET_WORKSPACE_ID Procedure

This function is used to set the workspace ID for the application to be imported.

Syntax

```
APEX_APPLICATION_INSTALL.SET_WORKSPACE_ID (  
    p_workspace_id IN NUMBER);
```

Parameters

[Table 2–9](#) describes the parameters available in the SET_WORKSPACE_ID procedure.

Table 2–9 SET_WORKSPACE_ID Parameters

Parameter	Description
p_workspace_id	The workspace ID.

Example

For examples of this procedure call, see ["Import Application into Different Workspace using Different Schema"](#) on page 2-4 and ["Import into Training Instance for Three Different Workspaces"](#) on page 2-5.

See Also: ["SET_WORKSPACE_ID Procedure"](#) on page 2-25

APEX_COLLECTION

Collections enable you to temporarily capture one or more nonscalar values. You can use collections to store rows and columns currently in session state so they can be accessed, manipulated, or processed during a user's specific session. You can think of a collection as a bucket in which you temporarily store and name rows of information.

Topics:

- [About the APEX_COLLECTION API](#)
- [ADD_MEMBER Procedure](#)
- [ADD_MEMBER Function](#)
- [ADD_MEMBERS Procedure](#)
- [COLLECTION_EXISTS Function](#)
- [COLLECTION_HAS_CHANGED Function](#)
- [COLLECTION_MEMBER_COUNT Function](#)
- [CREATE_COLLECTION Procedure](#)
- [CREATE_OR_TRUNCATE_COLLECTION Procedure](#)
- [CREATE_COLLECTION_FROM_QUERY Procedure](#)
- [CREATE_COLLECTION_FROM_QUERY2 Procedure](#)
- [CREATE_COLLECTION_FROM_QUERY_B Procedure](#)
- [CREATE_COLLECTION_FROM_QUERYB2 Procedure](#)
- [DELETE_ALL_COLLECTIONS Procedure](#)
- [DELETE_ALL_COLLECTIONS_SESSION Procedure](#)
- [DELETE_COLLECTION Procedure](#)
- [DELETE_MEMBER Procedure](#)
- [DELETE_MEMBERS Procedure](#)
- [GET_MEMBER_MD5 Function](#)
- [MERGE_MEMBERS Procedure](#)
- [MOVE_MEMBER_DOWN Procedure](#)
- [MOVE_MEMBER_UP Procedure](#)
- [RESEQUENCE_COLLECTION Procedure](#)
- [RESET_COLLECTION_CHANGED Procedure](#)

-
- [RESET_COLLECTION_CHANGED_ALL Procedure](#)
 - [SORT_MEMBERS Procedure](#)
 - [TRUNCATE_COLLECTION Procedure](#)
 - [UPDATE_MEMBER Procedure](#)
 - [UPDATE_MEMBERS Procedure](#)
 - [UPDATE_MEMBER_ATTRIBUTE Procedure Signature 1](#)
 - [UPDATE_MEMBER_ATTRIBUTE Procedure Signature 2](#)
 - [UPDATE_MEMBER_ATTRIBUTE Procedure Signature 3](#)
 - [UPDATE_MEMBER_ATTRIBUTE Procedure Signature 4](#)
 - [UPDATE_MEMBER_ATTRIBUTE Procedure Signature 5](#)
 - [UPDATE_MEMBER_ATTRIBUTE Procedure Signature 6](#)

About the APEX_COLLECTION API

Every collection contains a named list of data elements (or members) which can have up to 50 character attributes (`VARCHAR2 (4000)`), five number attributes, five date attributes, one XML Type attribute, one large binary attribute (`BLOB`), and one large character attribute (`CLOB`). You insert, update, and delete collection information using the PL/SQL API `APEX_COLLECTION`.

The following are examples of when you might use collections:

- When you are creating a data-entry wizard in which multiple rows of information first need to be collected within a logical transaction. You can use collections to temporarily store the contents of the multiple rows of information, before performing the final step in the wizard when both the physical and logical transactions are completed.
- When your application includes an update page on which a user updates multiple detail rows on one page. The user can make many updates, apply these updates to a collection and then call a final process to apply the changes to the database.
- When you are building a wizard where you are collecting an arbitrary number of attributes. At the end of the wizard, the user then performs a task that takes the information temporarily stored in the collection and applies it to the database.

Topics:

- [Naming, Creating and Accessing Collections](#)
- [Merging, Truncating and Deleting Collections](#)
- [Adding, Updating and Deleting Collection Members](#)
- [Managing Collections](#)

Naming, Creating and Accessing Collections

Topics:

- [Naming Collections](#)
- [Creating a Collection](#)
- [About the Parameter p_generate_md5](#)

Naming Collections

When you create a collection, you must give it a name that cannot exceed 255 characters. Note that collection names are not case-sensitive and will be converted to uppercase.

Once the collection is named, you can access the values in the collection by running a SQL query against the view `APEX_COLLECTIONS`.

See Also: ["Accessing a Collection" on page 3-5](#), ["CREATE_COLLECTION Procedure Parameters" on page 3-21](#), ["CREATE_OR_TRUNCATE_COLLECTION Procedure Parameters" on page 3-22](#)

Creating a Collection

Every collection contains a named list of data elements (or members) which can have up to 50 character attributes (`VARCHAR2(4000)`), five number attributes, one XML Type attribute, one large binary attribute (BLOB), and one large character attribute (CLOB). You use the following methods to create a collection:

- `CREATE_COLLECTION`
This method creates an empty collection with the provided name. An exception is raised if the named collection exists.
- `CREATE_OR_TRUNCATE_COLLECTION`
If the provided named collection does not exist, this method creates an empty collection with the given name. If the named collection exists, this method truncates it. Truncating a collection empties it, but leaves it in place.
- `CREATE_COLLECTION_FROM_QUERY`
This method creates a collection and then populates it with the results of a specified query. An exception is raised if the named collection exists. This method can be used with a query with up to 50 columns in the `SELECT` clause. These columns in the `SELECT` clause will populate the 50 character attributes of the collection (C001 through C050).
- `CREATE_COLLECTION_FOM_QUERY2`
This method creates a collection and then populates it with the results of a specified query. An exception is raised if the named collection exists. It is identical to the `CREATE_COLLECTION_FROM_QUERY`, however, the first 5 columns of the `SELECT` clause must be numeric. After the numeric columns, there can be up to 50 character columns in the `SELECT` clause.
- `CREATE_COLLECTION_FROM_QUERY_B`
This method offers significantly faster performance than the `CREATE_COLLECTION_FROM_QUERY` method by performing bulk SQL operations, but has the following limitations:

- No column value in the select list of the query can be more than 2,000 bytes. If a row is encountered that has a column value of more than 2,000 bytes, an error will be raised during execution.
- The MD5 checksum will not be computed for any members in the collection.
- `CREATE_COLLECTION_FROM_QUERYB2`
This method also creates a collection and then populates it with the results of a specified query. An exception is raised if the named collection exists. It is identical to the `CREATE_COLLECTION_FROM_QUERY_B`, however, the first five columns of the `SELECT` clause must be numeric. After the numeric columns, there can be up to 50 character columns in the `SELECT` clause.

See Also: ["CREATE_COLLECTION Procedure"](#) on page 3-21, ["CREATE_OR_TRUNCATE_COLLECTION Procedure"](#) on page 3-22, ["CREATE_COLLECTION_FROM_QUERY Procedure"](#) on page 3-23, ["CREATE_COLLECTION_FROM_QUERY2 Procedure"](#) on page 3-24, ["CREATE_COLLECTION_FROM_QUERY_B Procedure"](#) on page 3-26, ["CREATE_COLLECTION_FROM_QUERYB2 Procedure"](#) on page 3-28

About the Parameter `p_generate_md5`

Use the `p_generate_md5` flag to specify if the message digest of the data of the collection member should be computed. By default, this flag is set to `NO`. Use this parameter to check the MD5 of the collection member (that is, compare it with another member or see if a member has changed).

See Also: ["Determining Collection Status"](#) on page 3-11 for information about using the `GET_MEMBER_MD5` function, ["GET_MEMBER_MD5 Function"](#) on page 3-35

Accessing a Collection

You can access the members of a collection by querying the database view `APEX_COLLECTIONS`. The `APEX_COLLECTIONS` view has the following definition:

<code>COLLECTION_NAME</code>	<code>NOT NULL VARCHAR2(255)</code>
<code>SEQ_ID</code>	<code>NOT NULL NUMBER</code>
<code>C001</code>	<code>VARCHAR2(4000)</code>
<code>C002</code>	<code>VARCHAR2(4000)</code>
<code>C003</code>	<code>VARCHAR2(4000)</code>
<code>C004</code>	<code>VARCHAR2(4000)</code>
<code>C005</code>	<code>VARCHAR2(4000)</code>
<code>...</code>	
<code>C050</code>	<code>VARCHAR2(4000)</code>
<code>N001</code>	<code>NUMBER</code>
<code>N002</code>	<code>NUMBER</code>
<code>N003</code>	<code>NUMBER</code>
<code>N004</code>	<code>NUMBER</code>
<code>N005</code>	<code>NUMBER</code>
<code>CLOB001</code>	<code>CLOB</code>
<code>BLOB001</code>	<code>BLOB</code>
<code>XMLTYPE001</code>	<code>XMLTYPE</code>
<code>MD5_ORIGINAL</code>	<code>VARCHAR2(4000)</code>

Use the `APEX_COLLECTIONS` view in an application just as you would use any other table or view in an application, for example:

```
SELECT c001, c002, c003, n001, clob001
```

```
FROM APEX_collections  
WHERE collection_name = 'DEPARTMENTS'
```

Merging, Truncating and Deleting Collections

Topics:

- [Merging Collections](#)
- [Truncating a Collection](#)
- [Deleting a Collection](#)
- [Deleting All Collections for the Current Application](#)
- [Deleting All Collections in the Current Session](#)

Merging Collections

You can merge members of a collection with values passed in a set of arrays. By using the `p_init_query` argument, you can create a collection from the supplied query.

See Also: ["MERGE_MEMBERS Procedure"](#) on page 3-36

Truncating a Collection

If you truncate a collection, you remove all members from the specified collection, but the named collection remains in place.

See Also: ["TRUNCATE_COLLECTION Procedure"](#) on page 3-44

Deleting a Collection

If you delete a collection, you delete the collection and all of its members. Be aware that if you do not delete a collection, it will eventually be deleted when the session is purged.

See Also: ["DELETE_COLLECTION Procedure"](#) on page 3-32

Deleting All Collections for the Current Application

Use the `DELETE_ALL_COLLECTIONS` method to delete all collections defined in the current application.

See Also: ["DELETE_ALL_COLLECTIONS Procedure"](#) on page 3-30

Deleting All Collections in the Current Session

Use the `DELETE_ALL_COLLECTIONS_SESSION` method to delete all collections defined in the current session.

See Also: ["DELETE_ALL_COLLECTIONS_SESSION Procedure"](#) on page 3-31

Adding, Updating and Deleting Collection Members

Topics:

- [Adding Members to a Collection](#)
- [About the Parameters p_generate_md5, p_clob001, p_blob001, and p_xmltype001](#)
- [Updating Collection Members](#)
- [Deleting Collection Members](#)

Adding Members to a Collection

When data elements (or members) are added to a collection, they are assigned a unique sequence ID. As you add members to a collection, the sequence ID will change in increments of 1, with the newest members having the largest ID.

You add new members to a collection using the `ADD_MEMBER` function. Calling this function returns the sequence ID of the newly added member.

You can also add new members (or an array of members) to a collection using the `ADD_MEMBERS` procedure. The number of members added is based on the number of elements in the first array.

See Also: ["ADD_MEMBER Procedure"](#) on page 3-12, ["ADD_MEMBER Function"](#) on page 3-14, ["ADD_MEMBERS Procedure"](#) on page 3-16

About the Parameters p_generate_md5, p_clob001, p_blob001, and p_xmltype001

Use the `p_generate_md5` flag to specify if the message digest of the data of the collection member should be computed. By default, this flag is set to `NO`. Use this parameter to check the MD5 of the collection member (that is, compare it with another member or see if a member has changed).

Use `p_clob001` for collection member attributes which exceed 4,000 characters. Use `p_blob001` for binary collection member attributes. Use `p_xmltype001` to store well-formed XML.

See Also: ["Determining Collection Status"](#) on page 3-11 for information about using the function `GET_MEMBER_MD5`

Updating Collection Members

You can update collection members by calling the `UPDATE_MEMBER` procedure and referencing the desired collection member by its sequence ID. The `UPDATE_MEMBER` procedure replaces an entire collection member, not individual member attributes.

Use the `p_clob001` parameter for collection member attributes which exceed 4,000 characters.

To update a single attribute of a collection member, use the `UPDATE_MEMBER_ATTRIBUTE` procedure.

See Also: ["UPDATE_MEMBER Procedure"](#) on page 3-45, ["UPDATE_MEMBERS Procedure"](#) on page 3-47, ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 1"](#) on page 3-49, ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 2"](#) on page 3-51, ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 3"](#) on page 3-53, ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 4"](#) on page 3-55, ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 5"](#) on page 3-57

Deleting Collection Members

You can delete a collection member by calling the `DELETE_MEMBER` procedure and referencing the desired collection member by its sequence ID. Note that this procedure leaves a gap in the sequence IDs in the specified collection.

You can also delete all members from a collection by when an attribute matches a specific value. Note that the `DELETE_MEMBERS` procedure also leaves a gap in the sequence IDs in the specified collection. If the supplied attribute value is null, then all members of the named collection will be deleted where the attribute (specified by `p_attr_number`) is null.

See Also: ["DELETE_MEMBER Procedure"](#) on page 3-33, ["DELETE_MEMBERS Procedure"](#) on page 3-34

Managing Collections

Topics:

- [Obtaining a Member Count](#)
- [Resequencing a Collection](#)
- [Verifying Whether a Collection Exists](#)
- [Adjusting a Member Sequence ID](#)
- [Sorting Collection Members](#)
- [Clearing Collection Session State](#)

Obtaining a Member Count

Use `COLLECTION_MEMBER_COUNT` to return the total count of all members in a collection. Note that this count does not indicate the highest sequence in the collection.

See Also: ["COLLECTION_MEMBER_COUNT Function"](#) on page 3-20

Resequencing a Collection

Use `RESEQUENCE_COLLECTION` to resequence a collection to remove any gaps in sequence IDs while maintaining the same element order.

See Also: ["RESEQUENCE_COLLECTION Procedure"](#) on page 3-40

Verifying Whether a Collection Exists

Use `COLLECTION_EXISTS` to determine if a collection exists.

See Also: ["COLLECTION_EXISTS Function"](#) on page 3-18

Adjusting a Member Sequence ID

You can adjust the sequence ID of a specific member within a collection by moving the ID up or down. When you adjust a sequence ID, the specified ID is exchanged with another ID. For example, if you were to move the ID 2 up, 2 becomes 3, and 3 would become 2.

Use `MOVE_MEMBER_UP` to adjust a member sequence ID up by one. Alternately, use `MOVE_MEMBER_DOWN` to adjust a member sequence ID down by one.

See Also: ["MOVE_MEMBER_DOWN Procedure"](#) on page 3-38, ["MOVE_MEMBER_UP Procedure"](#) on page 3-39

Sorting Collection Members

Use the `SORT_MEMBERS` method to reorder members of a collection by the column number. This method sorts the collection by a particular column number and also reassigns the sequence IDs for each member to remove gaps.

See Also: ["SORT_MEMBERS Procedure"](#) on page 3-43

Clearing Collection Session State

Clearing the session state of a collection removes the collection members. A shopping cart is a good example of when you might need to clear collection session state. When

a user requests to empty the shopping cart and start again, you must clear the session state for a collection. You can remove session state of a collection by calling the `TRUNCATE_COLLECTION` method or by using `f?p` syntax.

Calling the `TRUNCATE_COLLECTION` method deletes the existing collection and then recreates it, for example:

```
APEX_COLLECTION.TRUNCATE_COLLECTION(  
    p_collection_name => collection name);
```

You can also use the sixth `f?p` syntax argument to clear session state, for example:

```
f?p=App:Page:Session::NO:collection name
```

See Also: ["TRUNCATE_COLLECTION Procedure"](#) on page 3-44

Determining Collection Status

The `p_generate_md5` parameter determines if the MD5 message digests are computed for each member of a collection. The collection status flag is set to `FALSE` immediately after you create a collection. If any operations are performed on the collection (such as add, update, truncate, and so on), this flag is set to `TRUE`.

You can reset this flag manually by calling `RESET_COLLECTION_CHANGED`.

Once this flag has been reset, you can determine if a collection has changed by calling `COLLECTION_HAS_CHANGED`.

When you add a new member to a collection, an MD5 message digest is computed against all 50 attributes and the CLOB attribute if the `p_generated_md5` parameter is set to `YES`. You can access this value from the `MD5_ORIGINAL` column of the view `APEX_COLLECTION`. You can access the MD5 message digest for the current value of a specified collection member by using the function `GET_MEMBER_MD5`.

See Also: ["RESET_COLLECTION_CHANGED Procedure"](#) on page 3-41, ["COLLECTION_HAS_CHANGED Function"](#) on page 3-19, ["GET_MEMBER_MD5 Function"](#) on page 3-35

ADD_MEMBER Procedure

Use this procedure to add a new member to an existing collection. An error is raised if the specified collection does not exist for the current user in the same session for the current Application ID. Gaps are not used when adding a new member, so an existing collection with members of sequence IDs (1,2,5,8) will add the new member with a sequence ID of 9.

Syntax

```
APEX_COLLECTION.ADD_MEMBER (
    p_collection_name IN VARCHAR2,
    p_c001 IN VARCHAR2 default null,
    ...
    p_c050 IN VARCHAR2 default null,
    p_n001 IN NUMBER default null,
    p_n002 IN NUMBER default null,
    p_n003 IN NUMBER default null,
    p_n004 IN NUMBER default null,
    p_n005 IN NUMBER default null,
    p_d001 IN DATE default null,
    p_d002 IN DATE default null,
    p_d003 IN DATE default null,
    p_d004 IN DATE default null,
    p_d005 IN DATE default null,
    p_clob001 IN CLOB default empty_clob(),
    p_blob001 IN BLOB default empty_blob(),
    p_xmltype001 IN XMLTYPE default null,
    p_generate_md5 IN VARCHAR2 default 'NO');
```

Parameters

Table 3–1 describes the parameters available in the ADD_MEMBER procedure.

Note: Any character attribute exceeding 4,000 characters is truncated to 4,000 characters.

Table 3–1 ADD_MEMBER Procedure Parameters

Parameter	Description
p_collection_name	The name of an existing collection. Maximum length is 255 bytes. Collection names are not case sensitive and are converted to upper case.
p_c001 through p_c050	Attribute value of the member to be added. Maximum length is 4,000 bytes. Any character attribute exceeding 4,000 characters is truncated to 4,000 characters.
p_n001 through p_n005	Attribute value of the numeric attributes to be added.
p_d001 through p_d005	Attribute value of the date attribute.
p_clob001	Use p_clob001 for collection member attributes that exceed 4,000 characters.
p_blob001	Use p_blob001 for binary collection member attributes.
p_xmltype001	Use p_xmltype001 to store well-formed XML.

Table 3–1 (Cont.) ADD_MEMBER Procedure Parameters

Parameter	Description
p_generate_md5	Valid values include YES and NO. YES to specify if the message digest of the data of the collection member should be computed. Use this parameter to compare the MD5 of the collection member with another member or to see if that member has changed.

Example

The following is an example of the ADD_MEMBER procedure.

```
APEX_COLLECTION.ADD_MEMBER(  
    p_collection_name => 'GROCERIES'  
    p_c001             => 'Grapes',  
    p_c002             => 'Imported',  
    p_n001             => 125,  
    p_d001             => sysdate );  
END;
```

See Also: ["GET_MEMBER_MD5 Function"](#) on page 3-35, ["ADD_MEMBER Function"](#) on page 3-14, ["ADD_MEMBERS Procedure"](#) on page 3-16

ADD_MEMBER Function

Use this function to add a new member to an existing collection. Calling this function returns the sequence ID of the newly added member. An error is raised if the specified collection does not exist for the current user in the same session for the current Application ID. Gaps are not used when adding a new member, so an existing collection with members of sequence IDs (1,2,5,8) will add the new member with a sequence ID of 9.

Syntax

```
APEX_COLLECTION.ADD_MEMBER (  
    p_collection_name IN VARCHAR2,  
    p_c001 IN VARCHAR2 default null,  
    ...  
    p_c050 IN VARCHAR2 default null,  
    p_n001 IN NUMBER default null,  
    p_n002 IN NUMBER default null,  
    p_n003 IN NUMBER default null,  
    p_n004 IN NUMBER default null,  
    p_n005 IN NUMBER default null,  
    p_d001 IN DATE default null,  
    p_d002 IN DATE default null,  
    p_d003 IN DATE default null,  
    p_d004 IN DATE default null,  
    p_d005 IN DATE default null,  
    p_clob001 IN CLOB default empty_clob(),  
    p_blob001 IN BLOB default empty_blob(),  
    p_xmltype001 IN XMLTYPE default null,  
    p_generate_md5 IN VARCHAR2 default 'NO')  
RETURN NUMBER;
```

Parameters

Table 3–2 describes the parameters available in the ADD_MEMBER function.

Note: Any character attribute exceeding 4,000 characters is truncated to 4,000 characters.

Table 3–2 ADD_MEMBER Function Parameters

Parameter	Description
p_collection_name	The name of an existing collection. Maximum length is 255 bytes. Collection names are not case sensitive and are converted to upper case.
p_c001 through p_c050	Attribute value of the member to be added. Maximum length is 4,000 bytes. Any character attribute exceeding 4,000 characters is truncated to 4,000 characters.
p_n001 through p_n005	Attribute value of the numeric attributes to be added.
p_d001 through p_d005	Attribute value of the date attribute to be added.
p_clob001	Use p_clob001 for collection member attributes that exceed 4,000 characters.
p_blob001	Use p_blob001 for binary collection member attributes.

Table 3–2 (Cont.) ADD_MEMBER Function Parameters

Parameter	Description
p_xmltype001	Use p_xmltype001 to store well-formed XML.
p_generate_md5	Valid values include YES and NO. YES to specify if the message digest of the data of the collection member should be computed. Use this parameter to compare the MD5 of the collection member with another member or to see if that member has changed.

Example

```

DECLARE
    l_seq number;
BEGIN
    l_seq := APEX_COLLECTION.ADD_MEMBER(
        p_collection_name => 'GROCERIES'
        p_c001             => 'Grapes',
        p_c002             => 'Imported',
        p_n001             => 125,
        p_d001             => sysdate );
END;
```

See Also: ["GET_MEMBER_MD5 Function"](#) on page 3-35, ["ADD_MEMBER Procedure"](#) on page 3-12, ["ADD_MEMBERS Procedure"](#) on page 3-16

ADD_MEMBERS Procedure

Use this procedure to add an array of members to a collection. An error is raised if the specified collection does not exist for the current user in the same session for the current Application ID. Gaps are not used when adding a new member, so an existing collection with members of sequence IDs (1,2,5,8) will add the new member with a sequence ID of 9. The count of elements in the p_c001 PL/SQL table will be used as the total number of items across all PL/SQL tables. For example, if p_c001.count is 2 and p_c002.count is 10, only 2 members will be added. If p_c001 is null an application error is raised.

Syntax

```
APEX_COLLECTION.ADD_MEMBERS (
    p_collection_name IN VARCHAR2,
    p_c001 IN APEX_APPLICATION_GLOBAL.VC_ARR2 default empty_vc_arr,
    p_c002 IN APEX_APPLICATION_GLOBAL.VC_ARR2 default empty_vc_arr,
    p_c003 IN APEX_APPLICATION_GLOBAL.VC_ARR2 default empty_vc_arr,
    ...
    p_c050 IN APEX_APPLICATION_GLOBAL.VC_ARR2 default empty_vc_arr,
    p_n001 IN APEX_APPLICATION_GLOBAL.N_ARR default empty_n_arr,
    p_n002 IN APEX_APPLICATION_GLOBAL.N_ARR default empty_n_arr,
    p_n003 IN APEX_APPLICATION_GLOBAL.N_ARR default empty_n_arr,
    p_n004 IN APEX_APPLICATION_GLOBAL.N_ARR default empty_n_arr,
    p_n005 IN APEX_APPLICATION_GLOBAL.N_ARR default empty_n_arr,
    p_d001 IN APEX_APPLICATION_GLOBAL.D_ARR default empty_d_arr,
    p_d002 IN APEX_APPLICATION_GLOBAL.D_ARR default empty_d_arr,
    p_d003 IN APEX_APPLICATION_GLOBAL.D_ARR default empty_d_arr,
    p_d004 IN APEX_APPLICATION_GLOBAL.D_ARR default empty_d_arr,
    p_d005 IN APEX_APPLICATION_GLOBAL.D_ARR default empty_d_arr,
    p_generate_md5 IN VARCHAR2 default 'NO');
```

Parameters

Table 3–3 describes the parameters available in the ADD_MEMBERS procedure.

Note: Any character attribute exceeding 4,000 characters is truncated to 4,000 characters. Also, the number of members added is based on the number of elements in the first array.

Table 3–3 ADD_MEMBERS Procedure Parameters

Parameter	Description
p_collection_name	The name of an existing collection. Maximum length is 255 bytes. Collection names are not case sensitive and are converted to upper case.
p_c001 through p_c050	Array of character attribute values to be added.
p_n001 through p_n005	Array of numeric attribute values to be added.
p_d001 through p_d005	Array of date attribute values to be added.

Table 3–3 (Cont.) ADD_MEMBERS Procedure Parameters

Parameter	Description
p_generate_md5	Valid values include YES and NO. YES to specify if the message digest of the data of the collection member should be computed. Use this parameter to compare the MD5 of the collection member with another member or to see if that member has changed.

Example

The following example shows how to add two new members to the EMPLOYEE table.

```
Begin
  APEX_COLLECTION.ADD_MEMBERS(
    p_collection_name => 'EMPLOYEE',
    p_c001 => l_arr1,
    p_c002 => l_arr2);
End;
```

See Also: ["GET_MEMBER_MD5 Function" on page 3-35](#), ["ADD_MEMBER Procedure" on page 3-12](#), ["ADD_MEMBER Function" on page 3-14](#)

COLLECTION_EXISTS Function

Use this function to determine if a collection exists. A `TRUE` is returned if the specified collection exists for the current user in the current session for the current Application ID, otherwise `FALSE` is returned.

Syntax

```
APEX_COLLECTION.COLLECTION_EXISTS (  
    p_collection_name IN VARCHAR2)  
RETURN BOOLEAN;
```

Parameters

[Table 3–4](#) describes the parameters available in the `COLLECTION_EXISTS` function.

Table 3–4 *COLLECTION_EXISTS Function Parameters*

Parameter	Description
<code>p_collection_name</code>	The name of the collection. Maximum length is 255 bytes. The collection name is not case sensitive and is converted to upper case.

Example

The following example shows how to use the `COLLECTION_EXISTS` function to determine if the collection named `EMPLOYEES` exists.

```
Begin  
    l_exists := APEX_COLLECTION.COLLECTION_EXISTS (  
        p_collection_name => 'EMPLOYEES';  
End;
```

COLLECTION_HAS_CHANGED Function

Use this function to determine if a collection has changed since it was created or the collection changed flag was reset.

Syntax

```
APEX_COLLECTION.COLLECTION_HAS_CHANGED (  
    p_collection_name IN VARCHAR2)  
RETURN BOOLEAN;
```

Parameters

Table 3–5 describes the parameters available in the COLLECTION_HAS_CHANGED function.

Table 3–5 COLLECTION_HAS_CHANGED Function Parameters

Parameter	Description
p_collection_name	The name of the collection. An error is returned if this collection does not exist with the specified name of the current user and in the same session.

Example

The following example shows how to use the COLLECTION_HAS_CHANGED function to determine if the EMPLOYEES collection has changed since it was created or last reset.

```
Begin  
    l_exists := APEX_COLLECTION.COLLECTION_HAS_CHANGED (  
        p_collection_name => 'EMPLOYEES';  
End;
```

COLLECTION_MEMBER_COUNT Function

Use this function to get the total number of members for the named collection. If gaps exist, the total member count returned is not equal to the highest sequence ID in the collection. If the named collection does not exist for the current user in the current session, an error is raised.

Syntax

```
APEX_COLLECTION.COLLECTION_MEMBER_COUNT (
    p_collection_name IN VARCHAR2)
RETURN NUMBER;
```

Parameters

[Table 3–6](#) describes the parameters available in the `COLLECTION_MEMBER_COUNT` function.

Table 3–6 *COLLECTION_MEMBER_COUNT Function Parameters*

Parameter	Description
<code>p_collection_name</code>	The name of the collection.

Example

This example shows how to use the `COLLECTION_MEMBER_COUNT` function to get the total number of members in the `DEPARTMENTS` collection.

```
Begin
    l_count := APEX_COLLECTION.COLLECTION_MEMBER_COUNT( p_collection_name =>
    'DEPARTMENTS';
End;
```

CREATE_COLLECTION Procedure

Use this procedure to create an empty collection that does not already exist. If a collection exists with the same name for the current user in the same session for the current Application ID, an application error is raised.

Syntax

```
APEX_COLLECTION.CREATE_COLLECTION(  
    p_collection_name IN VARCHAR2);
```

Parameters

[Table 3–7](#) describes the parameters available in the CREATE_COLLECTION procedure.

Table 3–7 CREATE_COLLECTION Procedure Parameters

Parameter	Description
p_collection_name	The name of the collection. The maximum length is 255 characters. An error is returned if this collection exists with the specified name of the current user and in the same session.

Example

This example shows how to use the CREATE_COLLECTION procedure to create an empty collection named EMPLOYEES.

```
Begin  
    APEX_COLLECTION.CREATE_COLLECTION(  
        p_collection_name => 'EMPLOYEES');  
End;
```

See Also: ["CREATE_OR_TRUNCATE_COLLECTION Procedure"](#) on page 3-22, ["CREATE_COLLECTION_FROM_QUERY Procedure"](#) on page 3-23, ["CREATE_COLLECTION_FROM_QUERY2 Procedure"](#) on page 3-24, ["CREATE_COLLECTION_FROM_QUERY_B Procedure"](#) on page 3-26, ["CREATE_COLLECTION_FROM_QUERYB2 Procedure"](#) on page 3-28

CREATE_OR_TRUNCATE_COLLECTION Procedure

Use this procedure to create a collection. If a collection exists with the same name for the current user in the same session for the current Application ID, all members of the collection are removed. In other words, the named collection is truncated.

Syntax

```
APEX_COLLECTION.CREATE_OR_TRUNCATE_COLLECTION(  
    p_collection_name IN VARCHAR2);
```

Parameters

[Table 3–8](#) describes the parameters available in the CREATE_OR_TRUNCATE_COLLECTION procedure.

Table 3–8 *CREATE_OR_TRUNCATE_COLLECTION Procedure Parameters*

Parameter	Description
p_collection_name	The name of the collection. The maximum length is 255 characters. All members of the named collection are removed if the named collection exists for the current user in the current session.

Example

This example shows how to use the CREATE_OR_TRUNCATE_COLLECTION procedure to remove all members in an existing collection named EMPLOYEES.

```
Begin  
    APEX_COLLECTION.CREATE_OR_TRUNCATE_COLLECTION(  
        p_collection_name => 'EMPLOYEES');  
End;
```

See Also: ["CREATE_COLLECTION Procedure"](#) on page 3-21,
["CREATE_COLLECTION_FROM_QUERY Procedure"](#) on page 3-23,
["CREATE_COLLECTION_FROM_QUERY2 Procedure"](#) on page 3-24,
["CREATE_COLLECTION_FROM_QUERY_B Procedure"](#) on
page 3-26, ["CREATE_COLLECTION_FROM_QUERYB2 Procedure"](#)
on page 3-28

CREATE_COLLECTION_FROM_QUERY Procedure

Use this procedure to create a collection from a supplied query. The query will be parsed as the application owner. This method can be used with a query with up to 50 columns in the `SELECT` clause. These columns in the `SELECT` clause will populate the 50 character attributes of the collection (C001 through C050). If a collection exists with the same name for the current user in the same session for the current Application ID, an application error is raised.

Syntax

```
APEX_COLLECTION.CREATE_COLLECTION_FROM_QUERY (
    p_collection_name IN VARCHAR2,
    p_query IN VARCHAR2,
    p_generate_md5 IN VARCHAR2 default 'NO');
```

Parameters

[Table 3–9](#) describes the parameters available in the `CREATE_COLLECTION_FROM_QUERY` procedure.

Table 3–9 CREATE_COLLECTION_FROM_QUERY Procedure Parameters

Parameter	Description
<code>p_collection_name</code>	The name of the collection. The maximum length is 255 characters. An error is returned if this collection exists with the specified name of the current user and in the same session.
<code>p_query</code>	Query to execute in order to populate the members of the collection. If <code>p_query</code> is numeric, it is assumed to be a DBMS_SQL cursor.
<code>p_generate_md5</code>	Valid values include YES and NO. YES to specify if the message digest of the data of the collection member should be computed. Use this parameter to compare the MD5 of the collection member with another member or to see if that member has changed.

Example

The following example shows how to use the `CREATE_COLLECTION_FROM_QUERY` procedure to create a collection named `AUTO` and populate it with data from the `AUTOS` table. Because `p_generate_md5` is 'YES', the MD5 checksum will be computed to allow comparisons to determine change status.

```
Begin
    l_query := 'select make, model, year from AUTOS';
    APEX_COLLECTION.CREATE_COLLECTION_FROM_QUERY (
        p_collection_name => 'AUTO',
        p_query => l_query,
        p_generate_md5 => 'YES');
End;
```

See Also: ["GET_MEMBER_MD5 Function"](#) on page 3-35, ["CREATE_COLLECTION Procedure"](#) on page 3-21, ["CREATE_OR_TRUNCATE_COLLECTION Procedure"](#) on page 3-22, ["CREATE_COLLECTION_FROM_QUERY2 Procedure"](#) on page 3-24, ["CREATE_COLLECTION_FROM_QUERY_B Procedure"](#) on page 3-26, ["CREATE_COLLECTION_FROM_QUERYB2 Procedure"](#) on page 3-28

CREATE_COLLECTION_FROM_QUERY2 Procedure

Use this procedure to create a collection from a supplied query. This method is identical to CREATE_COLLECTION_FROM_QUERY, however, the first 5 columns of the SELECT clause must be numeric and the next 5 must be date. After the numeric and date columns, there can be up to 50 character columns in the SELECT clause. The query will be parsed as the application owner. If a collection exists with the same name for the current user in the same session for the current Application ID, an application error is raised.

Syntax

```
APEX_COLLECTION.CREATE_COLLECTION_FROM_QUERY2 (
    p_collection_name IN VARCHAR2,
    p_query IN VARCHAR2,
    p_generate_md5 IN VARCHAR2 default 'NO');
```

Parameters

Table 3–10 describes the parameters available in the CREATE_COLLECTION_FROM_QUERY2 procedure.

Table 3–10 CREATE_COLLECTION_FROM_QUERY2 Procedure Parameters

Parameter	Description
p_collection_name	The name of the collection. The maximum length is 255 characters. An error is returned if this collection exists with the specified name of the current user and in the same session.
p_query	Query to executed in order to populate the members of the collection. If p_query is numeric, it is assumed to be a DBMS_SQL cursor.
p_generate_md5	Valid values include YES and NO. YES to specify if the message digest of the data of the collection member should be computed. Use this parameter to compare the MD5 of the collection member with another member or to see if that member has changed.

Example

The following example shows how to use the CREATE_COLLECTION_FROM_QUERY2 procedure to create a collection named EMPLOYEE and populate it with data from the EMP table. The first five columns (mgr, sal, comm, deptno, and null) are all numeric. Because p_generate_md5 is 'NO', the MD5 checksum is not computed.

```
begin;
    APEX_COLLECTION.CREATE_COLLECTION_FROM_QUERY2 (
        p_collection_name => 'EMPLOYEE',
        p_query => 'select empno, sal, comm, deptno, null, hiredate, null, null,
null, null, ename, job, mgr from emp',
        p_generate_md5 => 'NO');
end;
```

See Also: ["GET_MEMBER_MD5 Function"](#) on page 3-35, ["CREATE_COLLECTION Procedure"](#) on page 3-21, ["CREATE_OR_TRUNCATE_COLLECTION Procedure"](#) on page 3-22, ["CREATE_COLLECTION_FROM_QUERY Procedure"](#) on page 3-23, ["CREATE_COLLECTION_FROM_QUERY_B Procedure"](#) on page 3-26, ["CREATE_COLLECTION_FROM_QUERYB2 Procedure"](#) on page 3-28

CREATE_COLLECTION_FROM_QUERY_B Procedure

Use this procedure to create a collection from a supplied query using bulk operations. This method offers significantly faster performance than the `CREATE_COLLECTION_FROM_QUERY` method. The query will be parsed as the application owner. If a collection exists with the same name for the current user in the same session for the current Application ID, an application error is raised.

This procedure uses bulk dynamic SQL to perform the fetch and insert operations into the named collection. Two limitations are imposed by this procedure:

1. The MD5 checksum for the member data will not be computed.
2. No column value in query `p_query` can exceed 2,000 bytes. If a row is encountered that has a column value of more than 2,000 bytes, an error will be raised during execution. In Oracle Database 11g Release 2 (11.2.0.1) or later, this column limit is 4,000 bytes.

Syntax

```
APEX_COLLECTION.CREATE_COLLECTION_FROM_QUERY_B (
    p_collection_name IN VARCHAR2,
    p_query IN VARCHAR2,
    p_names IN apex_application_global.vc_arr2 DEFAULT,
    p_values IN apex_applicationN_globa.vc_arr2 DEFAULT,
    p_max_row_count IN NUMBER DEFAULT);
```

Parameters

[Table 3–11](#) describes the parameters available in the `CREATE_COLLECTION_FROM_QUERY_B` procedure.

Table 3–11 CREATE_COLLECTION_FROM_QUERY_B Procedure Parameters

Parameter	Description
<code>p_collection_name</code>	The name of the collection. The maximum length is 255 characters. An error is returned if this collection exists with the specified name of the current user and in the same session.
<code>p_query</code>	Query to executed in order to populate the members of the collection. If <code>p_query</code> is numeric, it is assumed to be a DBMS_SQL cursor.
<code>p_names</code>	Array of bind variable names used in the query statement.
<code>p_values</code>	Array of bind variable values used in the bind variables in the query statement.
<code>p_max_row_count</code>	Maximum number of rows returned from the query in <code>p_query</code> which should be added to the collection.

Example

The following examples shows how to use the `CREATE_COLLECTION_FROM_QUERY_B` procedure to create a collection named `AUTO` and populate it with data from the `AUTOS` table.

```
Begin
    l_query := 'select make, model, year from AUTOS';
    APEX_COLLECTION.CREATE_COLLECTION_FROM_QUERY_B (
        p_collection_name => 'AUTO',
        p_query => l_query);
```

End;

See Also: ["GET_MEMBER_MD5 Function" on page 3-35](#), ["CREATE_COLLECTION Procedure" on page 3-21](#), ["CREATE_OR_TRUNCATE_COLLECTION Procedure" on page 3-22](#), ["CREATE_COLLECTION_FROM_QUERY Procedure" on page 3-23](#), ["CREATE_COLLECTION_FROM_QUERY2 Procedure" on page 3-24](#), ["CREATE_COLLECTION_FROM_QUERYB2 Procedure" on page 3-28](#)

CREATE_COLLECTION_FROM_QUERYB2 Procedure

Use this procedure to create a collection from a supplied query using bulk operations. This method offers significantly faster performance than the `CREATE_COLLECTION_FROM_QUERY_2` method. The query will be parsed as the application owner. If a collection exists with the same name for the current user in the same session for the current Application ID, an application error is raised. It is identical to the `CREATE_COLLECTION_FROM_QUERY_B`, however, the first five columns of the `SELECT` clause must be numeric and the next five columns must be date. After the date columns, there can be up to 50 character columns in the `SELECT` clause

This procedure uses bulk dynamic SQL to perform the fetch and insert operations into the named collection. Two limitations are imposed by this procedure:

1. The MD5 checksum for the member data will not be computed.
2. No column value in query `p_query` can exceed 2,000 bytes. If a row is encountered that has a column value of more than 2,000 bytes, an error will be raised during execution. In Oracle Database 11g Release 2 (11.2.0.1) or later, this column limit is 4,000 bytes.

Syntax

```
APEX_COLLECTION.CREATE_COLLECTION_FROM_QUERYB2 (
    p_collection_name IN VARCHAR2,
    p_query IN VARCHAR2,
    p_names IN apex_application_global.vc_arr2 DEFAULT,
    p_values IN apex_applicationN_globa.vc_arr2 DEFAULT,
    p_max_row_count IN NUMBER DEFAULT);
```

Parameters

[Table 3–12](#) describes the parameters available in the `CREATE_COLLECTION_FROM_QUERYB2` procedure.

Table 3–12 CREATE_COLLECTION_FROM_QUERYB2 Procedure Parameters

Parameter	Description
<code>p_collection_name</code>	The name of the collection. The maximum length is 255 characters. An error is returned if this collection exists with the specified name of the current user and in the same session.
<code>p_query</code>	Query to executed in order to populate the members of the collection. If <code>p_query</code> is numeric, it is assumed to be a DBMS_SQL cursor.
<code>p_names</code>	Array of bind variable names used in the query statement.
<code>p_values</code>	Array of bind variable values used in the bind variables in the query statement.
<code>p_max_row_count</code>	Maximum number of rows returned from the query in <code>p_query</code> which should be added to the collection.

Example

The following example shows how to use the `CREATE_COLLECTION_FROM_QUERYB2` procedure to create a collection named `EMPLOYEES` and populate it with data from the `EMP` table. The first five columns (`mgr`, `sal`, `comm`, `deptno`, and `null`) are all numeric and the next five are all date. Because `p_generate_md5` is 'NO', the MD5 checksum is not computed.


```
Begin
    l_query := 'select empno, sal, comm, deptno, null, hiredate, null, null, null,
null, ename, job, mgr from emp';
    APEX_COLLECTION.CREATE_COLLECTION_FROM_QUERYB2 (
        p_collection_name => 'EMPLOYEES',
        p_query => l_query,
        p_generate_md5 => 'NO');
End;
```

See Also: ["GET_MEMBER_MD5 Function"](#) on page 3-35, ["CREATE_COLLECTION Procedure"](#) on page 3-21, ["CREATE_OR_TRUNCATE_COLLECTION Procedure"](#) on page 3-22, ["CREATE_COLLECTION_FROM_QUERY Procedure"](#) on page 3-23, ["CREATE_COLLECTION_FROM_QUERY2 Procedure"](#) on page 3-24, ["CREATE_COLLECTION_FROM_QUERY_B Procedure"](#) on page 3-26

DELETE_ALL_COLLECTIONS Procedure

Use this procedure to delete all collections that belong to the current user in the current Application Express session regardless of the current Application ID.

Syntax

```
APEX_COLLECTION.DELETE_ALL_COLLECTIONS;
```

Parameters

None.

Example

This example shows how to use the `DELETE_ALL_COLLECTIONS` procedure to remove all collections that belong to the current user in the current session and Application ID.

```
Begin
    APEX_COLLECTION.DELETE_ALL_COLLECTIONS;
End;
```

See Also: ["DELETE_ALL_COLLECTIONS Procedure"](#) on page 3-30, ["DELETE_COLLECTION Procedure"](#) on page 3-32, ["DELETE_MEMBER Procedure"](#) on page 3-33, ["DELETE_MEMBERS Procedure"](#) on page 3-34

DELETE_ALL_COLLECTIONS_SESSION Procedure

Use this procedure to delete all collections that belong to the current user in the current Flow session regardless of the Application ID.

Syntax

```
APEX_COLLECTION.DELETE_ALL_COLLECTIONS_SESSION;
```

Parameters

None.

Example

This example shows how to use the `DELETE_ALL_COLLECTIONS_SESSION` procedure to remove all collections that belong to the current user in the current session regardless of Application ID.

```
Begin
    APEX_COLLECTION.DELETE_ALL_COLLECTIONS_SESSION;
End;
```

See Also: ["DELETE_ALL_COLLECTIONS Procedure"](#) on page 3-30, ["DELETE_COLLECTION Procedure"](#) on page 3-32, ["DELETE_MEMBER Procedure"](#) on page 3-33, ["DELETE_MEMBERS Procedure"](#) on page 3-34

DELETE_COLLECTION Procedure

Use this procedure to delete a named collection. All members that belong to the collection are removed and the named collection is dropped. If the named collection does not exist for the same user in the current session for the current Application ID, an application error is raised.

Syntax

```
APEX_COLLECTION.DELETE_COLLECTION (
    p_collection_name IN VARCHAR2);
```

Parameters

[Table 3–13](#) describes the parameters available in the DELETE_COLLECTION procedure.

Table 3–13 *DELETE_COLLECTION Procedure Parameters*

Parameter	Description
p_collection_name	The name of the collection to remove all members from and drop. An error is returned if this collection does not exist with the specified name of the current user and in the same session.

Example

This example shows how to use the DELETE_COLLECTION procedure to remove the 'EMPLOYEE' collection.

```
Begin
    APEX_COLLECTION.DELETE_COLLECTION (
        p_collection_name => 'EMPLOYEE');
End;
```

See Also: ["DELETE_ALL_COLLECTIONS_SESSION Procedure"](#) on page 3-31, ["DELETE_ALL_COLLECTIONS Procedure"](#) on page 3-30, ["DELETE_MEMBER Procedure"](#) on page 3-33, ["DELETE_MEMBERS Procedure"](#) on page 3-34

DELETE_MEMBER Procedure

Use this procedure to delete a specified member from a given named collection. If the named collection does not exist for the same user in the current session for the current Application ID, an application error is raised.

Syntax

```
APEX_COLLECTION.DELETE_MEMBER (  
    p_collection_name IN VARCHAR2,  
    p_seq IN VARCHAR2);
```

Parameters

[Table 3–14](#) describes the parameters available in the DELETE_MEMBER procedure.

Table 3–14 DELETE_MEMBER Parameters

Parameter	Description
p_collection_name	The name of the collection to delete the specified member from. The maximum length is 255 characters. Collection names are not case sensitive and are converted to upper case. An error is returned if this collection does not exist for the current user in the same session.
p_seq	This is the sequence ID of the collection member to be deleted.

Example

This example shows how to use the DELETE_MEMBER procedure to remove the member with a sequence ID of '2' from the collection named EMPLOYEES.

```
Begin  
    APEX_COLLECTION.DELETE_MEMBER(  
        p_collection_name => 'EMPLOYEES',  
        p_seq => '2');  
End;
```

See Also: ["DELETE_ALL_COLLECTIONS_SESSION Procedure" on page 3-31](#), ["DELETE_ALL_COLLECTIONS Procedure" on page 3-30](#), ["DELETE_COLLECTION Procedure" on page 3-32](#), ["DELETE_MEMBERS Procedure" on page 3-34](#)

DELETE_MEMBERS Procedure

Use this procedure to delete all members from a given named collection where the attribute specified by the attribute number equals the supplied value. If the named collection does not exist for the same user in the current session for the current Application ID, an application error is raised. If the attribute number specified is invalid or outside the range of 1 to 50, an error is raised.

If the supplied attribute value is null, then all members of the named collection are deleted where the attribute, specified by p_attr_number, is null.

Syntax

```
APEX_COLLECTION.DELETE_MEMBERS (  
    p_collection_name IN VARCHAR2,  
    p_attr_number IN VARCHAR2,  
    p_attr_value IN VARCHAR2);
```

Parameters

Table 3–14 describes the parameters available in the DELETE_MEMBERS procedure.

Table 3–15 DELETE_MEMBERS Parameters

Parameter	Description
p_collection_name	The name of the collection to delete the specified members from. The maximum length is 255 characters. Collection names are not case sensitive and are converted to upper case. An error is returned if this collection does not exist for the current user in the same session.
p_attr_number	Attribute number of the member attribute used to match for the specified attribute value for deletion. Valid values are 1 through 50 and null.
p_attr_value	Attribute value of the member attribute used to match for deletion. Maximum length can be 4,000 bytes. The attribute value will be truncated to 4,000 bytes if greater than this amount.

Example

The following example deletes all members of the collection named 'GROCERIES' where the 5th character attribute is equal to 'APPLE'.

```
Begin  
    apex_collection.delete_members(  
        p_collection_name => 'GROCERIES'  
        p_attr_number      => 5,  
        p_attr_value       => 'APPLE' );  
    Commit;  
End;
```

See Also: ["DELETE_ALL_COLLECTIONS_SESSION Procedure"](#) on page 3-31, ["DELETE_ALL_COLLECTIONS Procedure"](#) on page 3-30, ["DELETE_COLLECTION Procedure"](#) on page 3-32, ["DELETE_MEMBER Procedure"](#) on page 3-33

GET_MEMBER_MD5 Function

This function is used to compute and return the message digest of the attributes for the member specified by the sequence ID. This computation of message digest is equal to the computation performed natively by collections. Thus, the result of this function could be compared to the MD5_ORIGINAL column of the view wwv_flow_collections.

If a collection does not exist with the specified name for the current user in the same session and for the current Application ID, an application error will be raised. If the member specified by sequence ID p_seq does not exist, an application error will be raised.

Syntax

```
APEX_COLLECTION.GET_MEMBER_MD5 (
    p_collection_name IN VARCHAR2,
    p_seq IN NUMBER)
RETURN VARCHAR2;
```

Parameters

[Table 3–16](#) describes the parameters available in the GET_MEMBER_MD5 function.

Table 3–16 GET_MEMBER_MD5 Parameters

Parameter	Description
p_collection_name	The name of the collection to add this array of members to. An error is returned if this collection does not exist with the specified name of the current user and in the same session.
p_seq	Sequence ID of the collection member.

Example

The following example computes the MD5 for the 5th member of the GROCERIES collection.

```
declare
    l_md5 varchar2(4000);
begin
    l_md5 := apex_collection.get_member_md5(
        p_collection_name => 'GROCERIES'
        p_seq              => 10 );
end;
```

See Also: ["COLLECTION_HAS_CHANGED Function"](#) on page 3-19, ["RESET_COLLECTION_CHANGED Procedure"](#) on page 3-41, ["RESET_COLLECTION_CHANGED_ALL Procedure"](#) on page 3-42

MERGE_MEMBERS Procedure

Use this procedure to merge members of the given named collection with the values passed in the arrays. If the named collection does not exist one is created. If a `p_init_query` is provided, the collection is created from the supplied SQL query. If the named collection exists, the following occurs:

1. Rows in the collection and not in the arrays are deleted.
2. Rows in the collections and in the arrays are updated.
3. Rows in the arrays and not in the collection are inserted.

The count of elements in the `p_c001` PL/SQL table will be used as the total number of items across all PL/SQL tables. For example, if `p_c001.count` is 2 and `p_c002.count` is 10, only 2 members will be merged. If `p_c001` is null an application error is raised.

Syntax

```
APEX_COLLECTION.MERGE_MEMBERS (
    p_collection_name IN VARCHAR2,
    p_seq IN APEX_APPLICATION_GLOBAL.VC_ARR2 DEFAULT empty_vc_arr,
    p_c001 IN APEX_APPLICATION_GLOBAL.VC_ARR2 DEFAULT empty_vc_arr,
    p_c002 IN APEX_APPLICATION_GLOBAL.VC_ARR2 DEFAULT empty_vc_arr,
    p_c003 IN APEX_APPLICATION_GLOBAL.VC_ARR2 DEFAULT empty_vc_arr,
    ...
    p_c050 IN APEX_APPLICATION_GLOBAL.VC_ARR2 DEFAULT empty_vc_arr,
    p_null_index IN NUMBER DEFAULT 1,
    p_null_value IN VARCHAR2 DEFAULT null,
    p_init_query IN VARCHAR2 DEFAULT null);
```

Parameters

[Table 3–17](#) describes the parameters available in the `MERGE_MEMBERS` procedure.

Note: Any character attribute exceeding 4,000 characters is truncated to 4,000 characters. Also, the number of members added is based on the number of elements in the first array.

Table 3–17 *MERGE_MEMBERS Procedure Parameters*

Parameter	Description
<code>p_collection_name</code>	The name of the collection. Maximum length is 255 bytes. Collection names are not case sensitive and are converted to upper case.
<code>p_c001</code> through <code>p_c050</code>	Array of attribute values to be merged. Maximum length is 4,000 bytes. Any character attribute exceeding 4,000 characters is truncated to 4,000 characters. The count of the <code>p_c001</code> array is used across all arrays. If no values are provided then no actions are performed.
<code>p_c0xx</code>	Attribute of NN attributes values to be merged. Maximum length can be 4,000 bytes. The attribute value is truncated to 4,000 bytes if greater than this amount.
<code>p_seq</code>	Identifies the sequence number of the collection to be merged.

Table 3–17 (Cont.) MERGE_MEMBERS Procedure Parameters

Parameter	Description
p_null_index	That is if the element identified by this value is null, then treat this row as a null row. For example, if p_null_index is 3, then p_c003 is treated as a null row. In other words, tell the merge function to ignore this row. This results in the null rows being removed from the collection. The null index works in conjunction with the null value. If the value of the p_cxxx argument is equal to the p_null_value then the row will be treated as null.
p_null_value	Used in conjunction with the p_null_index argument. Identifies the null value. If used, this value must not be null. A typical value for this argument is "0"
p_init_query	If the collection does not exist, the collection is created using this query.

Example

The following example creates a collection on the table of employees, and then merges the contents of the local arrays with the collection, updating the job of two employees.

```

DECLARE
    l_seq    APEX_APPLICATION_GLOBAL.VC_ARR2;
    l_c001   APEX_APPLICATION_GLOBAL.VC_ARR2;
    l_c002   APEX_APPLICATION_GLOBAL.VC_ARR2;
    l_c003   APEX_APPLICATION_GLOBAL.VC_ARR2;
BEGIN
    l_seq(1) := 1;
    l_c001(1) := 7369;
    l_c002(1) := 'SMITH';
    l_c003(1) := 'MANAGER';
    l_seq(2) := 2;
    l_c001(2) := 7499;
    l_c002(2) := 'ALLEN';
    l_c003(2) := 'CLERK';

    APEX_COLLECTION.MERGE_MEMBERS (
        p_collection_name => 'EMPLOYEES',
        p_seq => l_seq,
        p_c001 => l_c001,
        p_c002 => l_c002,
        p_c003 => l_c003,
        p_init_query => 'select empno, ename, job from emp order by empno');
END;
```

MOVE_MEMBER_DOWN Procedure

Use this procedure to adjust the sequence ID of specified member in the given named collection down by one (subtract one), swapping sequence ID with the one it is replacing. For example, 3 becomes 2 and 2 becomes 3. If a collection does not exist with the specified name for the current user in the same session and for the current Application ID, an application error will be raised. If the member specified by sequence ID p_seq does not exist, an application error is raised. If the member specified by sequence ID p_seq is the lowest sequence in the collection, an application error is NOT returned.

Syntax

```
APEX_COLLECTION.MOVE_MEMBER_DOWN (
    p_collection_name IN VARCHAR2,
    p_seq IN NUMBER);
```

Parameters

[Table 3–19](#) describes the parameters available in the MOVE_MEMBER_DOWN procedure.

Table 3–18 MOVE_MEMBER_DOWN Parameters

Parameter	Description
p_collection_name	The name of the collection. Maximum length is 255 bytes. Collection names are not case sensitive and are converted to upper case. An error is returned if this collection does not exist with the specified name of the current user in the same session.
p_seq	Identifies the sequence number of the collection member to be moved down by one.

Example

This example shows how to a member of the EMPLOYEES collection down one position. After executing this example, sequence ID '5' becomes sequence ID '4' and sequence ID '4' becomes sequence ID '5'.

```
BEGIN;
  APEX_COLLECTION.MOVE_MEMBER_DOWN(
    p_collection_name => 'EMPLOYEES',
    p_seq => '5' );
END;
```

See Also: ["MOVE_MEMBER_UP Procedure"](#) on page 3-39

MOVE_MEMBER_UP Procedure

Use this procedure to adjust the sequence ID of specified member in the given named collection up by one (add one), swapping sequence ID with the one it is replacing. For example, 2 becomes 3 and 3 becomes 2. If a collection does not exist with the specified name for the current user in the same session and for the current Application ID, an application error will be raised. If the member specified by sequence ID p_seq does not exist, an application error is raised. If the member specified by sequence ID p_seq is the highest sequence in the collection, an application error is not returned.

Syntax

```
APEX_COLLECTION.MOVE_MEMBER_UP (  
    p_collection_name IN VARCHAR2,  
    p_seq IN NUMBER);
```

Parameters

[Table 3–19](#) describes the parameters available in the MOVE_MEMBER_UP procedure.

Table 3–19 MOVE_MEMBER_UP Parameters

Parameter	Description
p_collection_name	The name of the collection. Maximum length is 255 bytes. Collection names are not case sensitive and are converted to upper case. An error is returned if this collection does not exist with the specified name of the current user in the same session.
p_seq	Identifies the sequence number of the collection member to be moved up by one.

Example

This example shows how to a member of the EMPLOYEES collection down one position. After executing this example, sequence ID '5' becomes sequence ID '6' and sequence ID '6' becomes sequence ID '5'.

```
BEGIN;  
    APEX_COLLECTION.MOVE_MEMBER_UP(  
        p_collection_name => 'EMPLOYEES',  
        p_seq => '5' );  
END;
```

See Also: ["MOVE_MEMBER_DOWN Procedure"](#) on page 3-38

RESEQUENCE_COLLECTION Procedure

For a named collection, use this procedure to update the `seq_id` value of each member so that no gaps exist in the sequencing. For example, a collection with the following set of sequence IDs (1,2,3,5,8,9) becomes (1,2,3,4,5,6). If a collection does not exist with the specified name for the current user in the same session and for the current Application ID, an application error will be raised.

Syntax

```
APEX_COLLECTION.RESEQUENCE_COLLECTION (  
    p_collection_name IN VARCHAR2);
```

Parameters

[Table 3–20](#) describes the parameters available in the RESEQUENCE_COLLECTION procedure.

Table 3–20 RESEQUENCE_COLLECTION Parameters

Parameter	Description
p_collection_name	The name of the collection to resequence. An error is returned if this collection does not exist with the specified name of the current user and in the same session.

Example

This example shows how to resequence the DEPARTMENTS collection to remove gaps in the sequence IDs.

```
BEGIN;  
    APEX_COLLECTION.RESEQUENCE_COLLECTION (  
        p_collection_name => 'DEPARTMENTS');  
END;
```

See Also: ["MOVE_MEMBER_DOWN Procedure"](#) on page 3-38,
["MOVE_MEMBER_UP Procedure"](#) on page 3-39

RESET_COLLECTION_CHANGED Procedure

Use this procedure to reset the collection changed flag (mark as not changed) for a given collection. If a collection does not exist with the specified name for the current user in the same session and for the current Application ID, an application error will be raised.

Syntax

```
APEX_COLLECTION.RESET_COLLECTION_CHANGED (  
    p_collection_name IN VARCHAR2);
```

Parameters

[Table 3–21](#) describes the parameters available in the RESET_COLLECTION_CHANGED procedure.

Table 3–21 RESET_COLLECTION_CHANGED Parameters

Parameter	Description
p_collection_name	The name of the collection to reset the collection changed flag. An error is returned if this collection does not exist with the specified name of the current user and in the same session.

Example

This example shows how to reset the changed flag for the DEPARTMENTS collection.

```
BEGIN;  
    APEX_COLLECTION.RESET_COLLECTION_CHANGED (  
        p_collection_name => 'DEPARTMENTS');  
END;
```

See Also: ["RESET_COLLECTION_CHANGED_ALL Procedure"](#) on page 3-42

RESET_COLLECTION_CHANGED_ALL Procedure

Use this procedure to reset the collection changed flag (mark as not changed) for all collections in the user's current session.

Syntax

```
APEX_COLLECTION.RESET_COLLECTION_CHANGED_ALL; (
```

Parameters

None.

Example

This example shows how to reset the changed flag for all collections in the user's current session.

```
BEGIN;  
    APEX_COLLECTION.RESET_COLLECTION_CHANGED_ALL;  
END;
```

See Also: ["RESET_COLLECTION_CHANGED Procedure"](#) on page 3-41.

SORT_MEMBERS Procedure

Use this procedure to reorder the members of a given collection by the column number specified by `p_sort_on_column_number`. This will sort the collection by a particular column/attribute in the collection and reassign the sequence IDs of each number such that no gaps exist. If a collection does not exist with the specified name for the current user in the same session and for the current Application ID, an application error will be raised.

Syntax

```
APEX_COLLECTION.SORT_MEMBERS (  
    p_collection_name IN VARCHAR2,  
    p_sort_on_column_number IN NUMBER);
```

Parameters

[Table 3–22](#) describes the parameters available in the `SORT_MEMBERS` procedure.

Table 3–22 *SORT_MEMBERS Parameters*

Parameter	Description
<code>p_collection_name</code>	The name of the collection to sort. An error is returned if this collection does not exist with the specified name of the current user and in the same session.
<code>p_sort_on_column_number</code>	The column number used to sort the collection.

Example

In this example, column 2 of the `DEPARTMENTS` collection is the department location. The collection is reorder according to the department location.

```
BEGIN;  
    APEX_COLLECTION.SORT_MEMBERS (  
        p_collection_name => 'DEPARTMENTS',  
        p_sort_on_column_number => '2';  
END;
```

TRUNCATE_COLLECTION Procedure

Use this procedure to remove all members from a named collection. If a collection does not exist with the specified name for the current user in the same session and for the current Application ID, an application error will be raised.

Syntax

```
APEX_COLLECTION.TRUNCATE_COLLECTION (  
    p_collection_name IN VARCHAR2);
```

Parameters

[Table 3–23](#) describes the parameters available in the TRUNCATE_COLLECTION procedure.

Table 3–23 *TRUNCATE_COLLECTION Parameters*

Parameter	Description
p_collection_name	The name of the collection to truncate. An error is returned if this collection does not exist with the specified name of the current user and in the same session.

Example

This example shows how to remove all members from the DEPARTMENTS collection.

```
BEGIN;  
    APEX_COLLECTION.TRUNCATE_COLLECTION(  
        p_collection_name => 'DEPARTMENTS');  
END;
```

See Also: ["CREATE_OR_TRUNCATE_COLLECTION Procedure"](#)
on page 3-22

UPDATE_MEMBER Procedure

Use this procedure to update the specified member in the given named collection. If a collection does not exist with the specified name for the current user in the same session and for the current Application ID, an application error will be raised. If the member specified by sequence ID p_seq does not exist, an application error is raised.

Note: Using this procedure sets the columns identified and nullifies any columns not identified. If you need to update specific columns, without affecting the values of other columns, use ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 1"](#) on page 3-49.

Syntax

```
APEX_COLLECTION.UPDATE_MEMBER (
    p_collection_name IN VARCHAR2,
    p_seq IN VARCHAR2 DEFAULT NULL,
    p_c001 IN VARCHAR2 DEFAULT NULL,
    p_c002 IN VARCHAR2 DEFAULT NULL,
    p_c003 IN VARCHAR2 DEFAULT NULL,
    ...
    p_c050 IN VARCHAR2 DEFAULT NULL,
    p_n001 IN NUMBER DEFAULT NULL,
    p_n002 IN NUMBER DEFAULT NULL,
    p_n003 IN NUMBER DEFAULT NULL,
    p_n004 IN NUMBER DEFAULT NULL,
    p_n005 IN NUMBER DEFAULT NULL,
    p_d001 IN DATE DEFAULT NULL,
    p_d002 IN DATE DEFAULT NULL,
    p_d003 IN DATE DEFAULT NULL,
    p_d004 IN DATE DEFAULT NULL,
    p_d005 IN DATE DEFAULT NULL,
    p_clob001 IN CLOB DEFAULT empty_clob(),
    p_blob001 IN BLOB DEFAULT empty_blob(),
    p_xmltype001 IN XMLTYPE DEFAULT NULL);
```

Parameters

[Table 3–24](#) describes the parameters available in the UPDATE_MEMBER procedure.

Note: Any character attribute exceeding 4,000 characters is truncated to 4,000 characters. Also, the number of members added is based on the number of elements in the first array.

Table 3–24 UPDATE_MEMBER Parameters

Parameter	Description
p_collection_name	The name of the collection to update. Maximum length is 255 bytes. Collection names are not case sensitive and are converted to upper case.
p_c001 through p_c050	Attribute value of the member to be added. Maximum length is 4,000 bytes. Any character attribute exceeding 4,000 characters is truncated to 4,000 characters.

Table 3–24 (Cont.) UPDATE_MEMBER Parameters

Parameter	Description
p_n001 through p_n005	Attribute value of the numeric attributes to be added or updated.
p_d001 through p_d005	Attribute value of the date attributes to be added or updated.
p_clob001	Use p_clob001 for collection member attributes that exceed 4,000 characters.
p_blob001	Use p_blob001 for binary collection member attributes.
p_xmltype001	Use p_xmltype001 to store well-formed XML.

Example

Update the second member of the collection named 'Departments', updating the first member attribute to 'Engineering' and the second member attribute to 'Sales'.

```
BEGIN;  
  APEX_COLLECTION.UPDATE_MEMBER (  
    p_collection_name => 'Departments',  
    p_seq => '2',  
    p_c001 => 'Engineering',  
    p_c002 => 'Sales');  
END;
```

See Also: ["UPDATE_MEMBERS Procedure"](#) on page 3-47

UPDATE_MEMBERS Procedure

Use this procedure to update the array of members for the given named collection. If a collection does not exist with the specified name for the current user in the same session and for the current Application ID, an application error will be raised. The count of elements in the p_seq PL/SQL table will be used as the total number of items across all PL/SQL tables. That is, if p_seq.count = 2 and p_c001.count = 10, only 2 members will be updated. If p_seq is null, an application error is raised. If the member specified by sequence ID p_seq does not exist, an application error is raised.

Syntax

```
APEX_COLLECTION.UPDATE_MEMBERS (
    p_collection_name IN VARCHAR2,
    p_seq IN wwv_flow_global.VC_ARR2 DEFAULT empty_vc_arr,
    p_c001 IN wwv_flow_global.VC_ARR2 DEFAULT empty_vc_arr,
    p_c002 IN wwv_flow_global.VC_ARR2 DEFAULT empty_vc_arr,
    p_c003 IN wwv_flow_global.VC_ARR2 DEFAULT empty_vc_arr,
    ...
    p_c050 IN wwv_flow_global.VC_ARR2 DEFAULT empty_vc_arr,
    p_n001 IN wwv_flow_global.N_ARR DEFAULT empty_n_arr,
    p_n002 IN wwv_flow_global.N_ARR DEFAULT empty_n_arr,
    p_n003 IN wwv_flow_global.N_ARR DEFAULT empty_n_arr,
    p_n004 IN wwv_flow_global.N_ARR DEFAULT empty_n_arr,
    p_n005 IN wwv_flow_global.N_ARR DEFAULT empty_n_arr,
    p_d001 IN wwv_flow_global.D_ARR DEFAULT empty_d_arr,
    p_d002 IN wwv_flow_global.D_ARR DEFAULT empty_d_arr,
    p_d003 IN wwv_flow_global.D_ARR DEFAULT empty_d_arr,
    p_d004 IN wwv_flow_global.D_ARR DEFAULT empty_d_arr,
    p_d005 IN wwv_flow_global.D_ARR DEFAULT empty_d_arr)
```

Parameters

[Table 3–25](#) describes the parameters available in the UPDATE_MEMBERS procedure.

Note: Any character attribute exceeding 4,000 characters is truncated to 4,000 characters. Also, the number of members added is based on the number of elements in the first array.

Table 3–25 UPDATE_MEMBERS Parameters

Parameter	Description
p_collection_name	The name of the collection to update. Maximum length is 255 bytes. Collection names are not case sensitive and are converted to upper case.
p_seq	Array of member sequence IDs to be updated. The count of the p_seq array is used across all arrays.
p_c001 through p_c050	Array of attribute values to be updated.
p_n001 through p_n005	Attribute value of numeric
p_d001 through p_d005	Array of date attribute values to be updated.

Example

```
DECLARE
```

```
l_seq apex_application_global.vc_arr2;
l_carr apex_application_global.vc_arr2;
l_narr apex_application_global.n_arr;
l_darr apex_application_global.d_arr;
BEGIN
  l_seq(1) := 10;
  l_seq(2) := 15;
  l_carr(1) := 'Apples';
  l_carr(2) := 'Grapes';
  l_narr(1) := 100;
  l_narr(2) := 150;
  l_darr(1) := sysdate;
  l_darr(2) := sysdate;

  APEX_COLLECTION.UPDATE_MEMBERS (
    p_collection_name => 'Groceries',
    p_seq => l_seq,
    p_c001 => l_carr,
    p_n001 => l_narr,
    p_d001 => l_darr);
END;
```

See Also: ["UPDATE_MEMBER Procedure"](#) on page 3-45

UPDATE_MEMBER_ATTRIBUTE Procedure Signature 1

Update the specified member attribute in the given named collection. If a collection does not exist with the specified name for the current user in the same session for the current Application ID, an application error will be raised. If the member specified by sequence ID p_seq does not exist, an application error will be raised. If the attribute number specified is invalid or outside the range 1-50, an error will be raised. Any attribute value exceeding 4,000 bytes will be truncated to 4,000 bytes.

Syntax

```
APEX_COLLECTION.UPDATE_MEMBER_ATTRIBUTE (
    p_collection_name IN VARCHAR2,
    p_seq IN VARCHAR2,
    p_attr_number IN VARCHAR2,
    p_attr_value IN VARCHAR2);
```

Parameters

Table 3–26 describes the parameters available in the UPDATE_MEMBER_ATTRIBUTE procedure signature 1.

Note: Any character attribute exceeding 4,000 characters is truncated to 4,000 characters. Also, the number of members added is based on the number of elements in the first array.

Table 3–26 UPDATE_MEMBER_ATTRIBUTE Signature 1 Parameters

Parameter	Description
p_collection_name	The name of the collection. Maximum length can be 255 bytes. Collection_names are case-insensitive, as the collection name will be converted to upper case. An error is returned if this collection does not exist with the specified name of the current user and in the same session.
p_seq	Sequence ID of the collection member to be updated.
p_attr_number	Attribute number of the member attribute to be updated. Valid values are 1 through 50. Any number outside of this range will be ignored.
p_attr_value	Attribute value of the member attribute to be updated.

Example

Update the second member of the collection named 'Departments', updating the first member attribute to 'Engineering' and the second member attribute to 'Sales'.

```
BEGIN;
    APEX_COLLECTION.UPDATE_MEMBER_ATTRIBUTE (
        p_collection_name => 'Departments',
        p_seq => '2',
        p_attr_number => '1',
        p_attr_value => 'Engineering');
END;
```

See Also: ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 2" on page 3-51](#), ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 3" on page 3-53](#), ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 4" on page 3-55](#), ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 5" on page 3-57](#), ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 6" on page 3-59](#)

UPDATE_MEMBER_ATTRIBUTE Procedure Signature 2

Update the specified CLOB member attribute in the given named collection. If a collection does not exist with the specified name for the current user in the same session for the current Application ID, an application error will be raised. If the member specified by sequence ID `p_seq` does not exist, an application error will be raised. If the attribute number specified is invalid or outside the valid range (currently only 1 for CLOB), an error will be raised.

Syntax

```
APEX_COLLECTION.UPDATE_MEMBER_ATTRIBUTE (
    p_collection_name IN VARCHAR2,
    p_seq IN VARCHAR2,
    p_clob_number IN NUMBER,
    p_clob_value IN CLOB);
```

Parameters

[Table 3–27](#) describes the parameters available in the `UPDATE_MEMBER_ATTRIBUTE` procedure signature 2.

Note: Any character attribute exceeding 4,000 characters is truncated to 4,000 characters. Also, the number of members added is based on the number of elements in the first array.

Table 3–27 *UPDATE_MEMBER_ATTRIBUTE Signature 2 Parameters*

Parameter	Description
<code>p_collection_name</code>	The name of the collection. Maximum length can be 255 bytes. Collection names are case-insensitive, as the collection name will be converted to upper case. An error is returned if this collection does not exist with the specified name of the current user and in the same session.
<code>p_seq</code>	Sequence ID of the collection member to be updated.
<code>p_clob_number</code>	Attribute number of the CLOB member attribute to be updated. Valid value is 1. Any number outside of this range will be ignored.
<code>p_clob_value</code>	Attribute value of the CLOB member attribute to be updated.

Example

The following example sets the first and only CLOB attribute of collection sequence number 2 in the collection named 'Departments' to a value of 'Engineering'.

```
BEGIN;
    APEX_COLLECTION.UPDATE_MEMBER_ATTRIBUTE (
        p_collection_name => 'Departments',
        p_seq => '2',
        p_clob_number => '1',
        p_clob_value => 'Engineering');
END;
```

See Also: ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 1" on page 3-49](#), ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 3" on page 3-53](#), ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 4" on page 3-55](#), ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 5" on page 3-57](#), ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 6" on page 3-59](#)

UPDATE_MEMBER_ATTRIBUTE Procedure Signature 3

Update the specified BLOB member attribute in the given named collection. If a collection does not exist with the specified name for the current user in the same session for the current Application ID, an application error will be raised. If the member specified by sequence ID `p_seq` does not exist, an application error will be raised. If the attribute number specified is invalid or outside the valid range (currently only 1 for BLOB), an error will be raised.

Syntax

```
APEX_COLLECTION.UPDATE_MEMBER_ATTRIBUTE (
    p_collection_name IN VARCHAR2,
    p_seq IN VARCHAR2,
    p_blob_number IN NUMBER,
    p_blob_value IN BLOB);
```

Parameters

[Table 3–28](#) describes the parameters available in the `UPDATE_MEMBER_ATTRIBUTE` procedure signature 3.

Note: Any character attribute exceeding 4,000 characters is truncated to 4,000 characters. Also, the number of members added is based on the number of elements in the first array.

Table 3–28 *UPDATE_MEMBER_ATTRIBUTE Signature 3 Parameters*

Parameter	Description
<code>p_collection_name</code>	The name of the collection. Maximum length can be 255 bytes. Collection names are case-insensitive, as the collection name will be converted to upper case. An error is returned if this collection does not exist with the specified name of the current user and in the same session.
<code>p_seq</code>	Sequence ID of the collection member to be updated.
<code>p_blob_number</code>	Attribute number of the BLOB member attribute to be updated. Valid value is 1. Any number outside of this range will be ignored.
<code>p_blob_value</code>	Attribute value of the BLOB member attribute to be updated.

Example

The following example sets the first and only BLOB attribute of collection sequence number 2 in the collection named 'Departments' to a value of the BLOB variable `l_blob_content`.

```
BEGIN;
    APEX_COLLECTION.UPDATE_MEMBER_ATTRIBUTE (
        p_collection_name => 'Departments',
        p_seq => '2',
        p_blob_number => '1',
        p_blob_value => l_blob_content);
END;
```

See Also: ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 1" on page 3-49](#), ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 2" on page 3-51](#), ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 4" on page 3-55](#), ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 5" on page 3-57](#), ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 6" on page 3-59](#)

UPDATE_MEMBER_ATTRIBUTE Procedure Signature 4

Update the specified XMLTYPE member attribute in the given named collection. If a collection does not exist with the specified name for the current user in the same session for the current Application ID, an application error will be raised. If the member specified by sequence ID `p_seq` does not exist, an application error will be raised. If the attribute number specified is invalid or outside the valid range (currently only 1 for XMLTYPE), an error will be raised.

Syntax

```
APEX_COLLECTION.UPDATE_MEMBER_ATTRIBUTE (
    p_collection_name IN VARCHAR2,
    p_seq IN VARCHAR2,
    p_xmltype_number IN NUMBER,
    p_xmltype_value IN BLOB);
```

Parameters

[Table 3–29](#) describes the parameters available in the UPDATE_MEMBER_ATTRIBUTE procedure signature 4.

Note: Any character attribute exceeding 4,000 characters is truncated to 4,000 characters. Also, the number of members added is based on the number of elements in the first array.

Table 3–29 UPDATE_MEMBER_ATTRIBUTE Signature 4 Parameters

Parameter	Description
<code>p_collection_name</code>	The name of the collection. Maximum length can be 255 bytes. Collection names are case-insensitive, as the collection name will be converted to upper case. An error is returned if this collection does not exist with the specified name of the current user and in the same session.
<code>p_seq</code>	Sequence ID of the collection member to be updated.
<code>p_xmltype_number</code>	Attribute number of the XMLTYPE member attribute to be updated. Valid value is 1. Any number outside of this range will be ignored.
<code>p_xmltype_value</code>	Attribute value of the XMLTYPE member attribute to be updated.

Example

The following example sets the first and only XML attribute of collection sequence number 2 in the collection named 'Departments' to a value of the XMLType variable `l_xmltype_content`.

```
BEGIN;
    APEX_COLLECTION.UPDATE_MEMBER_ATTRIBUTE (
        p_collection_name => 'Departments',
        p_seq => '2',
        p_xmltype_number => '1',
        p_xmltype_value => l_xmltype_content);
END;
```

See Also: ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 1" on page 3-49](#), ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 2" on page 3-51](#), ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 3" on page 3-53](#), ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 5" on page 3-57](#), ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 6" on page 3-59](#)

UPDATE_MEMBER_ATTRIBUTE Procedure Signature 5

Update the specified NUMBER member attribute in the given named collection. If a collection does not exist with the specified name for the current user in the same session for the current Application ID, an application error will be raised. If the member specified by sequence ID `p_seq` does not exist, an application error will be raised. If the attribute number specified is invalid or outside the valid range (currently only 1 through 5 for NUMBER), an error will be raised.

Syntax

```
APEX_COLLECTION.UPDATE_MEMBER_ATTRIBUTE (
    p_collection_name IN VARCHAR2,
    p_seq IN VARCHAR2,
    p_attr_number IN NUMBER,
    p_number_value IN NUMBER);
```

Parameters

[Table 3–30](#) describes the parameters available in the UPDATE_MEMBER_ATTRIBUTE procedure signature 5.

Note: Any character attribute exceeding 4,000 characters is truncated to 4,000 characters. Also, the number of members added is based on the number of elements in the first array.

Table 3–30 UPDATE_MEMBER_ATTRIBUTE Signature 5 Parameters

Parameter	Description
<code>p_collection_name</code>	The name of the collection. Maximum length can be 255 bytes. Collection names are case-insensitive, as the collection name will be converted to upper case. An error is returned if this collection does not exist with the specified name of the current user and in the same session.
<code>p_seq</code>	Sequence ID of the collection member to be updated.
<code>p_attr_number</code>	Attribute number of the NUMBER member attribute to be updated. Valid value is 1 through 5. Any number outside of this range will be ignored.
<code>p_number_value</code>	Attribute value of the NUMBER member attribute to be updated.

Example

The following example sets the first numeric attribute of collection sequence number 2 in the collection named 'Departments' to a value of 3000.

```
BEGIN;
    APEX_COLLECTION.UPDATE_MEMBER_ATTRIBUTE (
        p_collection_name => 'Departments',
        p_seq => '2',
        p_attr_number => '1',
        p_number_value => 3000);
END;
```

See Also: ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 1" on page 3-49](#), ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 2" on page 3-51](#), ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 3" on page 3-53](#), ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 4" on page 3-55](#), ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 6" on page 3-59](#), ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 6" on page 3-59](#)

UPDATE_MEMBER_ATTRIBUTE Procedure Signature 6

Update the specified DATE member attribute in the given named collection. If a collection does not exist with the specified name for the current user in the same session for the current Application ID, an application error will be raised. If the member specified by sequence ID p_seq does not exist, an application error will be raised. If the attribute number specified is invalid or outside the valid range (currently only 1 through 5 for DATE), an error will be raised.

Syntax

```
APEX_COLLECTION.UPDATE_MEMBER_ATTRIBUTE (
    p_collection_name IN VARCHAR2,
    p_seq IN VARCHAR2,
    p_attr_number IN NUMBER,
    p_number_value IN DATE);
```

Parameters

Table 3–30 describes the parameters available in the UPDATE_MEMBER_ATTRIBUTE procedure signature 6.

Note: Any character attribute exceeding 4,000 characters is truncated to 4,000 characters. Also, the number of members added is based on the number of elements in the first array.

Table 3–31 UPDATE_MEMBER_ATTRIBUTE Signature 6 Parameters

Parameter	Description
p_collection_name	The name of the collection. Maximum length can be 255 bytes. Collection_names are case-insensitive, as the collection name will be converted to upper case. An error is returned if this collection does not exist with the specified name of the current user and in the same session.
p_seq	Sequence ID of the collection member to be updated.
p_attr_number	Attribute number of the DATE member attribute to be updated. Valid value is 1 through 5. Any number outside of this range will be ignored.
p_number_value	Attribute value of the DATE member attribute to be updated.

Example

Update the first attribute of the second collection member in collection named 'Departments', and set it to a value of 100.

```
BEGIN;
    APEX_COLLECTION.UPDATE_MEMBER_ATTRIBUTE (
        p_collection_name => 'Departments',
        p_seq => '2',
        p_attr_number => '1',
        p_number_value => 100 );
END;
```

See Also: ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 1" on page 3-49](#), ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 2" on page 3-51](#), ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 3" on page 3-53](#), ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 4" on page 3-55](#), ["UPDATE_MEMBER_ATTRIBUTE Procedure Signature 5" on page 3-57](#)

The APEX_CSS package provides utility functions for adding CSS styles to HTTP output. This package is usually used for plug-in development.

Topics:

- [ADD Procedure](#)
- [ADD_FILE Procedure](#)

ADD Procedure

This procedure adds a CSS style snippet that is included inline in the HTML output. This procedure can be used to add new CSS style declarations.

Syntax

```
APEX_CSS.ADD (  
    p_css          IN      VARCHAR2,  
    p_key          IN      VARCHAR2 DEFAULT NULL);
```

Parameters

[Table 4–1](#) describes the parameters available in the ADD procedure.

Table 4–1 ADD Parameters

Parameter	Description
p_css	The CSS style snippet. For example, #test {color:#fff}
p_key	Identifier for the style snippet. If specified and a style snippet with the same name has already been added the new style snippet will be ignored.

Example

Adds an inline CSS definition for the class autocomplete into the HTML page. The key autocomplete_widget prevents the definition from being included another time if the apex_css.add is called another time.

```
apex_css.add (  
    p_css => '.autocomplete { color:#ffffff }',  
    p_key => 'autocomplete_widget' );
```

ADD_FILE Procedure

This procedure adds the link tag to load a CSS library. If a library has already been added, it will not be added a second time.

Syntax

```
APEX_CSS.ADD_FILE (
    p_name          IN      VARCHAR2,
    p_directory     IN      VARCHAR2 DEFAULT WWV_FLOW.G_IMAGE_PREFIX || 'css/',
    p_version       IN      VARCHAR2 DEFAULT C_APEX_VERSION,
    p_skip_extension IN      BOOLEAN DEFAULT FALSE);
```

Parameters

[Table 4–2](#) describes the parameters available in the ADD_FILE procedure.

Table 4–2 ADD_FILE Parameters

Parameter	Description
p_name	Name of the CSS file.
p_directory	Begin of the URL where the CSS file should be read from. If you use this function for a plug-in you should set this parameter to p_plugin.file_prefix.
p_version	Identifier of the version of the CSS file. The version will be added to the CSS filename. In most cases you should set NULL as value.
p_skip_extension	The function automatically adds ".css" to the CSS filename. If this parameter is set to TRUE this will not be done.

Example

Adds the CSS file `jquery.autocomplete.css` in the directory specified by `p_plugin.image_prefix` to the HTML output of the page and makes sure that it will only be included once if `apex_css.add_file` is called multiple times with that name.

```
apex_css.add_file (
    p_name => 'jquery.autocomplete',
    p_directory => p_plugin.image_prefix,
    p_version => null );
```

APEX_CUSTOM_AUTH

You can use the APEX_CUSTOM_AUTH package to perform various operations related to authentication and session management.

Topics:

- APPLICATION_PAGE_ITEM_EXISTS Function
- CURRENT_PAGE_IS_PUBLIC Function
- DEFINE_USER_SESSION Procedure
- GET_COOKIE_PROPS Procedure
- GET_LDAP_PROPS Procedure
- GET_NEXT_SESSION_ID Function
- GET_SECURITY_GROUP_ID Function
- GET_SESSION_ID Function
- GET_SESSION_ID_FROM_COOKIE Function
- GET_USER Function
- GET_USERNAME Function
- IS_SESSION_VALID Function
- LOGIN Procedure
- LOGOUT Procedure
- POST_LOGIN Procedure
- SESSION_ID_EXISTS Function
- SET_SESSION_ID Procedure
- SET_SESSION_ID_TO_NEXT_VALUE Procedure
- SET_USER Procedure

APPLICATION_PAGE_ITEM_EXISTS Function

This function checks for the existence of page-level item within the current page of an application. This function requires the parameter `p_item_name`. This function returns a Boolean value (true or false).

Syntax

```
APEX_CUSTOM_AUTH.APPLICATION_PAGE_ITEM_EXISTS(  
    p_item_name IN VARCHAR2)  
RETURN BOOLEAN;
```

Parameters

[Table 5–1](#) describes the parameters available in the APPLICATION_PAGE_ITEM_EXISTS function.

Table 5–1 APPLICATION_PAGE_ITEM_EXISTS Parameters

Parameter	Description
<code>p_item_name</code>	The name of the page-level item.

Example

The following example checks for the existence of a page-level item, `ITEM_NAME`, within the current page of the application.

```
DECLARE  
    L_VAL BOOLEAN;  
BEGIN  
    VAL := APEX_CUSTOM_AUTH.APPLICATION_PAGE_ITEM_EXISTS(:ITEM_NAME);  
    IF L_VAL THEN  
        http.p('Item Exists');  
    ELSE  
        http.p('Does not Exist');  
    END IF;  
END;
```

CURRENT_PAGE_IS_PUBLIC Function

This function checks whether the current page's authentication attribute is set to **Page Is Public** and returns a Boolean value (true or false)

See Also: "Editing Page Attributes" in *Oracle Application Express Application Builder User's Guide*.

Syntax

```
APEX_CUSTOM_AUTH.CURRENT_PAGE_IS_PUBLIC  
RETURN BOOLEAN;
```

Example

The following example checks whether the current page in an application is public.

```
DECLARE  
    L_VAL BOOLEAN;  
BEGIN  
    L_VAL := APEX_CUSTOM_AUTH.CURRENT_PAGE_IS_PUBLIC;  
    IF L_VAL THEN  
        http.p('Page is Public');  
    ELSE  
        http.p('Page is not Public');  
    END IF;  
END;
```

DEFINE_USER_SESSION Procedure

This procedure combines the SET_USER and SET_SESSION_ID procedures to create one call.

Syntax

```
APEX_CUSTOM_AUTH.DEFINE_USER_SESSION(
    p_user          IN    VARCHAR2,
    p_session_id    IN    NUMBER);
```

Parameters

[Table 5–2](#) describes the parameters available in the DEFINE_USER_SESSION procedure.

Table 5–2 *DEFINE_USER_SESSION Parameters*

Parameter	Description
p_user	Login name of the user.
p_session_id	The session ID.

Example

In the following example, a new session ID is generated and registered along with the current application user.

```
APEX_CUSTOM_AUTH.DEFINE_USER_SESSION (
    :APP_USER,
    APEX_CUSTOM_AUTH.GET_NEXT_SESSION_ID);
```

See Also: ["SET_USER Procedure"](#) on page 5-21 and ["SET_SESSION_ID Procedure"](#) on page 5-19.

GET_COOKIE_PROPS Procedure

This procedure obtains the properties of the session cookie used in the current authentication scheme for the specified application. These properties can be viewed directly in the Application Builder by viewing the authentication scheme cookie attributes.

Syntax

```
APEX_CUSTOM_AUTH.GET_COOKIE_PROPS(
    p_app_id          IN  NUMBER,
    p_cookie_name      OUT VARCHAR2,
    p_cookie_path      OUT VARCHAR2,
    p_cookie_domain    OUT VARCHAR2,
    p_secure           OUT BOOLEAN);
```

Parameters

[Table 5–3](#) describes the parameters available in the GET_COOKIE_PROPS procedure.

Table 5–3 GET_COOKIE_PROPS Parameters

Parameter	Description
p_app_id	An application ID in the current workspace.
p_cookie_name	The cookie name.
p_cookie_path	The cookie path.
p_cookie_domain	The cookie domain.
p_secure	Flag to set secure property of cookie.

Example

The following example retrieves the session cookie values used by the authentication scheme of the current application.

```
DECLARE
    l_cookie_name  varchar2(256);
    l_cookie_path  varchar2(256);
    l_cookie_domain varchar2(256);
    l_secure       boolean;
BEGIN
    APEX_CUSTOM_AUTH.GET_COOKIE_PROPS(
        p_app_id => 2918,
        p_cookie_name => l_cookie_name,
        p_cookie_path => l_cookie_path,
        p_cookie_domain => l_cookie_domain,
        p_secure => l_secure);
END;
```

GET_LDAP_PROPS Procedure

This procedure obtains the LDAP attributes of the current authentication scheme for the current application. These properties can be viewed directly in Application Builder by viewing the authentication scheme attributes.

Syntax

```
APEX_CUSTOM_AUTH.GET_LDAP_PROPS (
    p_ldap_host          OUT VARCHAR2,
    p_ldap_port          OUT INTEGER,
    p_use_ssl            OUT VARCHAR2,
    p_use_exact_dn       OUT VARCHAR2,
    p_search_filter      OUT VARCHAR2,
    p_ldap_dn            OUT VARCHAR2,
    p_ldap_edit_function OUT VARCHAR2);
```

Parameters

[Table 5–4](#) describes the parameters available in the GET_LDAP_PROPS procedure.

Table 5–4 GET_LDAP_PROPS Parameters

Parameter	Description
p_ldap_host	LDAP host name.
p_ldap_port	LDAP port number.
p_use_ssl	Whether or not SSL is used.
p_use_exact_dn	Whether or not exact distinguished names are used.
p_search_filter	The search filter used if exact DN is not used.
p_ldap_dn	LDAP DN string.
p_ldap_edit_function	LDAP edit function name.

Example

The following example retrieves the LDAP attributes associated with the current application.

```
DECLARE
    l_ldap_host          VARCHAR2(256);
    l_ldap_port          INTEGER;
    l_use_ssl            VARCHAR2(1);
    l_use_exact_dn       VARCHAR2(1);
    l_search_filter      VARCHAR2(256);
    l_ldap_dn            VARCHAR2(256);
    l_ldap_edit_function VARCHAR2(256);
BEGIN
    APEX_CUSTOM_AUTH.GET_LDAP_PROPS (
        p_ldap_host      => l_ldap_host,
        p_ldap_port      => l_ldap_port,
        p_use_ssl        => l_use_ssl,
        p_use_exact_dn   => l_use_exact_dn,
        p_search_filter   => l_search_filter,
        p_ldap_dn        => l_ldap_dn,
        p_ldap_edit_function => l_ldap_edit_function);
```

END;

GET_NEXT_SESSION_ID Function

This function generates the next session ID from the Oracle Application Express sequence generator. This function returns a number.

Syntax

```
APEX_CUSTOM_AUTH.GET_NEXT_SESSION_ID  
RETURN NUMBER;
```

Example

The following example generates the next session ID and stores it into a variable.

```
DECLARE  
    VAL NUMBER;  
BEGIN  
    VAL := APEX_CUSTOM_AUTH.GET_NEXT_SESSION_ID;  
END;
```

GET_SECURITY_GROUP_ID Function

This function returns a number with the value of the security group ID that identifies the workspace of the current user.

Syntax

```
APEX_CUSTOM_AUTH.GET_SECURITY_GROUP_ID  
RETURN NUMBER;
```

Example

The following example retrieves the Security Group ID for the current user.

```
DECLARE  
    VAL NUMBER;  
BEGIN  
    VAL := APEX_CUSTOM_AUTH.GET_SECURITY_GROUP_ID;  
END;
```

GET_SESSION_ID Function

This function returns APEX_APPLICATION.G_INSTANCE global variable. GET_SESSION_ID returns a number.

Syntax

```
APEX_CUSTOM_AUTH.GET_SESSION_ID  
RETURN NUMBER;
```

Example

The following example retrieves the session ID for the current user.

```
DECLARE  
    VAL NUMBER;  
BEGIN  
    VAL := APEX_CUSTOM_AUTH.GET_SESSION_ID;  
END;
```

GET_SESSION_ID_FROM_COOKIE Function

This function returns the Oracle Application Express session ID located by the session cookie in the context of a page request in the current browser session.

Syntax

```
APEX_CUSTOM_AUTH.GET_SESSION_ID_FROM_COOKIE  
RETURN NUMBER;
```

Example

The following example retrieves the session ID from the current session cookie.

```
DECLARE  
    VAL NUMBER;  
BEGIN  
    VAL := APEX_CUSTOM_AUTH.GET_SESSION_ID_FROM_COOKIE;  
END;
```

GET_USER Function

This function returns the APEX_APPLICATION.G_USER global variable (VARCHAR2).

Syntax

```
APEX_CUSTOM_AUTH.GET_USER  
RETURN VARCHAR2;
```

Examples

The following example retrieves the username associated with the current session.

```
DECLARE  
    VAL VARCHAR2(256);  
BEGIN  
    VAL := APEX_CUSTOM_AUTH.GET_USER;  
END;
```


GET_USERNAME Function

This function returns user name registered with the current Oracle Application Express session in the internal sessions table. This user name is usually the same as the authenticated user running the current page.

Syntax

```
APEX_CUSTOM_AUTH.GET_USERNAME  
RETURN VARCHAR2;
```

Example

The following example retrieves the username registered with the current application session.

```
DECLARE  
    VAL VARCHAR2(256);  
BEGIN  
    VAL := APEX_CUSTOM_AUTH.GET_USERNAME;  
END;
```

IS_SESSION_VALID Function

This function is a Boolean result obtained from executing the current application's authentication scheme to determine if a valid session exists. This function returns the Boolean result of the authentication scheme's page sentry.

Syntax

```
APEX_CUSTOM_AUTH.IS_SESSION_VALID  
RETURN BOOLEAN;
```

Example

The following example verifies whether the current session is valid.

```
DECLARE  
    L_VAL BOOLEAN;  
BEGIN  
    L_VAL := APEX_CUSTOM_AUTH.IS_SESSION_VALID;  
    IF L_VAL THEN  
        http.p('Valid');  
    ELSE  
        http.p('Invalid');  
    END IF;  
END;
```

LOGIN Procedure

Also referred to as the "Login API," this procedure performs authentication and session registration.

Syntax

```
APEX_CUSTOM_AUTH.LOGIN(
    p_username      IN VARCHAR2 DEFAULT NULL,
    p_password      IN VARCHAR2 DEFAULT NULL,
    p_session_id    IN VARCHAR2 DEFAULT NULL,
    p_app_page      IN VARCHAR2 DEFAULT NULL,
    p_entry_point   IN VARCHAR2 DEFAULT NULL,
    p_preserve_case IN BOOLEAN  DEFAULT FALSE);
```

Parameter

Table 5–5 describes the parameters available in the LOGIN procedure.

Table 5–5 LOGIN Parameters

Parameter	Description
p_username	Login name of the user.
p_password	Clear text user password.
p_session_id	Current Oracle Application Express session ID.
p_app_page	Current application ID. After login page separated by a colon (:).
p_entry_point	Internal use only.
p_preserve_case	If true, do not upper p_username during session registration

Example

The following example performs the user authentication and session registration.

```
BEGIN
    APEX_CUSTOM_AUTH.LOGIN (
        p_username => 'FRANK',
        p_password => 'secret99',
        p_session_id => V('APP_SESSION'),
        p_app_page  => :APP_ID || ':1');
END;
```

Note: Do not use bind variable notations for p_session_id argument.

LOGOUT Procedure

This procedure causes a logout from the current session by unsetting the session cookie and redirecting to a new location.

Syntax

```
APEX_CUSTOM_AUTH.LOGOUT (
    p_this_app          IN VARCHAR2  DEFAULT NULL,
    p_next_app_page_sess IN VARCHAR2  DEFAULT NULL,
    p_next_url          IN VARCHAR2  DEFAULT NULL);
```

Parameter

[Table 5–6](#) describes the parameters available in the LOGOUT procedure.

Table 5–6 LOGOUT Parameters

Parameter	Description
p_this_app	Current application ID.
p_next_app_page_sess	Application and page number to redirect to. Separate multiple pages using a colon (:) and optionally followed by a colon (:) and the session ID (if control over the session ID is desired).
p_next_url	URL to redirect to (use this instead of p_next_app_page_sess).

Example

The following example causes a logout from the current session and redirects to page 99 of application 1000.

```
BEGIN
    APEX_CUSTOM_AUTH.LOGOUT (
        p_this_app          => '1000',
        p_next_app_page_sess => '1000:99');
END;
```

POST_LOGIN Procedure

This procedure performs session registration, assuming the authentication step has been completed. It can be called only from within an Oracle Application Express application page context.

Syntax

```
APEX_CUSTOM_AUTH.POST_LOGIN(
    p_username      IN VARCHAR2 DEFAULT NULL,
    p_session_id    IN VARCHAR2 DEFAULT NULL,
    p_app_page      IN VARCHAR2 DEFAULT NULL,
    p_preserve_case IN BOOLEAN  DEFAULT FALSE);
```

Parameter

[Table 5–7](#) describes the parameters available in the POST_LOGIN procedure.

Table 5–7 POST_LOGIN Parameters

Parameter	Description
p_username	Login name of user.
p_session_id	Current Oracle Application Express session ID.
p_app_page	Current application ID and after login page separated by a colon (:).
p_preserve_case	If true, do not include p_username in uppercase during session registration.

Example

The following example performs the session registration following a successful authentication.

```
BEGIN
    APEX_CUSTOM_AUTH.POST_LOGIN (
        p_username      => 'FRANK',
        p_session_id    => V('APP_SESSION'),
        p_app_page      => :APP_ID || ':' || 1);
END;
```

SESSION_ID_EXISTS Function

This function returns a Boolean result based on the global package variable containing the current Oracle Application Express session ID. Returns true if the result is a positive number and returns false if the result is a negative number.

Syntax

```
APEX_CUSTOM_AUTH.SESSION_ID_EXISTS  
RETURN BOOLEAN;
```

Example

The following example checks whether the current session ID is valid and exists.

```
DECLARE  
    L_VAL BOOLEAN;  
BEGIN  
    L_VAL := APEX_CUSTOM_AUTH.SESSION_ID_EXISTS;  
    IF VAL THEN  
        http.p('Exists');  
    ELSE  
        http.p('Does not exist');  
    END IF;  
END;
```

SET_SESSION_ID Procedure

This procedure sets APEX_APPLICATION.G_INSTANCE global variable. This procedure requires the parameter P_SESSION_ID (NUMBER) which specifies a session ID.

Syntax

```
APEX_CUSTOM_AUTH.SET_SESSION_ID(  
    p_session_id    IN    NUMBER);
```

Parameters

[Table 5–8](#) describes the parameters available in the SET_SESSION_ID procedure.

Table 5–8 SET_SESSION_ID Parameters

Parameter	Description
p_session_id	The session ID to be registered.

Example

In the following example, the session ID value registered is retrieved from the browser cookie.

```
APEX_CUSTOM_AUTH.SET_SESSION_ID(APEX_CUSTOM_AUTH.GET_SESSION_ID_FROM_COOKIE);
```

SET_SESSION_ID_TO_NEXT_VALUE Procedure

This procedure combines the operation of GET_NEXT_SESSION_ID and SET_SESSION_ID in one call.

Syntax

```
APEX_CUSTOM_AUTH.SET_SESSION_ID_TO_NEXT_VALUE;
```

Example

In the following example, if the current session is not valid, a new session ID is generated and registered.

```
IF NOT APEX_CUSTOM_AUTH.SESSION_ID_EXISTS THEN  
    APEX_CUSTOM_AUTH.SET_SESSION_ID_TO_NEXT_VALUE;  
END IF;
```

SET_USER Procedure

This procedure sets the APEX_APPLICATION.G_USER global variable. SET_USER requires the parameter P_USER (VARCHAR2) which defines a user ID.

Syntax

```
APEX_CUSTOM_AUTH.SET_USER(  
    p_user    IN    VARCHAR2);
```

Parameters

[Table 5–9](#) describes the parameters available in the SET_USER procedure.

Table 5–9 SET_USER Parameters

Parameter	Description
p_user	The user ID to be registered.

Example

In the following example, if the current application user is **NOBODY**, then **JOHN.DOE** is registered as the application user.

```
IF V('APP_USER') = 'NOBODY' THEN  
    APEX_CUSTOM_AUTH.SET_USER('JOHN.DOE');  
END IF;
```

APEX_DEBUG_MESSAGE

The APEX_DEBUG_MESSAGE package provides utility functions for managing the debug message log. Specifically, this package provides the necessary APIs to instrument and debug PL/SQL code contained within your APEX application as well as PL/SQL code in database stored procedures and functions. Instrumenting your PL/SQL code makes it much easier to track down bugs and isolate unexpected behavior more quickly.

The package also provides the means to enable and disable debugging at different debug levels and utility procedures to clean up the message log.

You can view the message log either as described in the "Accessing Debugging Mode" section of the Oracle Application Express Application Builder User's Guide or by querying the APEX_DEBUG_MESSAGES view.

Please see the individual API descriptions for further information.

Topics:

- [DISABLE_DEBUG_MESSAGES Procedure](#)
- [ENABLE_DEBUG_MESSAGES Procedure](#)
- [LOG_MESSAGE Procedure](#)
- [LOG_LONG_MESSAGE Procedure](#)
- [LOG_PAGE_SESSION_STATE Procedure](#)
- [REMOVE_DEBUG_BY_AGE Procedure](#)
- [REMOVE_DEBUG_BY_APP Procedure](#)
- [REMOVE_DEBUG_BY_VIEW Procedure](#)
- [REMOVE_SESSION_MESSAGES Procedure](#)

DISABLE_DEBUG_MESSAGES Procedure

This procedure is used to turn off debug messaging.

Syntax

```
APEX_DEBUG_MESSAGE.DISABLE_DEBUG_MESSAGES;
```

Parameters

None.

Example

This example shows how you can turn off debug messaging.

```
BEGIN
    APEX_DEBUG_MESSAGE.DISABLE_DEBUG_MESSAGES ();
END;
```

See Also: [ENABLE_DEBUG_MESSAGES Procedure](#) on page 6-3

ENABLE_DEBUG_MESSAGES Procedure

This procedure turns on debug messaging. You can specify, by level of importance, the types of debug messages that will be monitored.

Note: ENABLE_DEBUG_MESSAGES procedure only needs to be called once per page view or page accept.

Syntax

```
APEX_DEBUG_MESSAGE.ENABLE_DEBUG_MESSAGES (
    p_level    IN    NUMBER DEFAULT 7);
```

Parameters

[Table 6–1](#) describes the parameters available in the ENABLE_DEBUG_MESSAGES procedure.

Table 6–1 ENABLE_DEBUG_MESSAGES Parameters

Parameter	Description
p_level	<p>Level or levels of messages to log. Must be an integer from 1 to 7, where level 1 is the most important messages and level 7 (the default) is the least important.</p> <p>Setting to a specific level will log messages both at that level and below that level. For example, setting p_level to 3 will log any message at level 1, 2 or 3.</p>

Example

This examples shows how to enable logging of messages for levels 1, 2 and 3. Messages at levels 4, 5, 6 and 7 are not logged.

```
BEGIN
    APEX_DEBUG_MESSAGE.ENABLE_DEBUG_MESSAGES (
        p_level => 3);
END;
```

LOG_MESSAGE Procedure

This procedure is used to emit debug messages from PLSQL components of Application Express, or PLSQL procedures and functions.

Syntax

```
APEX_DEBUG_MESSAGE.LOG_MESSAGE (
    p_message      IN VARCHAR2  DEFAULT NULL,
    p_enabled      IN BOOLEAN   DEFAULT FALSE,
    p_level        IN NUMBER     DEFAULT 7);
```

Parameters

[Table 6–2](#) describes the parameters available in the LOG_MESSAGE procedure.

Table 6–2 LOG_MESSAGE Parameters

Parameter	Description
p_message	Log message with maximum size of 4000 bytes.
p_enabled	Set to TRUE to always log messages, irrespective of whether debugging is enabled. Set to FALSE to only log messages if debugging is enabled.
p_level	Identifies the level of the log message. Must be an integer from 1 to 7, where level 1 is the most important and level 7 (the default) is the least important.

Example

This example shows how to enable debug message logging for 1, 2 and 3 level messages and display a level 1 message showing a variable value. Note, the p_enabled parameter need not be specified, as debugging has been explicitly enabled and the default of false for this parameter respects this enabling.

```
DECLARE
    l_value varchar2(100) := 'test value';
BEGIN
    APEX_DEBUG_MESSAGE.ENABLE_DEBUG_MESSAGES(p_level => 3);

    APEX_DEBUG_MESSAGE.LOG_MESSAGE(
        p_message => 'l_value = ' || l_value,
        p_level => 1 );

END;
```

See Also: [LOG_LONG_MESSAGE Procedure](#) on page 6-5, "[LOG_PAGE_SESSION_STATE Procedure](#)" on page 6-6

LOG_LONG_MESSAGE Procedure

This procedure is used to emit debug messages from PLSQL components of Application Express, or PLSQL procedures and functions. This procedure is the same as LOG_MESSAGE, except it allows logging of much longer messages, which are subsequently split into 4,000 character chunks in the debugging output (because a single debug message is constrained to 4,000 characters).

Syntax

```
APEX_DEBUG_MESSAGE.LOG_LONG_MESSAGE (
    p_message      IN VARCHAR2  DEFAULT NULL,
    p_enabled      IN BOOLEAN   DEFAULT FALSE,
    p_level        IN NUMBER    DEFAULT 7);
```

Parameters

[Table 6–2](#) describes the parameters available in the LOG_LONG_MESSAGE procedure.

Table 6–3 LOG_LONG_MESSAGE Parameters

Parameter	Description
p_message	Log long message with maximum size of 32767 bytes.
p_enabled	Set to TRUE to always log messages, irrespective of whether debugging is enabled. Set to FALSE to only log messages if debugging is enabled.
p_level	Identifies the level of the long log message. Must be an integer from 1 to 7, where level 1 is the most important and level 7 (the default) is the least important.

Example

This example shows how to enable debug message logging for 1, 2 and 3 level messages and display a level 1 message that could contain anything up to 32767 characters. Note, the p_enabled parameter need not be specified, as debugging has been explicitly enabled and the default of false for this parameter respects this enabling.

```
DECLARE
    l_msg VARCHAR2(32767) := 'Debug will output anything up to varchar2 limit';
BEGIN
    APEX_DEBUG_MESSAGE.ENABLE_DEBUG_MESSAGES(p_level => 3);

    APEX_DEBUG_MESSAGE.LOG_LONG_MESSAGE(
        p_message => l_msg,
        p_level => 1 );

END;
```

LOG_PAGE_SESSION_STATE Procedure

This procedure is used to log the session state of a page.

Syntax

```
APEX_DEBUG_MESSAGE.LOG_PAGE_SESSION_STATE (  
    p_page_id    IN NUMBER    DEFAULT NULL,  
    p_enabled    IN BOOLEAN   DEFAULT FALSE,  
    p_level      IN NUMBER    DEFAULT 7);
```

Parameters

[Table 6–4](#) describes the parameters available in the LOG_PAGE_SESSION_STATE procedure.

Table 6–4 LOG_PAGE_SESSION_STATE Parameters

Parameter	Description
p_page_id	Identifies a page within the current application and workspace. If no value is passed for this parameter, the application's current page will be used.
p_enabled	Set to TRUE to always log messages, irrespective of whether debugging is enabled. Set to FALSE to only log messages if debugging is enabled.
p_level	Identifies the level of the long log message. Must be an integer from 1 to 7, where level 1 is the most important and level 7 (the default) is the least important.

Example

This example shows how to enable debug message logging for 1, 2 and 3 level messages and display a level 1 message containing all the session state for the application's current page. Note, the p_enabled parameter need not be specified, as debugging has been explicitly enabled and the default of false for this parameter respects this enabling. Also note the p_page_id has not been specified, as this example just shows session state information for the application's current page.

```
BEGIN  
    APEX_DEBUG_MESSAGE.ENABLE_DEBUG_MESSAGES(p_level => 3);  
  
    APEX_DEBUG_MESSAGE.LOG_PAGE_SESSION_STATE (p_level => 1);  
  
END;
```

See Also: [LOG_LONG_MESSAGE Procedure](#) on page 6-5, [LOG_MESSAGE Procedure](#) on page 6-4

REMOVE_DEBUG_BY_AGE Procedure

This procedure is used to delete from the debug message log all data older than the specified number of days.

Syntax

```
APEX_DEBUG_MESSAGE.REMOVE_DEBUG_BY_AGE (
    p_application_id    IN NUMBER,
    p_older_than_days   IN NUMBER);
```

Parameters

[Table 6–5](#) describes the parameters available in the REMOVE_DEBUG_BY_AGE procedure.

Table 6–5 REMOVE_DEBUG_BY_AGE Parameters

Parameter	Description
p_application_id	The application ID of the application.
p_older_than_days	The number of days data can exist in the debug message log before it is deleted.

Example

This example demonstrates removing debug messages relating to the current application, that are older than 3 days old.

```
BEGIN
    APEX_DEBUG_MESSAGE.REMOVE_DEBUG_BY_AGE (
        p_application_id => TO_NUMBER(:APP_ID),
        p_older_than_days => 3 );
END;
```

See Also: ["REMOVE_DEBUG_BY_APP Procedure"](#) on page 6-8, ["REMOVE_DEBUG_BY_VIEW Procedure"](#) on page 6-9, ["REMOVE_SESSION_MESSAGES Procedure"](#) on page 6-10

REMOVE_DEBUG_BY_APP Procedure

This procedure is used to delete from the debug message log all data belonging to a specified application.

Syntax

```
APEX_DEBUG_MESSAGE.REMOVE_DEBUG_BY_APP (
    p_application_id    IN NUMBER);
```

Parameters

[Table 6–5](#) describes the parameters available in the REMOVE_DEBUG_BY_APP procedure.

Table 6–6 REMOVE_DEBUG_BY_APP Parameters

Parameter	Description
p_application_id	The application ID of the application.

Example

This example demonstrates removing all debug messages logged for the current application.

```
BEGIN
    APEX_DEBUG_MESSAGE.REMOVE_DEBUG_BY_APP(
        p_application_id => TO_NUMBER(:APP_ID) );
END;
```

See Also: ["REMOVE_DEBUG_BY_AGE Procedure"](#) on page 6-7, ["REMOVE_DEBUG_BY_VIEW Procedure"](#) on page 6-9, ["REMOVE_SESSION_MESSAGES Procedure"](#) on page 6-10

REMOVE_DEBUG_BY_VIEW Procedure

This procedure is used to delete all data for a specified view from the message log.

Syntax

```
APEX_DEBUG_MESSAGE.REMOVE_DEBUG_BY_VIEW (  
    p_application_id    IN NUMBER,  
    p_view_id           IN NUMBER);
```

Parameters

[Table 6–7](#) describes the parameters available in the REMOVE_DEBUG_BY_VIEW procedure.

Table 6–7 REMOVE_DEBUG_BY_VIEW Parameters

Parameter	Description
p_application_id	The application ID of the application.
p_view_id	The view ID of the view.

Example

This example demonstrates the removal of debug messages within the 'View Identifier' of 12345, belonging to the current application.

```
BEGIN  
    APEX_DEBUG_MESSAGE.REMOVE_DEBUG_BY_VIEW (  
        p_application_id => TO_NUMBER(:APP_ID),  
        p_view_id        => 12345 );  
END;
```

See Also: ["REMOVE_DEBUG_BY_AGE Procedure"](#) on page 6-7, ["REMOVE_DEBUG_BY_APP Procedure"](#) on page 6-8, ["REMOVE_SESSION_MESSAGES Procedure"](#) on page 6-10

REMOVE_SESSION_MESSAGES Procedure

This procedure is used to delete all data from a given session within your workspace from the debug message log.

Syntax

```
APEX_DEBUG_MESSAGE.REMOVE_SESSION_MESSAGES (  
    p_session    IN NUMBER    DEFAULT NULL);
```

Parameters

[Table 6–8](#) describes the parameters available in the REMOVE_SESSION_MESSAGES procedure.

Table 6–8 REMOVE_SESSION_MESSAGES Parameters

Parameter	Description
p_session	The session ID. Defaults to your current session.

Example

This example demonstrates the removal of all debug messages logged within the current session. Note: As no value is passed for the p_session parameter, the procedure defaults to the current session.

```
BEGIN  
    APEX_DEBUG_MESSAGE.REMOVE_SESSION_MESSAGES();  
END;
```

See Also: ["REMOVE_DEBUG_BY_AGE Procedure"](#) on page 6-7, ["REMOVE_DEBUG_BY_APP Procedure"](#) on page 6-8, ["REMOVE_DEBUG_BY_VIEW Procedure"](#) on page 6-9

APEX_ERROR

The APEX_ERROR package provides the interface declarations and some utility functions for an error handling function and includes procedures and functions to raise errors in an Application Express application.

Topics:

- [Package Overview](#)
- [Data Types and Constants](#)
- [Example of an Error Handling Function](#)
- [ADD_ERROR Procedure Signature 1](#)
- [ADD_ERROR Procedure Signature 2](#)
- [ADD_ERROR Procedure Signature 3](#)
- [ADD_ERROR Procedure Signature 4](#)
- [ADD_ERROR Procedure Signature 5](#)
- [AUTO_SET_ASSOCIATED_ITEM Procedure](#)
- [EXTRACT_CONSTRAINT_NAME Function](#)
- [GET_ARIA_ERROR_ATTRIBUTES Function](#)
- [GET_FIRST_ORA_ERROR_TEXT Function](#)
- [INT_ERROR_RESULT Function](#)

Package Overview

Data Types and Constants

The data types and constants used by the APEX_ERROR package are described in this section.

- [Constants used for Result Types](#)
- [t_error](#)
- [t_error_result](#)

Constants used for Result Types

The following constants are used for the API parameter `p_display_location` and the attribute `display_location` in the `t_error` and `t_error_result` types.

<code>c_inline_with_field</code>	<code>constant varchar2(40):='INLINE_WITH_FIELD';</code>
<code>c_inline_with_field_and_notif</code>	<code>constant varchar2(40):='INLINE_WITH_FIELD_AND_</code>
<code>NOTIFICATION';</code>	
<code>c_inline_in_notification</code>	<code>constant varchar2(40):='INLINE_IN_NOTIFICATION';</code>
<code>c_on_error_page</code>	<code>constant varchar2(40):='ON_ERROR_PAGE';</code>

The following constants are used for the API parameter `associated_type` in the `t_error` type.

<code>c_ass_type_page_item</code>	<code>constant varchar2(30):='PAGE_ITEM';</code>
<code>c_ass_type_region</code>	<code>constant varchar2(30):='REGION';</code>
<code>c_ass_type_region_column</code>	<code>constant varchar2(30):='REGION_COLUMN';</code>

t_error

The following type is passed into an error handling function and contains all of the relevant error information.

```

type t_error is record (
    message          varchar2(32767),      /* Displayed error message */
    additional_info   varchar2(32767),      /* Only used for display_location ON_
ERROR_PAGE to display additional error information */
    display_location  varchar2(40),         /* Use constants "used for display_
location" below */
    association_type   varchar2(40),         /* Use constants "used for asociation_
type" below */
    page_item_name    varchar2(255),        /* Associated page item name */
    region_id         number,               /* Associated tabular form region id of
the primary application */
    column_alias      varchar2(255),        /* Associated tabular form column alias
*/
    row_num           pls_integer,          /* Associated tabular form row */
    is_internal_error boolean,              /* Set to TRUE if it's a critical error
raised by the APEX engine, like an invalid SQL/PLSQL statements, ... Internal
Errors are always displayed on the Error Page */
    apex_error_code   varchar2(255),        /* Contains the system message code if
it's an error raised by APEX */
    ora_sqlcode       number,               /* SQLCODE on exception stack which
triggered the error, NULL if the error was not raised by an ORA error */
    ora_sqlerrm       varchar2(32767),      /* SQLERRM which triggered the error,
NULL if the error was not raised by an ORA error */
    error_backtrace   varchar2(32767),      /* Output of dbms_utility.format_error_
backtrace or dbms_utility.format_call_stack */
    component         wwv_flow.t_component /* Component which has been processed
when the error occurred */
);

```

t_error_result

The following type is used as the result type for an error handling function.

```
type t_error_result is record (  
    message          varchar2(32767), /* Displayed error message */  
    additional_info   varchar2(32767), /* Only used for display_location ON_ERROR_  
PAGE to display additional error information */  
    display_location  varchar2(40),    /* Use constants "used for display_location"  
below */  
    page_item_name    varchar2(255),   /* Associated page item name */  
    column_alias      varchar2(255)    /* Associated tabular form column alias */  
);
```

Example of an Error Handling Function

```

create or replace function apex_error_handling_example (
  p_error in apex_error.t_error )
  return apex_error.t_error_result
is
  l_result          apex_error.t_error_result;
  l_reference_id    number;
  l_constraint_name varchar2(255);
begin
  l_result := apex_error.init_error_result (
    p_error => p_error );

  -- If it's an internal error raised by APEX, like an invalid statement or
  -- code which can't be executed, the error text might contain security
  sensitive
  -- information. To avoid this security problem we can rewrite the error to
  -- a generic error message and log the original error message for further
  -- investigation by the help desk.
  if p_error.is_internal_error then
    -- Access Denied errors raised by application or page authorization should
    -- still show up with the original error message
    if p_error.apex_error_code <> 'APEX.AUTHORIZATION.ACCESS_DENIED' then
      -- log error for example with an autonomous transaction and return
      -- l_reference_id as reference#
      l_reference_id := log_error (
        p_error => p_error );
      --
      -- Change the message to the generic error message which doesn't
      expose
      -- any sensitive information.
      l_result.message := 'An unexpected internal application error
has occurred. '||
                                'Please get in contact with XXX and
provide '||
                                'reference# '||to_char(l_reference_id,
'999G999G999G990')||
                                ' for further investigation.';
      l_result.additional_info := null;
    end if;
  else
    -- Always show the error as inline error
    -- Note: If you have created manual tabular forms (using the package
    -- apex_item/htmlldb_item in the SQL statement) you should still
    -- use "On error page" on that pages to avoid loosing entered data
    l_result.display_location := case
      when l_result.display_location = apex_
error.c_on_error_page then apex_error.c_inline_in_notification
      else l_result.display_location
    end;

    -- If it's a constraint violation like
    --
    -- -) ORA-00001: unique constraint violated
    -- -) ORA-02091: transaction rolled back (-> can hide a deferred
    constraint)
    -- -) ORA-02290: check constraint violated

```

```

-- -) ORA-02291: integrity constraint violated - parent key not found
-- -) ORA-02292: integrity constraint violated - child record found
--
-- we try to get a friendly error message from our constraint lookup
configuration.
-- If we don't find the constraint in our lookup table we fallback to
-- the original ORA error message.
if p_error.ora_sqlcode in (-1, -2091, -2290, -2291, -2292) then
    l_constraint_name := apex_error.extract_constraint_name (
        p_error => p_error );

    begin
        select message
        into l_result.message
        from constraint_lookup
        where constraint_name = l_constraint_name;
        exception when no_data_found then null; -- not every constraint has to
be in our lookup table
    end;
end if;

-- If an ORA error has been raised, for example a raise_application_
error(-20xxx, '...')
-- in a table trigger or in a PL/SQL package called by a process and we
-- haven't found the error in our lookup table, then we just want to see
-- the actual error text and not the full error stack with all the ORA
error numbers.
if p_error.ora_sqlcode is not null and l_result.message = p_error.message
then
    l_result.message := apex_error.get_first_ora_error_text (
        p_error => p_error );
end if;

-- If no associated page item/tabular form column has been set, we can use
-- apex_error.auto_set_associated_item to automatically guess the affected
-- error field by examine the ORA error for constraint names or column
names.
if l_result.page_item_name is null and l_result.column_alias is null then
    apex_error.auto_set_associated_item (
        p_error => p_error,
        p_error_result => l_result );
end if;
end if;

return l_result;
end apex_error_handling_example;

```

ADD_ERROR Procedure Signature 1

This procedure adds an error message to the error stack that is used to display an error on an error page or inline in a notification. It can be called in a validation or process to add one or more errors to the error stack.

Note: This procedure must be called before the Application Express application has performed the last validation or process. Otherwise, the error is ignored if it does not have a display location of `apex_error.c_on_error_page`.

Syntax

```
APEX_ERROR.ADD_ERROR (
    p_message          in varchar2,
    p_additional_info   in varchar2 default null,
    p_display_location in varchar2 );
```

Parameters

[Table 7-1](#) describes the parameters available in the ADD_ERROR Procedure Signature 1.

Table 7-1 ADD_ERROR Procedure Signature 1 Parameters

Parameters	Description
p_message	Displayed error message.
p_additional_info	Additional error information needed if the error is displayed on the error page.
p_display_location	Specifies where the error message is displayed. Use the constant <code>apex_error.inline_notification</code> or <code>apex_error.c_error_page</code> . See "Constants used for Result Types" on page 7-4.

Example

This example illustrates how to add a custom error message to the error stack. The error message is displayed inline in a notification. This example can be used in a validation or process.

```
apex_error.add_error (
    p_message          => 'This custom account is not active!',
    p_display_location => apex_error.c_inline_in_notification );
```

ADD_ERROR Procedure Signature 2

This procedure adds an error message to the error stack that is used to display an error for a page item inline in a notification. It can be called in a validation or process to add one or more errors to the error stack.

Note: This procedure must be called before the Application Express application has performed the last validation or process. Otherwise, the error is ignored if it does not have a display location of `apex_error.c_on_error_page`.

Syntax

```
APEX_ERROR.ADD_ERROR (
    p_message          in varchar2,
    p_additional_info   in varchar2 default null,
    p_display_location in varchar2,
    p_page_item_name    in varchar2);
```

Parameters

[Table 7–2](#) describes the parameters available in the ADD_ERROR Procedure Signature 2.

Table 7–2 ADD_ERROR Procedure Signature 2 Parameters

Parameters	Description
p_message	Displayed error message.
p_additional_info	Additional error information needed if the error is displayed on the error page.
p_display_location	Specifies where the error message is displayed. Use the constant <code>apex_error.c_inline_with_field</code> or <code>apex_error.c_inline_with_field_and_notif</code> . See "Constants used for Result Types" on page 7-4.
p_page_item_name	Name of the page item on the current page that is highlighted if <code>apex_error.c_inline_with_field</code> or <code>apex_error.c_inline_with_field_and_notif</code> are used as the display location.

Example

This example illustrates how to add a custom error message to the error stack. The P5_CUSTOMER_ID item is highlighted on the page. The error message is displayed inline in a notification. This example can be used in a validation or process.

```
apex_error.add_error (
    p_message          => 'Invalid Customer ID!',
    p_display_location => apex_error.c_inline_with_field_and_notif,
    p_page_item_name   => 'P5_CUSTOMER_ID');
```

ADD_ERROR Procedure Signature 3

This procedure adds an error message to the error stack that is used to display text as defined by a shared component. This error message can be displayed to all display locations. It can be called in a validation or process to add one or more errors to the error stack.

Note: This procedure must be called before the Application Express application has performed the last validation or process. Otherwise, the error is ignored if it does not have a display location of `apex_error.c_on_error_page`.

Syntax

```
APEX_ERROR.ADD_ERROR (
    p_error_code          in varchar2,
    p0                    in varchar2 default null,
    p1                    in varchar2 default null,
    p2                    in varchar2 default null,
    p3                    in varchar2 default null,
    p4                    in varchar2 default null,
    p5                    in varchar2 default null,
    p6                    in varchar2 default null,
    p7                    in varchar2 default null,
    p8                    in varchar2 default null,
    p9                    in varchar2 default null,
    p_escape_placeholders in boolean default true,
    p_additional_info     in varchar2 default null,
    p_display_location    in varchar2,
    p_page_item_name      in varchar2 );
```

Parameters

[Table 7–3](#) describes the parameters available in the ADD_ERROR Procedure Signature 3.

Table 7–3 ADD_ERROR Procedure Signature 3 Parameters

Parameters	Description
p_error_code	Name of shared component text message.
p_additional_info	Additional error information needed if the error is displayed on the error page.
p0 through p9	Values for %0through %9 placeholders defined in the text message.
p_escape_placeholders	If set to TRUE, the values provided in p0 through p9 are escaped with <code>sys.htf.escape_sc</code> before replacing the placeholder in the text message. If set to FALSE, values are not escaped.
p_display_location	Specifies where the error message is displayed. Use the constants defined for <code>p_display_location</code> . See "Constants used for Result Types" on page 7-4.
p_page_item_name	Name of the page item on the current page that is highlighted if <code>apex_error.c_inline_with_field</code> or <code>apex_error.c_inline_with_field_and_notif</code> are used as the display location.

Example

This example illustrates how to add a custom error message, where the text is stored in a text message, to the error stack. The P5_CUSTOMER_ID item is highlighted on the page. The error message is displayed inline in a notification. This example can be used in a validation or process.

```
apex_error.add_error (
    p_error_code      => 'INVALID_CUSTOMER_ID',
    p0                => l_customer_id,
    p_display_location => apex_error.c_inline_with_field_and_notif,
    p_page_item_name  => 'P5_CUSTOMER_ID' );
```


ADD_ERROR Procedure Signature 4

This procedure adds an error message to the error stack that is used to display an error for a tabular form inline in a notification. It can be called in a validation or process to add one or more errors to the error stack.

Note: This procedure must be called before the Application Express application has performed the last validation or process. Otherwise, the error is ignored if it does not have a display location of `apex_error.c_on_error_page`.

Syntax

```
APEX_ERROR.ADD_ERROR (
    p_message          in varchar2,
    p_additional_info  in varchar2 default null,
    p_display_location in varchar2,
    p_region_id        in number,
    p_column_alias     in varchar2 default null,
    p_row_num          in number );
```

Parameters

[Table 7–4](#) describes the parameters available in the ADD_ERROR Procedure Signature 4.

Table 7–4 ADD_ERROR Procedure Signature 4 Parameters

Parameters	Description
p_message	Displayed error message.
p_additional_info	Additional error information needed if the error is displayed on the error page.
p_display_location	Specifies where the error message is displayed. Use the constant <code>apex_error.c_inline_with_field</code> or <code>apex_error.c_inline_with_field_and_notif</code> . See "Constants used for Result Types" on page 7-4.
p_region_id	The ID of a tabular form region on the current page. The ID can be read from the view <code>APEX_APPLICATION_PAGE_REGIONS</code> .
p_column_alias	Name of a tabular form column alias defined for p_region_id that is highlighted if <code>apex_error.c_inline_with_field</code> or <code>apex_error.c_inline_with_field_and_notif</code> are used as a display location.
p_row_num	Number of the tabular form row where the error occurred.

Example

This example illustrates how to add a custom error message for a tabular form, where the column `CUSTOMER_ID` is highlighted, to the error stack. The error message is displayed inline in a notification. This example can be used in a validation or process.

```
apex_error.add_error (
    p_message          => 'Invalid Customer ID!',
    p_display_location => apex_error.c_inline_with_field_and_notif,
    p_region_id        => l_region_id,
    p_column_alias     => 'CUSTOMER_ID',
```

```
p_row_num      => l_row_num );
```

ADD_ERROR Procedure Signature 5

This procedure adds an error message to the error stack of a tabular form that is used to display text as defined by a shared component. This error message can be displayed to all display locations. It can be called in a validation or process to add one or more errors to the error stack.

Note: This procedure must be called before the Application Express application has performed the last validation or process. Otherwise, the error is ignored if it does not have a display location of `apex_error.c_on_error_page`.

Syntax

```
APEX_ERROR.ADD_ERROR (
    p_error_code          in varchar2,
    p0                    in varchar2 default null,
    p1                    in varchar2 default null,
    p2                    in varchar2 default null,
    p3                    in varchar2 default null,
    p4                    in varchar2 default null,
    p5                    in varchar2 default null,
    p6                    in varchar2 default null,
    p7                    in varchar2 default null,
    p8                    in varchar2 default null,
    p9                    in varchar2 default null,
    p_escape_placeholders in boolean default true,
    p_additional_info     in varchar2 default null,
    p_display_location    in varchar2,
    p_region_id           in number,
    p_column_alias        in varchar2 default null,
    p_row_num             in number );
```

Parameters

[Table 7–5](#) describes the parameters available in the ADD_ERROR Procedure Signature 5.

Table 7–5 ADD_ERROR Procedure Signature 5 Parameters

Parameters	Description
p_error_code	Name of shared component text message.
p0 through p9	Values for %0 through %9 placeholders defined in the text message.
p_escape_placeholders	If set to TRUE, the values provided in p0 through p9 are escaped with <code>sys.htf.escape_sc</code> before replacing the placeholder in the text message. If set to FALSE, values are not escaped.
p_additional_info	Additional error information needed if the error is displayed on the error page.
p_display_location	Specifies where the error message is displayed. Use the constants defined for <code>p_display_location</code> . See "Constants used for Result Types" on page 7-4.

Table 7–5 (Cont.) ADD_ERROR Procedure Signature 5 Parameters

Parameters	Description
p_region_id	The ID of the tabular form region on the current page. The ID can be read from the view APEX_APPLICATION_PAGE_REGIONS.
p_column_alias	The name of the tabular form column alias defined for p_region_id that is highlighted if apex_error.c_inline_with_field or apex_error.c_inline_with_field_and_notif are used as a display location.
p_row_num	Number of the tabular form row where the error occurred.

Example

This example illustrates how to add a custom error message, where the text is stored in a text message, to the error stack. The CUSTOMER_ID column on the tabular form is highlighted. The error message is displayed inline in a notification. This example can be used in a validation or process.

```
apex_error.add_error (
    p_error_code      => 'INVALID_CUSTOMER_ID',
    p0                => l_customer_id,
    p_display_location => apex_error.c_inline_with_field_and_notif,
    p_region_id       => l_region_id,
    p_column_alias     => 'CUSTOMER_ID',
    p_row_num         => l_row_num );
```

AUTO_SET_ASSOCIATED_ITEM Procedure

This procedure automatically sets the associated page item or tabular form column based on a constraint contained in `p_error.ora_sqlerrm`.

This procedure performs the following:

- Identifies the constraint by searching for the `schema.constraint` pattern.
- Only supports constraints of type P, U, R and C.
- For constraints of type C (check constraints), the procedure parses the expression to identify those columns that are used in the constraints expression.
- Using those columns, the procedure will get the first visible page item or tabular form column that is based on that column and set it as associated `p_error_result.page_item_name` or `p_error_result.column_alias`.
- If a page item or tabular form column was found, `p_error_result.display_location` is set to `apex_error.c_inline_with_field_and_notif`.

Syntax

```
APEX_ERROR.AUTO_SET_ASSOCIATED_ITEM (
    p_error_result in out nocopy t_error_result,
    p_error        in          t_error );
```

Parameters

[Table 7–10](#) describes the parameters available in the AUTO_SET_ASSOCIATED_ITEM procedure.

Table 7–6 AUTO_SET_ASSOCIATED_ITEM Procedure Parameters

Parameters	Description
<code>p_error_result</code>	The result variable of your error handling function.
<code>p_error</code>	The <code>p_error</code> parameter of your error handling function.

Example

See an example of how to use this procedure in ["Example of an Error Handling Function"](#) on page 7-7.

EXTRACT_CONSTRAINT_NAME Function

This function extracts a constraint name contained in `p_error.ora_sqlerrm`. The constraint must match the pattern `schema.constraint`.

Syntax

```
APEX_ERROR.EXTRACT_CONSTRAINT_NAME (  
    p_error          in t_error,  
    p_include_schema in boolean default false )  
    return varchar2;
```

Parameters

[Table 7-7](#) describes the parameters available in the `EXTRACT_CONSTRAINT_NAME` function.

Table 7-7 *EXTRACT_CONSTRAINT_NAME Function Parameters*

Parameters	Description
<code>p_error</code>	The <code>p_error</code> parameter of your error handling function.
<code>p_include_schema</code>	If set to <code>TRUE</code> , the result is prefixed with the schema name. For example, <code>HR.DEMO_PRODUCT_INFO_PK</code> . If set to <code>FALSE</code> , only the constraint name is returned.

Example

See an example of how to use this procedure in ["Example of an Error Handling Function"](#) on page 7-7.

GET_ARIA_ERROR_ATTRIBUTES Function

This function is useful for item plug-in developers, to enhance screen reader usability of your item, specifically when that item is associated with an error on a page. This function is called as part of rendering of the item, where the main form element(s) are output. The returned WAI-ARIA attributes include:

- `aria-invalid="true"` - Indicates the page item's current value is invalid. This means a screen reader announces 'Invalid Entry' when the user is focused on the page item.
- `aria-describedby="[page_item_name]_error"` - This attribute value matches up with the ID of a `<div>` tag containing the item's associated error message, enabling a screen reader to announce the actual error, when the user is focused on the page item.

Note: Because these attributes only enhance screen reader usability, attributes are returned only if the current session is running in Screen Reader mode.

Syntax

```
function get_aria_error_attributes (
    p_item_name    in varchar2 )
    return varchar2;
```

Parameters

[Table 7–9](#) describes the parameters available in the `GET_ARIA_ERROR_ATTRIBUTES` function.

Table 7–8 *GET_ARIA_ERROR_ATTRIBUTES Function Parameters*

Parameter	Description
<code>p_item_name</code>	The page item name. This value is available via the <code>name</code> attribute of the <code>apex_plugin.t_page_item</code> record type, which is passed in as the 1st parameter to all item plug-in's Render Function Callback.

Example

This example shows how this function can be used, in the context of rendering a `SELECT` element, during processing of the Render Function callback for an item plug-in. This function returns additional attributes, if the page item has errors associated with it and if the user is running in Screen Reader mode.

```
...
    l_name := apex_plugin.get_input_name_for_page_item(false);
    sys.http.prn('<select name="' || l_name || '" id="' || p_item.name || '" ' ||
                apex_error.get_aria_error_attributes(p_item.name) || '>');
...
```

GET_FIRST_ORA_ERROR_TEXT Function

This function returns the first ORA error message text stored in `p_error.ora_sqlerrm`. If `p_error.ora_sqlerrm` does not contain a value, `NULL` is returned.

Syntax

```
APEX_ERROR.GET_FIRST_ORA_ERROR_TEXT (  
    p_error          in t_error,  
    p_include_error_no in boolean default false )  
    return varchar2;
```

Parameters

[Table 7–9](#) describes the parameters available in the `GET_FIRST_ORA_TEXT` function.

Table 7–9 *GET_FIRST_ORA_TEXT Function Parameters*

Parameters	Description
<code>p_error</code>	The <code>p_error</code> parameter of your error handling function.
<code>p_include_error_no</code>	If set to <code>TRUE</code> , <code>ORA-xxxx</code> is included in the returned error message. If set to <code>FALSE</code> , only the error message text is returned.

Example

See an example of how to use this procedure in ["Example of an Error Handling Function"](#) on page 7-7.

INT_ERROR_RESULT Function

This function returns the `t_error_result` type initialized with the values stored in `p_error`.

Note: This function must be used to ensure initialization is compatible with future changes to `t_error_result`.

Syntax

```
APEX_ERROR.INT_ERROR_RESULT (  
    p_error in t_error)  
    return t_error_result;
```

Parameters

[Table 7-10](#) describes the parameters available in the `INT_ERROR_RESULT` function.

Table 7-10 *INT_ERROR_RESULT Function Parameters*

Parameters	Description
<code>p_error</code>	The <code>p_error</code> parameter of your error handling function.

Example

See an example of how to use this function in "[Example of an Error Handling Function](#)" on page 7-7.

APEX_INSTANCE_ADMIN

The APEX_INSTANCE_ADMIN package provides utilities for managing an Oracle Application Express runtime environment. You use the APEX_INSTANCE_ADMIN package to get and set email settings, wallet settings, report printing settings and to manage scheme to workspace mappings. APEX_INSTANCE_ADMIN can be executed by the SYS, SYSTEM, and APEX_040100 database users as well as any database user granted the role APEX_ADMINISTRATOR_ROLE.

Topics:

- [ADD_SCHEMA Procedure](#)
- [ADD_WORKSPACE Procedure](#)
- [GET_PARAMETER Function](#)
- [GET_SCHEMAS Function](#)
- [REMOVE_APPLICATION Procedure](#)
- [REMOVE_SAVED_REPORTS Procedure](#)
- [REMOVE_SCHEMA Procedure](#)
- [REMOVE_WORKSPACE Procedure](#)
- [SET_PARAMETER Procedure](#)
- [TRUNCATE_LOG Procedure](#)
- [Available Parameter Values](#)

ADD_SCHEMA Procedure

The ADD_SCHEMA procedure adds a schema to a workspace to schema mapping.

Syntax

```
APEX_INSTANCE_ADMIN.ADD_SCHEMA(  
    p_workspace    IN VARCHAR2,  
    p_schema       IN VARCHAR2);
```

Parameters

[Table 8–1](#) describes the parameters available in the ADD_SCHEMA procedure.

Table 8–1 ADD_SCHEMA Parameters

Parameter	Description
p_workspace	The name of the workspace to which the schema mapping will be added.
p_schema	The schema to add to the schema to workspace mapping.

Example

The following example demonstrates how to use the ADD_SCHEMA procedure to map a schema mapped to a workspace.

```
BEGIN  
    APEX_INSTANCE_ADMIN.ADD_SCHEMA('MY_WORKSPACE', 'FRANK');  
END;
```

ADD_WORKSPACE Procedure

The ADD_WORKSPACE procedure adds a workspace to an Application Express Instance.

Syntax

```
APEX_INSTANCE_ADMIN.ADD_WORKSPACE(
    p_workspace_id      IN NUMBER DEFAULT NULL,
    p_workspace         IN VARCHAR2,
    p_source_identifier  IN VARCHAR2 DEFAULT NULL,
    p_primary_schema    IN VARCHAR2,
    p_additional_schemas IN VARCHAR2,
    p_rm_consumer_group  IN VARCHAR2 DEFAULT NULL );
```

Parameters

Table 8–2 describes the parameters available in the ADD_WORKSPACE procedure.

Table 8–2 ADD_WORKSPACE Parameters

Parameter	Description
p_workspace_id	The ID to uniquely identify the workspace in an Application Express instance. This may be left null and a new unique ID will be assigned.
p_workspace	The name of the workspace to be added.
p_source_identifier	A short identifier for the workspace used when synchronizing feedback between different instances.
p_primary_schema	The primary database schema to associate with the new workspace.
p_additional_schemas	A colon delimited list of additional schemas to associate with this workspace.
p_rm_consumer_group	Resource Manager consumer group which should be used when executing applications of this workspace.

Example

The following example demonstrates how to use the ADD_WORKSPACE procedure to add a new workspace named MY_WORKSPACE using the primary schema, SCOTT, along with additional schema mappings for HR and OE.

```
BEGIN
    APEX_INSTANCE_ADMIN.ADD_WORKSPACE (
        p_workspace_id      => 8675309,
        p_workspace         => 'MY_WORKSPACE',
        p_primary_schema    => 'SCOTT',
        p_additional_schemas => 'HR:OE' );
END;
```

GET_PARAMETER Function

The GET_PARAMETER function retrieves the value of a parameter used in administering a runtime environment.

Syntax

```
APEX_INSTANCE_ADMIN.GET_PARAMETER(  
    p_parameter      IN VARCHAR2)  
RETURN VARCHAR2;
```

Parameters

[Table 8–3](#) describes the parameters available in the GET_PARAMETER function.

Table 8–3 GET_PARAMETER Parameters

Parameter	Description
p_parameter	The instance parameter to be retrieved. See " Available Parameter Values " on page 8-13.

Example

The following example demonstrates how to use the GET_PARAMETER function to retrieve the SMTP_HOST_ADDRESS parameter currently defined for an Oracle Application Express instance.

```
DECLARE  
    L_VAL VARCHAR2(4000);  
BEGIN  
    L_VAL :=APEX_INSTANCE_ADMIN.GET_PARAMETER('SMTP_HOST_ADDRESS');  
    DBMS_OUTPUT.PUT_LINE('The SMTP Host Setting Is: '||L_VAL);  
END;
```

GET_SCHEMAS Function

The GET_SCHEMAS function retrieves a comma-delimited list of schemas that are mapped to a given workspace.

Syntax

```
APEX_INSTANCE_ADMIN.GET_SCHEMAS(  
    p_workspace      IN VARCHAR2)  
RETURN VARCHAR2;
```

Parameters

[Table 8–4](#) describes the parameters available in the GET_SCHEMAS function.

Table 8–4 GET_SCHEMAS Parameters

Parameter	Description
p_workspace	The name of the workspace from which to retrieve the schema list.

Example

The following example demonstrates how to use the GET_SCHEMA function to retrieve the underlying schemas mapped to a workspace.

```
DECLARE  
    L_VAL VARCHAR2(4000);  
BEGIN  
    L_VAL :=APEX_INSTANCE_ADMIN.GET_SCHEMAS('MY_WORKSPACE');  
    DBMS_OUTPUT.PUT_LINE('The schemas for my workspace: '||L_VAL);  
END;
```

REMOVE_APPLICATION Procedure

The REMOVE_APPLICATION procedure removes the application specified from the Application Express instance.

Syntax

```
APEX_INSTANCE_ADMIN.REMOVE_APPLICATION (  
    p_application_id IN NUMBER);
```

Parameters

[Table 8–5](#) describes the REMOVE_APPLICATION procedure parameters.

Table 8–5 REMOVE_APPLICATION Parameters

Parameter	Description
p_application_id	The ID of the application to remove.

Example

The following example demonstrates how to use the REMOVE_APPLICATION procedure to remove an application with an ID of 100 from an Application Express instance.

```
BEGIN  
    APEX_INSTANCE_ADMIN.REMOVE_APPLICATION(100);  
END;
```


REMOVE_SAVED_REPORT Procedure

The REMOVE_SAVED_REPORT procedure removes a specific user’s saved interactive report settings for a particular application.

Syntax

```
APEX_INSTANCE_ADMIN.REMOVE_SAVED_REPORT(  
    p_application_id    IN NUMBER,  
    p_report_id         IN NUMBER);
```

Parameters

[Table 8–6](#) describes the parameters available in the REMOVE_SAVED_REPORT procedure.

Table 8–6 REMOVE_SAVED_REPORT Parameters

Parameter	Description
p_application_id	The ID of the application for which to remove user saved interactive report information.
p_report_id	The ID of the saved user interactive report to be removed.

Example

The following example demonstrates how to use the REMOVE_SAVED_REPORT procedure to remove user saved interactive report with the ID 123 for the application with an ID of 100.

```
BEGIN  
    APEX_INSTANCE_ADMIN.REMOVE_SAVED_REPORT(100,123);  
END;
```

REMOVE_SAVED_REPORTS Procedure

The REMOVE_SAVED_REPORTS procedure removes all user saved interactive report settings for a particular application or for the entire instance.

Syntax

```
APEX_INSTANCE_ADMIN.REMOVE_SAVED_REPORTS(  
    p_application_id    IN NUMBER DEFAULT NULL);
```

Parameters

[Table 8–7](#) describes the parameters available in the REMOVE_SAVED_REPORTS procedure.

Table 8–7 REMOVE_SAVED_REPORTS Parameters

Parameter	Description
p_application_id	The ID of the application for which to remove user saved interactive report information. If this parameter is left null, all user saved interactive reports for the entire instance will be removed.

Example

The following example demonstrates how to use the REMOVE_SAVED_REPORTS procedure to remove user saved interactive report information for the application with an ID of 100.

```
BEGIN  
    APEX_INSTANCE_ADMIN.REMOVE_SAVED_REPORTS(100);  
END;
```

REMOVE_SCHEMA Procedure

This REMOVE_SCHEMA procedure removes a workspace to schema mapping.

Syntax

```
APEX_INSTANCE_ADMIN.REMOVE_SCHEMA(  
    p_workspace    IN VARCHAR2,  
    p_schema       IN VARCHAR2);
```

Parameters

[Table 8–8](#) describes the parameters available in the REMOVE_SCHEMA procedure.

Table 8–8 REMOVE_SCHEMA Parameters

Parameter	Description
p_workspace	The name of the workspace from which the schema mapping will be removed.
p_schema	The schema to remove from the schema to workspace mapping.

Example

The following example demonstrates how to use the REMOVE_SCHEMA procedure to remove the schema named Frank from the MY_WORKSPACE workspace to schema mapping.

```
BEGIN  
    APEX_INSTANCE_ADMIN.REMOVE_SCHEMA('MY_WORKSPACE', 'FRANK');  
END;
```

REMOVE_WORKSPACE Procedure

The REMOVE_WORKSPACE procedure removes a workspace from an Application Express instance.

Syntax

```
APEX_INSTANCE_ADMIN.REMOVE_WORKSPACE(  
    p_workspace          IN VARCHAR2,  
    p_drop_users         IN VARCHAR2 DEFAULT 'N',  
    p_drop_tablespaces   IN VARCHAR2 DEFAULT 'N' );
```

Parameters

[Table 8–9](#) describes the parameters available in the REMOVE_WORKSPACE procedure.

Table 8–9 REMOVE_WORKSPACE Parameters

Parameter	Description
p_workspace	The name of the workspace to be removed.
p_drop_users	'Y' to drop the database user associated with the workspace. The default is 'N'.
p_drop_tablespaces	'Y' to drop the tablespace associated with the database user associated with the workspace. The default is 'N'.

Example

The following example demonstrates how to use the REMOVE_WORKSPACE procedure to remove an existing workspace named MY_WORKSPACE, along with the associated database users and tablespace.

```
BEGIN  
    APEX_INSTANCE_ADMIN.REMOVE_WORKSPACE('MY_WORKSPACE', 'Y', 'Y');  
END;
```

SET_PARAMETER Procedure

The SET_PARAMETER procedure sets a parameter used in administering a runtime environment.

Syntax

```
APEX_INSTANCE_ADMIN.SET_PARAMETER(  
    p_parameter    IN VARCHAR2,  
    p_value        IN VARCHAR2 DEFAULT 'N');
```

Parameters

[Table 8–10](#) describes the parameters available in the SET_PARAMETER procedure.

Table 8–10 SET_PARAMETER Parameters

Parameter	Description
p_parameter	The instance parameter to be set.
p_value	The value of the parameter. See "Available Parameter Values" on page 8-13.

Example

The following example demonstrates how to use the SET_PARAMETER procedure to set the SMTP_HOST_ADDRESS parameter for an Oracle Application Express instance.

```
BEGIN  
    APEX_INSTANCE_ADMIN.SET_PARAMETER('SMTP_HOST_ADDRESS','mail.mycompany.com');  
END;
```

TRUNCATE_LOG Procedure

The TRUNCATE_LOG procedure truncates the log entries specified by the input parameter.

Syntax

```
APEX_INSTANCE_ADMIN.TRUNCATE_LOG(  
    p_log      IN VARCHAR2);
```

Parameters

[Table 8–11](#) describes the parameters available in the TRUNCATE_LOG procedure.

Table 8–11 TRUNCATE_LOG Parameters

Parameter	Description
p_log	<p>This parameter can have one of the following values:</p> <p>ACTIVITY - removes all entries that record page access.</p> <p>USER_ACCESS - removes all entries that record user login.</p> <p>MAIL - removes all entries that record mail sent.</p> <p>DEVELOPER - removes all entries that record developer activity.</p> <p>CLICKS - removes all entries that record clicks tracked to external sites.</p> <p>LOCK_PAGE - removes all entries that record developer locking of pages.</p> <p>WORKSPACE_HIST - removes all entries that record daily workspace summary.</p> <p>PURGE - removes all entries that record automatic workspace purge activity.</p> <p>FILE - removes all entries that record automatic file purge activity.</p> <p>SCRIPT - removes all entries that record results of SQL scripts executed in SQL Workshop.</p> <p>SQL - removes all entries that record the history of commands executed in SQL Workshop SQL Commands</p>

Example

The following example demonstrates how to use the TRUNCATE_LOG procedure to remove all log entries that record access to Application Express application pages.

```
BEGIN  
    APEX_INSTANCE_ADMIN.TRUNCATE_LOG('ACTIVITY');  
END;
```

Available Parameter Values

Table 8–12 lists all the available parameter values you can set within the APEX_INSTANCE_ADMIN package, including parameters for email, wallet, and reporting printing.

Table 8–12 Available Parameters

Parameter Name	Description
ACCOUNT_LIFETIME_DAYS	The maximum number of days an end-user account password may be used before the account is expired.
ALLOW_DB_MONITOR	If set to Y, the default, database monitoring is enabled. If set to N, it is disabled.
ALLOW_PUBLIC_FILE_UPLOAD	If set to Y, file uploads are allowed without user authentication. If set to N, the default, they are not allowed.
ALLOW_REST	If set to Y, the default, developers are allowed to expose report regions as RESTful services. If set to N, the are not allowed.
APPLICATION_ACTIVITY_LOGGING	Controls instance wide setting of application activity log ([A]lways, [N]ever, [U]se application settings)
AUTOEXTEND_TABLESPACES	If set to Y, the default, provisioned tablespaces will autoextend up to a maximum size. If set to N tablespaces will not autoextend.
DELETE_UPLOADED_FILES_AFTER_DAYS	Uploaded files like application export files, websheet export files, spreadsheet data load files will be automatically deleted after this number of days. Default is 14.
DISABLE_ADMIN_LOGIN	If set to Y, administration services are disabled. If set to N, the default, they are not disabled.
DISABLE_WORKSPACE_LOGIN	If set to Y, the workspace login is disabled. If set to N, the default, the login is not disabled.
DISABLE_WS_PROV	If set to Y, the workspace creation is disabled for requests sent out via e-mail notification. If set to N, the default, they are not disabled.
ENABLE_TRANSACTIONAL_SQL	If set to Y, the default, transactional SQL commands are enabled on this instance. If set to N, they are not enabled.
EXPIRE_FIND_USER_ACCOUNTS	If set to Y, expiration of APEX accounts is enabled. If set to N, they are not enabled.
MAX_SESSION_IDLE_SEC	The number of seconds an internal application may be idle.
MAX_SESSION_LENGTH_SEC	The number of seconds an internal application session may exist.
PASSWORD_ALPHA_CHARACTERS	The alphabetic characters used for password complexity rules. Default list of alphabetic characters include the following: abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZVWXYZ
PASSWORD_PUNCTUATION_CHARACTERS	The punctuation characters used for password complexity rules. Default list of punctuation characters include the following: !"#\$%&()``*+, -/ : ; <=>?_
PLSQL_EDITING	If set to Y, the default, the SQL Workshop Object Browser is enabled to allow users to edit and compile PL/SQL. If set to N, users are not allowed.

Table 8–12 (Cont.) Available Parameters

Parameter Name	Description
REQUIRE_HTTPS	If set to Y, access to the instance must be over SSL. If set to N, the default, access is not restricted to SSL.
REQUIRE_VERIFICATION_CODE	If set to Y, the Verification Code is displayed and is required for someone to request a new workspace. If set to N, the default, the Verification Code is not required.
REQ_NEW_SCHEMA	If set to Y, the option for new schema for new workspace requests is enabled. If set to N, the default, the option is disabled.
RESTFULL_SERVICES_ENABLED	If set to Y, the default, RESTful services development is enabled. If set to N, RESTful services are not enabled.
SERVICE_REQUESTS_ENABLED	If set to Y, the default, workspace service requests for schemas, storage, and termination is enabled. If set to N, these requests are disabled.
SERVICE_REQUEST_FLOW	Determines default provisioning mode. Default is MANUAL.
SMTP_FROM	<p>Defines the "from" address for administrative tasks that generate email, such as approving a provision request or resetting a password.</p> <p>Enter a valid email address, for example:</p> <p>someone@somewhere.com</p>
SMTP_HOST_ADDRESS	<p>Defines the server address of the SMTP server. If you are using another server as an SMTP relay, change this parameter to that server's address.</p> <p>Default setting:</p> <p>localhost</p>
SMTP_HOST_PORT	<p>Defines the port the SMTP server listens to for mail requests.</p> <p>Default setting:</p> <p>25</p>
SMTP_PASSWORD	Defines the password APEX takes to authenticate itself against the SMTP server, in conjunction with the parameter SMTP_USERNAME.
SMTP_TLS_MODE	<p>Defines whether or not APEX opens an encrypted connection to the SMTP server. Encryption is only supported on database versions 11.2.0.2 and later. On earlier database versions, the connection is not encrypted.</p> <p>If set to N, the connection is unencrypted (default).</p> <p>If set to Y, the connection is encrypted before data is sent.</p> <p>If STARTTLS, Apex sends the SMTP commands EHLO <SMTP_HOST_ADDRESS> and STARTTLS before encrypting the connection.</p>
SMTP_USERNAME	Defines the username APEX takes to authenticate itself against the SMTP server (default is null). Starting with database version 11.2.0.2, APEX uses UTL_MAIL's AUTH procedure for authentication. This procedure negotiates an authentication mode with the SMTP server. With earlier database versions, the authentication mode is always AUTH LOGIN. If SMTP_USERNAME is null, no authentication is used.
SQL_SCRIPT_MAX_OUTPUT_SIZE	The maximum allowable size for an individual script result. Default is 200000.

Table 8–12 (Cont.) Available Parameters

Parameter Name	Description
STRONG_SITE_ADMIN_PASSWORD	If set to Y, the default, the apex_admin password must conform to the default set of strong complexity rules. If set to N, the password is not required to follow the strong complexity rules.
SYSTEM_HELP_URL	Location of the help and documentation accessed from the Help link within the development environment. Default is <code>http://apex.oracle.com/doc41</code> .
USERNAME_VALIDATION	The regular expression used to validate a username if the Builder authentication scheme is not APEX. Default is as follows: <code>^[[[:alnum:]]_%-]+@[[[:alnum:]]-]+\.[[:alpha:]]{2,4}\$</code>
WALLET_PATH	The path to the wallet on the file system, for example: <code>file:/home/<username>/wallets</code>
WALLET_PWD	The password associated with the wallet.
WEBSHEET_SQL_ACCESS	If set to Y, the default, SQL tags and SQL reports are possible in Websheet applications. If set to N, they are not possible.
WORKSPACE_EMAIL_MAXIMUM	Maximum number of emails allowed to be sent via APEX_MAIL per workspace in a 24 hour period. Default is 1000.
WORKSPACE_MAX_OUTPUT_SIZE	The maximum space allocated for script results. Default is 2000000.
WORKSPACE_PROVISION_DEMO_OBJECTS	If set to Y, the default, demonstration applications and database objects are created in new workspaces. If set to N, they are created in the current workspace.
WORKSPACE_WEBSHEET_OBJECTS	If set to Y, the default, APEX Websheet database objects are created in new workspaces. If set to N, they are created in the current workspace.
PASSWORD_HISTORY_DAYS	Defines the maximum number of days a developer or administrator account password may be used before the account expires. The default value is 45 days.
PRINT_BIB_LICENSED	Specify either standard support or advanced support. Advanced support requires an Oracle BI Publisher license. Valid values include: <ul style="list-style-type: none"> ■ STANDARD ■ ADVANCED
PRINT_SVR_PROTOCOL	Valid values include: <ul style="list-style-type: none"> ■ http ■ https
PRINT_SVR_HOST	Specifies the host address of the print server converting engine, for example, <code>localhost</code> . Enter the appropriate host address if the print server is installed at another location.
PRINT_SVR_PORT	Defines the port of the print server engine, for example 8888. Value must be a positive integer.
PRINT_SVR_SCRIPT	Defines the script that is the print server engine, for example: <code>/xmlpsrver/convert</code>

Table 8–12 (Cont.) Available Parameters

Parameter Name	Description
REQUIRE_HTTPS	Set to Y to allow authentication pages within the Application Express development and administration applications to be used only when the protocol is HTTPS. Select N to allow these application pages to be used when the protocol is either HTTP or HTTPS.

See Also: "Configuring Email in a Runtime Environment", "Configuring a Wallet in a Runtime Environment", "Configuring Report Printing Settings in a Runtime Environment" in *Oracle Application Express Administration Guide*.

You can use the APEX_ITEM package to create form elements dynamically based on a SQL query instead of creating individual items page by page.

Topics:

- [CHECKBOX2 Function](#)
- [DATE_POPUP Function](#)
- [DATE_POPUP2 Function](#)
- [DISPLAY_AND_SAVE Function](#)
- [HIDDEN Function](#)
- [MD5_CHECKSUM Function](#)
- [MD5_HIDDEN Function](#)
- [POPUP_FROM_LOV Function](#)
- [POPUP_FROM_QUERY Function](#)
- [POPUPKEY_FROM_LOV Function](#)
- [POPUPKEY_FROM_QUERY Function](#)
- [RADIOGROUP Function](#)
- [SELECT_LIST Function](#)
- [SELECT_LIST_FROM_LOV Function](#)
- [SELECT_LIST_FROM_LOV_XL Function](#)
- [SELECT_LIST_FROM_QUERY Function](#)
- [SELECT_LIST_FROM_QUERY_XL Function](#)
- [TEXT Function](#)
- [TEXTAREA Function](#)
- [TEXT_FROM_LOV Function](#)
- [TEXT_FROM_LOV_QUERY Function](#)

CHECKBOX2 Function

This function creates check boxes.

Syntax

```
APEX_ITEM.CHECKBOX2 (
    p_idx                IN      NUMBER,
    p_value               IN      VARCHAR2 DEFAULT NULL,
    p_attributes          IN      VARCHAR2 DEFAULT NULL,
    p_checked_values      IN      VARCHAR2 DEFAULT NULL,
    p_checked_values_delimiter IN  VARCHAR2 DEFAULT ': ',
    p_item_id             IN      VARCHAR2 DEFAULT NULL,
    p_item_label          IN      VARCHAR2 DEFAULT NULL)
RETURN VARCHAR2;
```

Parameters

[Table 9–1](#) describes the parameters available in the CHECKBOX2 function.

Table 9–1 CHECKBOX2 Parameters

Parameter	Description
p_idx	Number that determines which APEX_APPLICATION global variable will be used. Valid range of values is 1 to 50. For example 1 creates F01 and 2 creates F02
p_value	Value of a check box, hidden field, or input form item
p_attributes	Controls HTML tag attributes (such as disabled)
p_checked_values	Values to be checked by default
p_checked_values_delimiter	Delimits the values in the previous parameter, p_checked_values
p_item_id	HTML attribute ID for the <input> tag
p_item_label	Invisible label created for the item

Examples of Default Check Box Behavior

The following example demonstrates how to create a selected check box for each employee in the emp table.

```
SELECT APEX_ITEM.CHECKBOX2 (1, empno, 'CHECKED') "Select",
       ename, job
FROM   emp
ORDER BY 1
```

The following example demonstrates how to have all check boxes for employees display without being selected.

```
SELECT APEX_ITEM.CHECKBOX2 (1, empno) "Select",
       ename, job
FROM   emp
ORDER BY 1
```

The following example demonstrates how to select the check boxes for employees who work in department 10.

```
SELECT APEX_ITEM.CHECKBOX2(1,empno,DECODE(deptno,10,'CHECKED',NULL)) "Select",
       ename, job
FROM   emp
ORDER BY 1
```

The next example demonstrates how to select the check boxes for employees who work in department 10 or department 20.

```
SELECT APEX_ITEM.CHECKBOX2(1,deptno,NULL,'10:20',':') "Select",
       ename, job
FROM   emp
ORDER BY 1
```

Creating an On-Submit Process

If you are using check boxes in your application, you might need to create an On Submit process to perform a specific type of action on the selected rows. For example, you could have a Delete button that utilizes the following logic:

```
SELECT APEX_ITEM.CHECKBOX2(1,empno) "Select",
       ename, job
FROM   emp
ORDER BY 1
```

Consider the following sample on-submit process:

```
FOR I in 1..APEX_APPLICATION.G_F01.COUNT LOOP
    DELETE FROM emp WHERE empno = to_number(APEX_APPLICATION.G_F01(i));
END LOOP;
```

The following example demonstrates how to create unselected checkboxes for each employee in the emp table, with a unique ID. This is useful for referencing records from within JavaScript code:

```
SELECT APEX_ITEM.CHECKBOX2(1,empno,NULL,NULL,NULL,'f01_#ROWNUM#') "Select",
       ename, job
FROM   emp
ORDER BY 1
```

DATE_POPUP Function

Use this function with forms that include date fields. The DATE_POPUP function dynamically generates a date field that has a popup calendar button.

Syntax

```
APEX_ITEM.DATE_POPUP(  
    p_idx           IN     NUMBER,  
    p_row           IN     NUMBER,  
    p_value          IN     VARCHAR2 DEFAULT NULL,  
    p_date_format    IN     DATE DEFAULT 'DD-MON-YYYY',  
    p_size           IN     NUMBER DEFAULT 20,  
    p_maxlength      IN     NUMBER DEFAULT 2000,  
    p_attributes     IN     VARCHAR2 DEFAULT NULL,  
    p_item_id        IN     VARCHAR2 DEFAULT NULL,  
    p_item_label     IN     VARCHAR2 DEFAULT NULL)  
RETURN VARCHAR2;
```

Parameters

[Table 9–2](#) describes the parameters available in the DATE_POPUP function.

Table 9–2 DATE_POPUP Parameters

Parameter	Description
p_idx	Number that determines which APEX_APPLICATION global variable will be used. Valid range of values is 1 to 50. For example, 1 creates F01 and 2 creates F02
p_row	This parameter is deprecated. Anything specified for this value will be ignored
p_value	Value of a field item
p_date_format	Valid database date format
p_size	Controls HTML tag attributes (such as disabled)
p_maxlength	Determines the maximum number of enterable characters. Becomes the maxlength attribute of the <input> HTML tag
p_attributes	Extra HTML parameters you want to add
p_item_id	HTML attribute ID for the <input> tag
p_item_label	Invisible label created for the item

See Also: *Oracle Database SQL Language Reference* for information about the TO_CHAR or TO_DATE functions

Example

The following example demonstrates how to use APEX_ITEM.DATE_POPUP to create popup calendar buttons for the hiredate column.

```
SELECT  
    empno,  
    APEX_ITEM.HIDDEN(1, empno) ||  
    APEX_ITEM.TEXT(2, ename) ename,
```

```
APEX_ITEM.TEXT(3,job) job,  
mgr,  
APEX_ITEM.DATE_POPUP(4,rownum,hiredate,'dd-mon-yyyy') hd,  
APEX_ITEM.TEXT(5,sal) sal,  
APEX_ITEM.TEXT(6,comm) comm,  
deptno  
FROM emp  
ORDER BY 1
```

DATE_POPUP2 Function

Use this function with forms that include date fields. The DATE_POPUP2 function dynamically generates a date field that has a jQuery based popup calendar with button.

Syntax

```
APEX_ITEM.DATE_POPUP2 (
    p_idx                in number,
    p_value              in date      default null,
    p_date_format        in varchar2 default null,
    p_size               in number   default 20,
    p_maxLength          in number   default 2000,
    p_attributes         in varchar2 default null,
    p_item_id            in varchar2 default null,
    p_item_label         in varchar2 default null,
    p_default_value      in varchar2 default null,
    p_max_value          in varchar2 default null,
    p_min_value          in varchar2 default null,
    p_show_on            in varchar2 default 'button',
    p_number_of_months   in varchar2 default null,
    p_navigation_list_for in varchar2 default 'NONE',
    p_year_range         in varchar2 default null,
    p_validation_date    in varchar2 default null)
RETURN VARCHAR2;
```

Parameters

Table 9–3 describes the parameters available in the DATE_POPUP2 function.

Table 9–3 DATE_POPUP2 Parameters

Parameter	Description
p_idx	Number that determines which APEX_APPLICATION global variable will be used. Valid range of values is 1 to 50. For example, 1 creates F01 and 2 creates F02.
p_value	Value of a field item
p_date_format	Valid database date format
p_size	Controls HTML tag attributes (such as disabled)
p_maxlength	Determines the maximum number of enterable characters. Becomes the maxlength attribute of the <input> HTML tag
p_attributes	Extra HTML parameters you want to add
p_item_id	HTML attribute ID for the <input> tag
p_item_label	Invisible label created for the item
p_default_value	The default date which should be selected in DatePicker calendar popup
p_max_value	The Maximum date that can be selected from the datepicker

Table 9–3 (Cont.) DATE_POPUP2 Parameters

Parameter	Description
p_min_value	The Minimum date that can be selected from the datepicker.
p_show_on	Determines when the datepicker displays, on button click or on focus of the item or both.
p_number_of_months	Determines number of months displayed. Value should be in array formats follows: [row,column]
p_navigation_list_for	Determines if a select list is displayed for Changing Month, Year or Both. Possible values include: MONTH, YEAR, MONTH_AND_YEAR and default is null.
p_year_range	The range of years displayed in the year selection list.
p_validation_date	Used to store the Date value for the which date validation failed

See Also: *Oracle Database SQL Language Reference* for information about the TO_CHAR or TO_DATE functions

DISPLAY_AND_SAVE Function

Use this function to display an item as text, but save its value to session state.

Syntax

```
APEX_ITEM.DISPLAY_AND_SAVE(  
    p_idx          IN    NUMBER,  
    p_value        IN    VARCHAR2 DEFAULT NULL,  
    p_item_id      IN    VARCHAR2 DEFAULT NULL,  
    p_item_label   IN    VARCHAR2 DEFAULT NULL)  
RETURN VARCHAR2;
```

Parameters

[Table 9–4](#) describes the parameters available in the `DISPLAY_AND_SAVE` function.

Table 9–4 *DISPLAY_AND_SAVE Parameters*

Parameter	Description
<code>p_idx</code>	Number that determines which <code>APEX_APPLICATION</code> global variable will be used. Valid range of values is 1 to 50. For example, 1 creates F01 and 2 creates F02
<code>p_value</code>	Current value
<code>p_item_id</code>	HTML attribute ID for the <code></code> tag
<code>p_item_label</code>	Invisible label created for the item

Example

The following example demonstrates how to use the `APEX_ITEM.DISPLAY_AND_SAVE` function.

```
SELECT APEX_ITEM.DISPLAY_AND_SAVE(10,empno) c FROM emp
```

HIDDEN Function

This function dynamically generates hidden form items.

Syntax

```
APEX_ITEM.HIDDEN(
    p_idx          IN      NUMBER,
    p_value         IN      VARCHAR2 DEFAULT
    p_attributes    IN      VARCHAR2 DEFAULT NULL,
    p_item_id       IN      VARCHAR2 DEFAULT NULL,
    p_item_label    IN      VARCHAR2 DEFAULT NULL
) RETURN VARCHAR2;
```

Parameters

[Table 9–5](#) describes the parameters available in the HIDDEN function.

Table 9–5 HIDDEN Parameters

Parameter	Description
p_idx	Number to identify the item you want to generate. The number will determine which G_FXX global is populated See Also: " APEX_APPLICATION " on page 1-1
p_value	Value of the hidden input form item
p_attributes	Extra HTML parameters you want to add
p_item_id	HTML attribute ID for the <input> tag
p_item_label	Invisible label created for the item

Example

Typically, the primary key of a table is stored as a hidden column and used for subsequent update processing, for example:

```
SELECT
    empno,
    APEX_ITEM.HIDDEN(1, empno) ||
    APEX_ITEM.TEXT(2, ename) ename,
    APEX_ITEM.TEXT(3, job) job,
    mgr,
    APEX_ITEM.DATE_POPUP(4, rownum, hiredate, 'dd-mon-yyyy') hiredate,
    APEX_ITEM.TEXT(5, sal) sal,
    APEX_ITEM.TEXT(6, comm) comm,
    deptno
FROM emp
ORDER BY 1
```

The previous query could use the following page process to process the results:

```
BEGIN
    FOR i IN 1..APEX_APPLICATION.G_F01.COUNT LOOP
        UPDATE emp
        SET
            ename=APEX_APPLICATION.G_F02(i),
            job=APEX_APPLICATION.G_F03(i),
```

```
        hiredate=to_date(APEX_APPLICATION.G_F04(i),'dd-mon-yyyy'),
        sal=APEX_APPLICATION.G_F05(i),
        comm=APEX_APPLICATION.G_F06(i)
    WHERE empno=to_number(APEX_APPLICATION.G_F01(i));
END LOOP;
END;
```

Note that the G_F01 column (which corresponds to the hidden EMPNO) is used as the key to update each row.

MD5_CHECKSUM Function

This function is used for lost update detection. Lost update detection ensures data integrity in applications where data can be accessed concurrently.

This function produces hidden form field(s) with a name attribute equal to 'fcs' and includes 50 inputs. APEX_ITEM.MD5_CHECKSUM also produces an MD5 checksum using the Oracle database DBMS_OBFUSCATION_TOOLKIT:

```
UTL_RAW.CAST_TO_RAW(DBMS_OBFUSCATION_TOOLKIT.MD5 ( ))
```

An MD5 checksum provides data integrity through hashing and sequencing to ensure that data is not altered or stolen as it is transmitted over a network.

Syntax

```
APEX_ITEM.MD5_CHECKSUM (
    p_value01    IN    VARCHAR2 DEFAULT NULL,
    p_value02    IN    VARCHAR2 DEFAULT NULL,
    p_value03    IN    VARCHAR2 DEFAULT NULL,
    ...
    p_value50    IN    VARCHAR2 DEFAULT NULL,
    p_col_sep    IN    VARCHAR2 DEFAULT '|',
    p_item_id    IN    VARCHAR2 DEFAULT NULL)
RETURN VARCHAR2;
```

Parameters

Table 9–6 describes the parameters available in the MD5_CHECKSUM function.

Table 9–6 MD5_CHECKSUM Parameters

Parameter	Description
p_value01	Fifty available inputs. If no parameters are supplied, the default to NULL
...	
p_value50	
p_col_sep	String used to separate p_value inputs. Defaults to the pipe symbol ()
p_item_id	ID of the HTML form item

Example

This function generates hidden form elements with the name 'fcs'. The values can subsequently be accessed via the APEX_APPLICATION.G_FCS array.

```
SELECT APEX_ITEM.MD5_CHECKSUM(ename,job,sal) md5_cks,
       ename, job, sal
FROM emp
```

MD5_HIDDEN Function

This function is used for lost update detection. Lost update detection ensures data integrity in applications where data can be accessed concurrently.

This function produces a hidden form field and includes 50 inputs. APEX_ITEM.MD5_HIDDEN also produces an MD5 checksum using the Oracle database DBMS_OBFUSCATION_TOOLKIT:

```
UTL_RAW.CAST_TO_RAW(DBMS_OBFUSCATION_TOOLKIT.MD5())
```

An MD5 checksum provides data integrity through hashing and sequencing to ensure that data is not altered or stolen as it is transmitted over a network

Syntax

```
APEX_ITEM.MD5_HIDDEN(  
    p_idx      IN      NUMBER,  
    p_value01  IN      VARCHAR2 DEFAULT NULL,  
    p_value02  IN      VARCHAR2 DEFAULT NULL,  
    p_value03  IN      VARCHAR2 DEFAULT NULL,  
    ...  
    p_value50  IN      VARCHAR2 DEFAULT NULL,  
    p_col_sep  IN      VARCHAR2 DEFAULT '|',  
    p_item_id  IN      VARCHAR2 DEFAULT NULL)  
RETURN VARCHAR2;
```

Parameters

Table 9–7 describes the parameters available in the MD5_HIDDEN function.

Table 9–7 MD5_HIDDEN Parameters

Parameter	Description
p_idx	Indicates the form element to be generated. For example, 1 equals F01 and 2 equals F02. Typically the p_idx parameter is constant for a given column
p_value01	Fifty available inputs. Parameters not supplied default to NULL
...	
p_value50	
p_col_sep	String used to separate p_value inputs. Defaults to the pipe symbol ()
p_item_id	ID of the HTML form item

Example

The p_idx parameter specifies the FXX form element to be generated. In the following example, 7 generates F07. Also note that an HTML hidden form element will be generated.

```
SELECT APEX_ITEM.MD5_HIDDEN(7,ename,job,sal)md5_h, ename, job, sal  
FROM emp
```

POPUP_FROM_LOV Function

This function generates an HTML popup select list from an application shared list of values (LOV). Like other available functions in the APEX_ITEM package, POPUP_FROM_LOV function is designed to generate forms with F01 to F50 form array elements.

Syntax

```
APEX_ITEM.POPUP_FROM_LOV(
    p_idx          IN      NUMBER,
    p_value         IN      VARCHAR2 DEFAULT NULL,
    p_lov_name      IN      VARCHAR2,
    p_width         IN      VARCHAR2 DEFAULT NULL,
    p_max_length    IN      VARCHAR2 DEFAULT NULL,
    p_form_index    IN      VARCHAR2 DEFAULT '0',
    p_escape_html   IN      VARCHAR2 DEFAULT NULL,
    p_max_elements  IN      VARCHAR2 DEFAULT NULL,
    p_attributes    IN      VARCHAR2 DEFAULT NULL,
    p_ok_to_query   IN      VARCHAR2 DEFAULT 'YES',
    p_item_id       IN      VARCHAR2 DEFAULT NULL,
    p_item_label    IN      VARCHAR2 DEFAULT NULL)
RETURN VARCHAR2;
```

Parameters

[Table 9–8](#) describes the some parameters in the POPUP_FROM_LOV function.

Table 9–8 POPUP_FROM_LOV Parameters

Parameter	Description
p_idx	Form element name. For example, 1 equals F01 and 2 equals F02. Typically, p_idx is a constant for a given column
p_value	Form element current value. This value should be one of the values in the p_lov_name parameter
p_lov_name	Named LOV used for this popup
p_width	Width of the text box
p_max_length	Maximum number of characters that can be entered in the text box
p_form_index	HTML form on the page in which an item is contained. Defaults to 0 and rarely used. Only use this parameter when it is necessary to embed a custom form in your page template (such as a search field that posts to a different Web site). If this form comes before the #FORM_OPEN# substitution string, then its index is zero and the form opened automatically by Oracle Application Express must be referenced as form 1. This functionality supports the JavaScript used in the popup LOV that passes a value back to a form element.

Table 9–8 (Cont.) POPUP_FROM_LOV Parameters

Parameter	Description
p_escape_html	<p>Replacements for special characters that require an escaped equivalent:</p> <ul style="list-style-type: none"> ■ &lt; for < ■ &gt; for > ■ &amp; for & <p>Range of values is YES and NO. If YES, special characters will be escaped. This parameter is useful if you know your query will return illegal HTML.</p>
p_max_elements	<p>Limit on the number of rows that can be returned by your query. Limits the performance impact of user searches. By entering a value in this parameter, you force the user to search for a narrower set of results.</p>
p_attributes	Additional HTML attributes to use for the form item.
p_ok_to_query	<p>Range of values is YES and NO. If YES, a popup returns first set of rows for the LOV. If NO, a search is initiated to return rows.</p>
p_item_id	ID attribute of the form element.
p_item_label	Invisible label created for the item.

Example

The following example demonstrates a sample query the generates a popup from an LOV named DEPT_LOV.

```
SELECT APEX_ITEM.POPUP_FROM_LOV (1,deptno, 'DEPT_LOV') dt
FROM emp
```


POPUP_FROM_QUERY Function

This function generates an HTML popup select list from a query. Like other available functions in the `APEX_ITEM` package, the `POPUP_FROM_QUERY` function is designed to generate forms with F01 to F50 form array elements.

Syntax

```
APEX_ITEM.POPUP_FROM_QUERY (

    p_idx           IN     NUMBER,
    p_value         IN     VARCHAR2 DEFAULT NULL,
    p_lov_query     IN     VARCHAR2,
    p_width         IN     VARCHAR2 DEFAULT NULL,
    p_max_length    IN     VARCHAR2 DEFAULT NULL,
    p_form_index    IN     VARCHAR2 DEFAULT '0',
    p_escape_html   IN     VARCHAR2 DEFAULT NULL,
    p_max_elements  IN     VARCHAR2 DEFAULT NULL,
    p_attributes    IN     VARCHAR2 DEFAULT NULL,
    p_ok_to_query   IN     VARCHAR2 DEFAULT 'YES',
    p_item_id       IN     VARCHAR2 DEFAULT NULL,
    p_item_label    IN     VARCHAR2 DEFAULT NULL)
RETURN VARCHAR2;
```

Parameters

[Table 9–9](#) describes the parameters in the `POPUP_FROM_QUERY` function.

Table 9–9 POPUP_FROM_QUERY Parameters

Parameter	Description
<code>p_idx</code>	Form element name. For example, 1 equals F01 and 2 equals F02. Typically, <code>p_idx</code> is a constant for a given column.
<code>p_value</code>	Form element current value. This value should be one of the values in the <code>p_lov_query</code> parameter.
<code>p_lov_query</code>	SQL query that is expected to select two columns (a display column and a return column). For example: SELECT dname, deptno FROM dept
<code>p_width</code>	Width of the text box.
<code>p_max_length</code>	Maximum number of characters that can be entered in the text box.
<code>p_form_index</code>	HTML form on the page in which an item is contained. Defaults to 0 and rarely used. Only use this parameter when it is necessary to embed a custom form in your page template (such as a search field that posts to a different Web site). If this form comes before the <code>#FORM_OPEN#</code> substitution string, then its index is zero and the form opened automatically by Oracle Application Express must be referenced as form 1. This functionality supports the JavaScript used in the popup LOV that passes a value back to a form element.

Table 9–9 (Cont.) POPUP_FROM_QUERY Parameters

Parameter	Description
p_escape_html	<p>Replacements for special characters that require an escaped equivalent.</p> <ul style="list-style-type: none"> ■ &lt; for < ■ &gt; for > ■ &amp; for & <p>Range of values is YES and NO. If YES, special characters will be escaped. This parameter is useful if you know your query will return illegal HTML.</p>
p_max_elements	<p>Limit on the number of rows that can be returned by your query. Limits the performance impact of user searches. By entering a value in this parameter, you force the user to search for a narrower set of results.</p>
p_attributes	<p>Additional HTML attributes to use for the form item.</p>
p_ok_to_query	<p>Range of values is YES and NO. If YES, a popup returns the first set of rows for the LOV. If NO, a search is initiated to return rows.</p>
p_item_id	<p>ID attribute of the form element.</p>
p_item_label	<p>Invisible label created for the item.</p>

Example

The following example demonstrates a sample query the generates a popup select list from the emp table.

```
SELECT APEX_ITEM.POPUP_FROM_QUERY (1,deptno,'SELECT dname, deptno FROM dept') dt
FROM emp
```

POPUPKEY_FROM_LOV Function

This function generates a popup key select list from a shared list of values (LOV). Similar to other available functions in the APEX_ITEM package, the POPUPKEY_FROM_LOV function is designed to generate forms with F01 to F50 form array elements.

Syntax

```
APEX_ITEM.POPUPKEY_FROM_LOV(
    p_idx          IN      NUMBER,
    p_value         IN      VARCHAR2 DEFAULT NULL,
    p_lov_name      IN      VARCHAR2,
    p_width         IN      VARCHAR2 DEFAULT NULL,
    p_max_length    IN      VARCHAR2 DEFAULT NULL,
    p_form_index    IN      VARCHAR2 DEFAULT '0',
    p_escape_html   IN      VARCHAR2 DEFAULT NULL,
    p_max_elements  IN      VARCHAR2 DEFAULT NULL,
    p_attributes    IN      VARCHAR2 DEFAULT NULL,
    p_ok_to_query   IN      VARCHAR2 DEFAULT 'YES',
    p_item_id       IN      VARCHAR2 DEFAULT NULL,
    p_item_label    IN      VARCHAR2 DEFAULT NULL)
RETURN VARCHAR2;
```

Although the text field associated with the popup displays in the first column in the LOV query, the actual value is specified in the second column in the query.

Parameters

[Table 9–10](#) describes the some parameters in the POPUPKEY_FROM_LOV function.

Table 9–10 POPUPKEY_FROM_LOV Parameters

Parameter	Description
p_idx	Identifies a form element name. For example, 1 equals F01 and 2 equals F02. Typically, p_idx is a constant for a given column Because of the behavior of POPUPKEY_FROM_QUERY, the next index value should be p_idx + 1. For example: SELECT APEX_ITEM.POPUPKEY_FROM_LOV (1,deptno,'DEPT') dt, APEX_ITEM.HIDDEN(3,empno) eno
p_value	Indicates the current value. This value should be one of the values in the P_LOV_NAME parameter.
p_lov_name	Identifies a named LOV used for this popup.
p_width	Width of the text box.
p_max_length	Maximum number of characters that can be entered in the text box.
p_form_index	HTML form on the page in which an item is contained. Defaults to 0 and rarely used. Only use this parameter when it is necessary to embed a custom form in your page template (such as a search field that posts to a different Web site). If this form comes before the #FORM_OPEN# substitution string, then its index is zero and the form opened automatically by Oracle Application Express must be referenced as form 1. This functionality supports the JavaScript used in the popup LOV that passes a value back to a form element.

Table 9–10 (Cont.) POPUPKEY_FROM_LOV Parameters

Parameter	Description
p_escape_html	Replacements for special characters that require an escaped equivalent. <ul style="list-style-type: none"> ▪ &lt; for < ▪ &gt; for > ▪ &amp; for & This parameter is useful if you know your query will return illegal HTML.
p_max_elements	Limit on the number of rows that can be returned by your query. Limits the performance impact of user searches. By entering a value in this parameter, you force the user to search for a narrower set of results.
p_attributes	Additional HTML attributes to use for the form item.
p_ok_to_query	Range of values is YES and NO. If YES, a popup returns the first set of rows for the LOV. If NO, a search is initiated to return rows.
p_item_id	HTML attribute ID for the <input> tag
p_item_label	Invisible label created for the item

Example

The following example demonstrates how to generate a popup key select list from a shared list of values (LOV).

```
SELECT APEX_ITEM.POPUPKEY_FROM_LOV (1,deptno,'DEPT') dt
FROM emp
```

POPUPKEY_FROM_QUERY Function

This function generates a popup key select list from a SQL query. Similar to other available functions in the APEX_ITEM package, the POPUPKEY_FROM_QUERY function is designed to generate forms with F01 to F50 form array elements.

Syntax

```
APEX_ITEM.POPUPKEY_FROM_QUERY(
    p_idx          IN      NUMBER,
    p_value         IN      VARCHAR2 DEFAULT NULL,
    p_lov_query     IN      VARCHAR2,
    p_width         IN      VARCHAR2 DEFAULT NULL,
    p_max_length    IN      VARCHAR2 DEFAULT NULL,
    p_form_index    IN      VARCHAR2 DEFAULT '0',
    p_escape_html   IN      VARCHAR2 DEFAULT NULL,
    p_max_elements  IN      VARCHAR2 DEFAULT NULL,
    p_attributes    IN      VARCHAR2 DEFAULT NULL,
    p_ok_to_query   IN      VARCHAR2 DEFAULT 'YES',
    p_item_id       IN      VARCHAR2 DEFAULT NULL,
    p_item_label    IN      VARCHAR2 DEFAULT NULL)
RETURN VARCHAR2;
```

Parameters

[Table 9–11](#) describes the some parameters in the POPUPKEY_FROM_QUERY function.

Table 9–11 POPUPKEY_FROM_QUERY Parameters

Parameter	Description
p_idx	<p>Form element name. For example, 1 equals F01 and 2 equals F02. Typically, p_idx is a constant for a given column.</p> <p>Because of the behavior of POPUPKEY_FROM_QUERY, the next index value should be p_idx + 1. For example:</p> <pre>SELECT APEX_ITEM.POPUPKEY_FROM_QUERY (1,deptno, 'SELECT dname, deptno FROM dept') dt, APEX_ITEM.HIDDEN(3,empno) eno</pre>
p_value	Form element current value. This value should be one of the values in the P_LOV_QUERY parameter.
p_lov_query	LOV query used for this popup.
p_width	Width of the text box.
p_max_length	Maximum number of characters that can be entered in the text box.
p_form_index	<p>HTML form on the page in which an item is contained. Defaults to 0 and rarely used.</p> <p>Only use this parameter when it is necessary to embed a custom form in your page template (such as a search field that posts to a different Web site). If this form comes before the #FORM_OPEN# substitution string, then its index is zero and the form opened automatically by Oracle Application Express must be referenced as form 1. This functionality supports the JavaScript used in the popup LOV that passes a value back to a form element.</p>

Table 9–11 (Cont.) POPUPKEY_FROM_QUERY Parameters

Parameter	Description
p_escape_html	<p>Replacements for special characters that require an escaped equivalent.</p> <ul style="list-style-type: none"> ■ &lt; for < ■ &gt; for > ■ &amp; for & <p>This parameter is useful if you know your query will return illegal HTML.</p>
p_max_elements	<p>Limit on the number of rows that can be returned by your query. Limits the performance impact of user searches. By entering a value in this parameter, you force the user to search for a narrower set of results.</p>
p_attributes	Additional HTML attributes to use for the form item.
p_ok_to_query	Range of values is YES and NO. If YES, a popup returns first set of rows for the LOV. If NO, a search is initiated to return rows.
p_item_id	ID attribute of the form element.
p_item_label	Invisible label created for the item.

Example

The following example demonstrates how to generate a popup select list from a SQL query.

```
SELECT APEX_ITEM.POPUPKEY_FROM_QUERY (1,deptno,'SELECT dname, deptno FROM dept')
dt
FROM emp
```

RADIOGROUP Function

This function generates a radio group from a SQL query.

Syntax

```
APEX_ITEM.RADIOGROUP(
    p_idx          IN      NUMBER,
    p_value         IN      VARCHAR2 DEFAULT NULL,
    p_selected_value IN      VARCHAR2 DEFAULT NULL,
    p_display       IN      VARCHAR2 DEFAULT NULL,
    p_attributes    IN      VARCHAR2 DEFAULT NULL,
    p_onblur        IN      VARCHAR2 DEFAULT NULL,
    p_onchange      IN      VARCHAR2 DEFAULT NULL,
    p_onfocus      IN      VARCHAR2 DEFAULT NULL,
    p_item_id       IN      VARCHAR2 DEFAULT NULL,
    p_item_label    IN      VARCHAR2 DEFAULT NULL)
RETURN VARCHAR2;
```

Parameters

[Table 9–12](#) describes the parameters available in the RADIOGROUP function.

Table 9–12 RADIOGROUP Parameters

Parameter	Description
p_idx	Number that determines which APEX_APPLICATION global variable will be used. Valid range of values is 1 to 50. For example 1 creates F01 and 2 creates F02.
p_value	Value of the radio group.
p_selected_value	Value that should be selected.
p_display	Text to display next to the radio option.
p_attributes	Extra HTML parameters you want to add.
p_onblur	JavaScript to execute in the onBlur event.
p_onchange	JavaScript to execute in the onChange event.
p_onfocus	JavaScript to execute in the onFocus event.
p_item_id	HTML attribute ID for the <input> tag
p_item_label	Invisible label created for the item

Example

The following example demonstrates how to select department 20 from the emp table as a default in a radio group.

```
SELECT APEX_ITEM.RADIOGROUP (1,deptno,'20',dname) dt
FROM   dept
ORDER BY 1
```

SELECT_LIST Function

This function dynamically generates a static select list. Similar to other functions available in the APEX_ITEM package, these select list functions are designed to generate forms with F01 to F50 form array elements.

Syntax

```
APEX_ITEM.SELECT_LIST(  
    p_idx          IN      NUMBER,  
    p_value        IN      VARCHAR2 DEFAULT NULL,  
    p_list_values  IN      VARCHAR2 DEFAULT NULL,  
    p_attributes   IN      VARCHAR2 DEFAULT NULL,  
    p_show_null    IN      VARCHAR2 DEFAULT 'NO',  
    p_null_value   IN      VARCHAR2 DEFAULT '%NULL%',  
    p_null_text    IN      VARCHAR2 DEFAULT '%',  
    p_item_id      IN      VARCHAR2 DEFAULT NULL,  
    p_item_label   IN      VARCHAR2 DEFAULT NULL,  
    p_show_extra   IN      VARCHAR2 DEFAULT 'YES')  
RETURN VARCHAR2;
```

Parameters

Table 9–13 describes the parameters available in the SELECT_LIST function.

Table 9–13 SELECT_LIST Parameters

Parameter	Description
p_idx	Form element name. For example, 1 equals F01 and 2 equals F02. Typically the P_IDX parameter is constant for a given column.
p_value	Current value. This value should be a value in the P_LIST_VALUES parameter.
p_list_values	List of static values separated by commas. Displays values and returns values that are separated by semicolons. Note that this is only available in the SELECT_LIST function.
p_attributes	Extra HTML parameters you want to add.
p_show_null	Extra select option to enable the NULL selection. Range of values is YES and NO.
p_null_value	Value to be returned when a user selects the NULL option. Only relevant when p_show_null equals YES.
p_null_text	Value to be displayed when a user selects the NULL option. Only relevant when p_show_null equals YES.
p_item_id	HTML attribute ID for the <input> tag.
p_item_label	Invisible label created for the item.
p_show_extra	Shows the current value even if the value of p_value is not located in the select list.

Example

The following example demonstrates a static select list that displays Yes, returns Y, defaults to Y, and generates a F01 form item.

```
SELECT APEX_ITEM.SELECT_LIST(1, 'Y', 'Yes;Y,No;N') yn
```


FROM emp

The following example demonstrates the use of `APEX_ITEM.SELECT_LIST` to generate a static select list where:

- A form array element F03 will be generated (`p_idx` parameter).
- The initial value for each element will be equal to the value for `deptno` for the row from `emp` (`p_value` parameter).
- The select list will contain 4 options (`p_list_values` parameter).
- The text within the select list will display in red (`p_attributes` parameter).
- A null option will be displayed (`p_show_null`) and this option will display -Select- as the text (`p_null_text` parameter).
- An HTML ID attribute will be generated for each row, where `#ROWNUM#` will be substituted for the current row `rownum` (`p_item_id` parameter). (So an ID of 'f03_4' will be generated for row 4.)
- A HTML label element will be generated for each row (`p_item_label` parameter).
- The current value for `deptno` will be displayed, even if it is not contained with the list of values passed in the `p_list_values` parameter (`p_show_extra` parameter).

```
SELECT empno "Employee #",
       ename "Name",
       APEX_ITEM.SELECT_LIST(
         p_idx      => 3,
         p_value    => deptno,
         p_list_values => 'ACCOUNTING;10,RESEARCH;20,SALES;30,OPERATIONS;40',
         p_attributes => 'style="color:red;"',
         p_show_null => 'YES',
         p_null_value => NULL,
         p_null_text => '-Select-',
         p_item_id   => 'f03_#ROWNUM#',
         p_item_label => 'Label for f03_#ROWNUM#',
         p_show_extra => 'YES') "Department"
FROM emp;
```

SELECT_LIST_FROM_LOV Function

This function dynamically generates select lists from a shared list of values (LOV). Similar to other functions available in the `APEX_ITEM` package, these select list functions are designed to generate forms with F01 to F50 form array elements.

Syntax

```
APEX_ITEM.SELECT_LIST_FROM_LOV(  
    p_idx          IN    NUMBER,  
    p_value        IN    VARCHAR2 DEFAULT NULL,  
    p_lov          IN    VARCHAR2,  
    p_attributes   IN    VARCHAR2 DEFAULT NULL,  
    p_show_null    IN    VARCHAR2 DEFAULT 'YES',  
    p_null_value   IN    VARCHAR2 DEFAULT '%NULL%',  
    p_null_text    IN    VARCHAR2 DEFAULT '%',  
    p_item_id      IN    VARCHAR2 DEFAULT NULL,  
    p_item_label   IN    VARCHAR2 DEFAULT NULL,  
    p_show_extra   IN    VARCHAR2 DEFAULT 'YES')  
RETURN VARCHAR2;
```

Parameters

[Table 9–14](#) describes the parameters available in the `SELECT_LIST_FROM_LOV` function.

Table 9–14 *SELECT_LIST_FROM_LOV Parameters*

Parameter	Description
<code>p_idx</code>	Form element name. For example, 1 equals F01 and 2 equals F02. Typically, the <code>p_idx</code> parameter is constant for a given column.
<code>p_value</code>	Current value. This value should be a value in the <code>p_lov</code> parameter.
<code>p_lov</code>	Text name of an application list of values. This list of values must be defined in your application. This parameter is used only by the <code>select_list_from_lov</code> function.
<code>p_attributes</code>	Extra HTML parameters you want to add.
<code>p_show_null</code>	Extra select option to enable the NULL selection. Range of values is YES and NO.
<code>p_null_value</code>	Value to be returned when a user selects the NULL option. Only relevant when <code>p_show_null</code> equals YES.
<code>p_null_text</code>	Value to be displayed when a user selects the NULL option. Only relevant when <code>p_show_null</code> equals YES.
<code>p_item_id</code>	HTML attribute ID for the <code><select></code> tag.
<code>p_item_label</code>	Invisible label created for the item.
<code>p_show_extra</code>	Shows the current value even if the value of <code>p_value</code> is not located in the select list.

Example

The following example demonstrates a select list based on an LOV defined in the application.

```
SELECT APEX_ITEM.SELECT_LIST_FROM_LOV(2, job, 'JOB_FLOW_LOV') job  
FROM emp
```

SELECT_LIST_FROM_LOV_XL Function

This function dynamically generates very large select lists (greater than 32K) from a shared list of values (LOV). Similar to other functions available in the `APEX_ITEM` package, these select list functions are designed to generate forms with F01 to F50 form array elements. This function is the same as `SELECT_LIST_FROM_LOV`, but its return value is CLOB. This enables you to use it in SQL queries where you need to handle a column value longer than 4000 characters.

Syntax

```
APEX_ITEM.SELECT_LIST_FROM_LOV_XL(
    p_idx          IN    NUMBER,
    p_value        IN    VARCHAR2 DEFAULT NULL,
    p_lov          IN    VARCHAR2,
    p_attributes   IN    VARCHAR2 DEFAULT NULL,
    p_show_null    IN    VARCHAR2 DEFAULT 'YES',
    p_null_value   IN    VARCHAR2 DEFAULT '%NULL%',
    p_null_text    IN    VARCHAR2 DEFAULT '%',
    p_item_id      IN    VARCHAR2 DEFAULT NULL,
    p_item_label   IN    VARCHAR2 DEFAULT NULL,
    p_show_extra   IN    VARCHAR2 DEFAULT 'YES')
RETURN CLOB;
```

Parameters

[Table 9–15](#) describes the parameters available in the `SELECT_LIST_FROM_LOV_XL` function.

Table 9–15 *SELECT_LIST_FROM_LOV_XL Parameters*

Parameter	Description
<code>p_idx</code>	Form element name. For example, 1 equals F01 and 2 equals F02. Typically, the <code>p_idx</code> parameter is constant for a given column.
<code>p_value</code>	Current value. This value should be a value in the <code>p_lov</code> parameter.
<code>p_lov</code>	Text name of a list of values. This list of values must be defined in your application. This parameter is used only by the <code>select_list_from_lov</code> function.
<code>p_attributes</code>	Extra HTML parameters you want to add.
<code>p_show_null</code>	Extra select option to enable the NULL selection. Range of values is YES and NO.
<code>p_null_value</code>	Value to be returned when a user selects the NULL option. Only relevant when <code>p_show_null</code> equals YES.
<code>p_null_text</code>	Value to be displayed when a user selects the NULL option. Only relevant when <code>p_show_null</code> equals YES.
<code>p_item_id</code>	HTML attribute ID for the <code><select></code> tag.
<code>p_item_label</code>	Invisible label created for the item.
<code>p_show_extra</code>	Shows the current value even if the value of <code>p_value</code> is not located in the select list.

Example

The following example demonstrates how to create a select list based on an LOV defined in the application.

```
SELECT APEX_ITEM.SELECT_LIST_FROM_LOV_XL(2,job,'JOB_FLOW_LOV') job  
FROM emp
```

SELECT_LIST_FROM_QUERY Function

This function dynamically generates a select list from a query. Similar to other functions available in the APEX_ITEM package, these select list functions are designed to generate forms with F01 to F50 form array elements.

Syntax

```
APEX_ITEM.SELECT_LIST_FROM_QUERY (
    p_idx          IN      NUMBER,
    p_value        IN      VARCHAR2 DEFAULT NULL,
    p_query        IN      VARCHAR2,
    p_attributes   IN      VARCHAR2 DEFAULT NULL,
    p_show_null    IN      VARCHAR2 DEFAULT 'YES',
    p_null_value   IN      VARCHAR2 DEFAULT '%NULL%',
    p_null_text    IN      VARCHAR2 DEFAULT '%',
    p_item_id      IN      VARCHAR2 DEFAULT NULL,
    p_item_label   IN      VARCHAR2 DEFAULT NULL,
    p_show_extra   IN      VARCHAR2 DEFAULT 'YES')
RETURN VARCHAR2;
```

Parameters

[Table 9–16](#) describes the parameters available in the SELECT_LIST_FROM_QUERY function.

Table 9–16 SELECT_LIST_FROM_QUERY Parameters

Parameter	Description
p_idx	Form element name. For example, 1 equals F01 and 2 equals F02. Typically, the p_idx parameter is constant for a given column.
p_value	Current value. This value should be a value in the p_query parameter.
p_query	SQL query that is expected to select two columns, a display column, and a return column. For example: SELECT dname, deptno FROM dept Note that this is used only by the SELECT_LIST_FROM_QUERY function. Also note, if only one column is specified in the select clause of this query, the value for this column will be used for both display and return purposes.
p_attributes	Extra HTML parameters you want to add.
p_show_null	Extra select option to enable the NULL selection. Range of values is YES and NO.
p_null_value	Value to be returned when a user selects the NULL option. Only relevant when p_show_null equals YES.
p_null_text	Value to be displayed when a user selects the NULL option. Only relevant when p_show_null equals YES.
p_item_id	HTML attribute ID for the <select> tag.
p_item_label	Invisible label created for the item.
p_show_extra	Show the current value even if the value of p_value is not located in the select list.

Example

The following example demonstrates a select list based on a SQL query.

```
SELECT APEX_ITEM.SELECT_LIST_FROM_QUERY(3,job,'SELECT DISTINCT job FROM emp') job  
FROM emp
```

SELECT_LIST_FROM_QUERY_XL Function

This function is the same as `SELECT_LIST_FROM_QUERY`, but its return value is a CLOB. This allows its use in SQL queries where you need to handle a column value longer than 4000 characters. Similar to other functions available in the `APEX_ITEM` package, these select list functions are designed to generate forms with F01 to F50 form array elements.

Syntax

```
APEX_ITEM.SELECT_LIST_FROM_QUERY_XL(
    p_idx          IN      NUMBER,
    p_value        IN      VARCHAR2 DEFAULT NULL,
    p_query        IN      VARCHAR2,
    p_attributes   IN      VARCHAR2 DEFAULT NULL,
    p_show_null    IN      VARCHAR2 DEFAULT 'YES',
    p_null_value   IN      VARCHAR2 DEFAULT '%NULL%',
    p_null_text    IN      VARCHAR2 DEFAULT '%',
    p_item_id      IN      VARCHAR2 DEFAULT NULL,
    p_item_label   IN      VARCHAR2 DEFAULT NULL,
    p_show_extra   IN      VARCHAR2 DEFAULT 'YES')
RETURN CLOB;
```

Parameters

[Table 9–17](#) describes the parameters available in the `SELECT_LIST_FROM_QUERY_XL` function.

Table 9–17 *SELECT_LIST_FROM_QUERY_XL Parameters*

Parameter	Description
<code>p_idx</code>	Form element name. For example, 1 equals F01 and 2 equals F02. Typically the <code>p_idx</code> parameter is constant for a given column.
<code>p_value</code>	Current value. This value should be a value in the <code>p_query</code> parameter.
<code>p_query</code>	SQL query that is expected to select two columns, a display column, and a return column. For example: SELECT dname, deptno FROM dept Note that this is used only by the <code>SELECT_LIST_FROM_QUERY_XL</code> function. Also note, if only one column is specified in the select clause of this query, the value for this column will be used for both display and return purposes.
<code>p_attributes</code>	Extra HTML parameters you want to add.
<code>p_show_null</code>	Extra select option to enable the NULL selection. Range of values is YES and NO.
<code>p_null_value</code>	Value to be returned when a user selects the NULL option. Only relevant when <code>p_show_null</code> equals YES.
<code>p_null_text</code>	Value to be displayed when a user selects the NULL option. Only relevant when <code>p_show_null</code> equals YES.
<code>p_item_id</code>	HTML attribute ID for the <select> tag.
<code>p_item_label</code>	Invisible label created for the item.

Table 9–17 (Cont.) SELECT_LIST_FROM_QUERY_XL Parameters

Parameter	Description
p_show_extra	Show the current value even if the value of p_value is not located in the select list.

Example

The following example demonstrates a select list based on a SQL query.

```
SELECT APEX_ITEM.SELECT_LIST_FROM_QUERY_XL(3,job,'SELECT DISTINCT job FROM  
emp') job  
FROM emp
```


TEXT Function

This function generates text fields (or text input form items) from a SQL query.

Syntax

```
APEX_ITEM.TEXT(
    p_idx          IN      NUMBER,
    p_value         IN      VARCHAR2 DEFAULT NULL,
    p_size          IN      NUMBER DEFAULT NULL,
    p_maxlength     IN      NUMBER DEFAULT NULL,
    p_attributes    IN      VARCHAR2 DEFAULT NULL,
    p_item_id       IN      VARCHAR2 DEFAULT NULL,
    p_item_label    IN      VARCHAR2 DEFAULT NULL)
RETURN VARCHAR2;
```

Parameters

[Table 9–18](#) describes the parameters available in the TEXT function.

Table 9–18 TEXT Parameters

Parameter	Description
p_idx	Number to identify the item you want to generate. The number will determine which G_FXX global is populated. See Also: "APEX_APPLICATION" on page 1-1
p_value	Value of a text field item.
p_size	Controls HTML tag attributes (such as disabled).
p_maxlength	Maximum number of characters that can be entered in the text box.
p_attributes	Extra HTML parameters you want to add.
p_item_id	HTML attribute ID for the <input> tag.
p_item_label	Invisible label created for the item.

Example

The following sample query demonstrates how to generate one update field for each row. Note that the `ename`, `sal`, and `comm` columns use the `APEX_ITEM.TEXT` function to generate an HTML text field for each row. Also, notice that each item in the query is passed a unique `p_idx` parameter to ensure that each column is stored in its own array.

```
SELECT
    empno,
    APEX_ITEM.HIDDEN(1, empno) ||
    APEX_ITEM.TEXT(2, ename) ename,
    APEX_ITEM.TEXT(3, job) job,
    mgr,
    APEX_ITEM.DATE_POPUP(4, rownum, hiredate, 'dd-mon-yyyy') hiredate,
    APEX_ITEM.TEXT(5, sal) sal,
    APEX_ITEM.TEXT(6, comm) comm,
    deptno
FROM emp
ORDER BY 1
```

TEXTAREA Function

This function creates text areas.

Syntax

```
APEX_ITEM.TEXTAREA(  
    p_idx          IN    NUMBER,  
    p_value        IN    VARCHAR2 DEFAULT NULL,  
    p_rows         IN    NUMBER DEault 40,  
    p_cols         IN    NUMBER DEFAULT 4,  
    p_attributes   IN    VARCHAR2 DEFAULT NULL,  
    p_item_id      IN    VARCHAR2 DEFAULT NULL,  
    p_item_label   IN    VARCHAR2 DEFAULT NULL)  
RETURN VARCHAR2;
```

Parameters

Table 9–19 describes the parameters available in the TEXTAREA function.

Table 9–19 TEXTAREA Parameters

Parameter	Description
p_idx	Number to identify the item you want to generate. The number will determine which G_FXX global is populated. See Also: "APEX_APPLICATION" on page 1-1
p_value	Value of the text area item.
p_rows	Height of the text area (HTML rows attribute)
p_cols	Width of the text area (HTML column attribute).
p_attributes	Extra HTML parameters you want to add.
p_item_id	HTML attribute ID for the <textarea> tag.
p_item_label	Invisible label created for the item.

Example

The following example demonstrates how to create a text area based on a SQL query.

```
SELECT APEX_ITEM.TEXTAREA(3,ename,5,80) a  
FROM emp
```

TEXT_FROM_LOV Function

Use this function to display an item as text, deriving the display value of the named LOV.

Syntax

```
APEX_ITEM.TEXT_FROM_LOV (
    p_value      IN    VARCHAR2 DEFAULT NULL,
    p_lov        IN    VARCHAR2,
    p_null_text  IN    VARCHAR2 DEFAULT '%' )
RETURN VARCHAR2;
```

Parameters

[Table 9–20](#) describes the parameters available in the TEXT_FROM_LOV function.

Table 9–20 TEXT_FROM_LOV Parameters

Parameter	Description
p_value	Value of a field item. Note that if p_value is not located in the list of values, p_null_text is value displayed.
p_lov	Text name of a shared list of values. This list of values must be defined in your application.
p_null_text	Value displayed when the value of the field item is NULL.

Example

The following example demonstrates how to derive the display value from a named LOV (EMPNO_ENAME_LOV).

```
SELECT APEX_ITEM.TEXT_FROM_LOV(empno, 'EMPNO_ENAME_LOV') c FROM emp
```

TEXT_FROM_LOV_QUERY Function

Use this function to display an item as text, deriving the display value from a list of values query.

Syntax

```
APEX_ITEM.TEXT_FROM_LOV_QUERY (  
    p_value      IN    VARCHAR2 DEFAULT NULL,  
    p_query      IN    VARCHAR2,  
    p_null_text  IN    VARCHAR2 DEFAULT '%')  
RETURN VARCHAR2;
```

Parameters

[Table 9–21](#) describes the parameters available in the TEXT_FROM_LOV_QUERY function.

Table 9–21 TEXT_FROM_LOV_QUERY Parameters

Parameter	Description
p_value	Value of a field item.
p_query	SQL query that is expected to select two columns, a display column and a return column. For example: SELECT dname, deptno FROM dept Note if only one column is specified in the select clause of this query, the value for this column will be used for both display and return purposes.
p_null_text	Value to be displayed when the value of the field item is NULL or a corresponding entry is not located for the value p_value in the list of values query.

Example

The following example demonstrates how to derive the display value from a query.

```
SELECT APEX_ITEM.TEXT_FROM_LOV_QUERY(empno, 'SELECT ename, empno FROM emp') c from  
emp
```

APEX_JAVASCRIPT

The APEX_JAVASCRIPT package provides utility functions for adding dynamic JavaScript code to HTTP output. This package is usually used for plug-in development.

Topics:

- [ADD_ATTRIBUTE Function Signature 1](#)
- [ADD_ATTRIBUTE Function Signature 2](#)
- [ADD_ATTRIBUTE Function Signature 3](#)
- [ADD_ATTRIBUTE Function Signature 4](#)
- [ADD_INLINE_CODE Procedure](#)
- [ADD_LIBRARY Procedure](#)
- [ADD_ONLOAD_CODE Procedure](#)
- [ADD_VALUE Function Signature 1](#)
- [ADD_VALUE Function Signature 2](#)
- [ADD_VALUE Function Signature 3](#)
- [ADD_VALUE Function Signature 4](#)
- [Escape Function](#)

ADD_ATTRIBUTE Function Signature 1

This function returns the attribute and the attribute's escaped text surrounded by double quotes.

Note: This function does not escape HTML tags. It only prevents HTML tags from breaking the JavaScript object attribute assignment. To prevent XSS (cross site scripting) attacks, you must also call `SYS.HTF.ESCAPE_SC` to prevent embedded JavaScript code from being executed when you inject the string into the HTML page.

Syntax

```
APEX_JAVASCRIPT.ADD_ATTRIBUTE (  
    p_name      IN VARCHAR2,  
    p_value     IN VARCHAR2,  
    p_omit_null IN BOOLEAN:=TRUE,  
    p_add_comma IN BOOLEAN:=TRUE)  
RETURN VARCHAR2;
```

Parameters

[Table 10–1](#) describes the parameters available in the ADD_ATTRIBUTE function signature 1.

Table 10–1 ADD_ATTRIBUTE Signature 1 Parameters

Parameter	Description
p_name	Name of the JavaScript object attribute.
p_value	Text to be assigned to the JavaScript object attribute.
p_omit_null	If set to TRUE and p_value is empty, returns NULL.
p_add_comma	If set to TRUE, a trailing comma is added when a value is returned.

Example

Adds a call to the addEmployee JavaScript function and passes in a JavaScript object with different attribute values. The output of this call will look like:

```
addEmployee(  
    {"FirstName": "John",  
     "LastName": "Doe",  
     "Salary": 2531.29,  
     "Birthday": new Date(1970,1,15,0,0,0),  
     "isSalesman": true  
});
```

As the last attribute you should use the parameter combination FALSE (p_omit_null), FALSE (p_add_comma) so that the last attribute is always generated. This avoids that you have to check for the other parameters if a trailing comma should be added or not.

```
apex_javascript.add_onload_code (  
    'addEmployee('||  
        '{'||  
        apex_javascript.add_attribute('FirstName', sys.htf.escape_sc(l_first_
```

```
name)||  
    apex_javascript.add_attribute('LastName',    sys.htf.escape_sc(l_last_  
name)||  
    apex_javascript.add_attribute('Salary',      l_salary)||  
    apex_javascript.add_attribute('Birthday',    l_birthday)||  
    apex_javascript.add_attribute('isSalesman',  l_is_salesman, false, false)||  
    '});' );
```

ADD_ATTRIBUTE Function Signature 2

This function returns the attribute and the attribute's number.

Syntax

```
APEX_JAVASCRIPT.ADD_ATTRIBUTE (  
    p_name      IN VARCHAR2,  
    p_value     IN NUMBER,  
    p_omit_null IN BOOLEAN:=TRUE,  
    p_add_comma IN BOOLEAN:=TRUE)  
RETURN VARCHAR2;
```

Parameters

[Table 10-2](#) describes the parameters available in the ADD_ATTRIBUTE function signature 2.

Table 10-2 ADD_ATTRIBUTE Signature 2 Parameters

Parameter	Description
p_name	Name of the JavaScript object attribute.
p_value	Number which should be assigned to the JavaScript object attribute.
p_omit_null	If set to TRUE and p_value is empty, returns NULL.
p_add_comma	If set to TRUE, a trailing comma is added when a value is returned.

Example

See example for [ADD_ATTRIBUTE Function Signature 1](#) on page 10-2.

ADD_ATTRIBUTE Function Signature 3

This function returns the attribute and a JavaScript boolean of true, false, or null.

Syntax

```
APEX_JAVASCRIPT.ADD_ATTRIBUTE (
    p_name      IN VARCHAR2,
    p_value     IN BOOLEAN,
    p_omit_null IN BOOLEAN:=TRUE,
    p_add_comma IN BOOLEAN:=TRUE)
RETURN VARCHAR2;
```

Parameters

[Table 10-3](#) describes the parameters available in the ADD_ATTRIBUTE function signature 3.

Table 10-3 ADD_ATTRIBUTE Signature 3 Parameters

Parameter	Description
p_name	Name of the JavaScript object attribute.
p_value	Boolean assigned to the JavaScript object attribute.
p_omit_null	If p_omit_null is TRUE and p_value is NULL the function returns NULL.
p_add_comma	If set to TRUE a trailing comma is added when a value is returned.

Example

See example for [ADD_ATTRIBUTE Function Signature 1](#) on page 10-2

ADD_ATTRIBUTE Function Signature 4

This function returns the attribute and the attribute's date. If p_value is null the value null is returned.

Syntax

```
APEX_JAVASCRIPT.ADD_ATTRIBUTE (  
    p_name          IN VARCHAR2,  
    p_value         IN DATE,  
    p_omit_null     IN BOOLEAN:=TRUE,  
    p_add_comma     IN BOOLEAN:=TRUE)  
RETURN VARCHAR2;
```

Parameters

[Table 10–4](#) describes the parameters available in the ADD_ATTRIBUTE function signature 4.

Table 10–4 ADD_ATTRIBUTE Signature 4 Parameters

Parameter	Description
p_name	Name of the JavaScript object attribute.
p_value	Date assigned to the JavaScript object attribute.
p_omit_null	If p_omit_null is TRUE and p_value is NULL the function returns NULL.
p_add_comma	If set to TRUE a trailing comma is added when a value is returned.

Example

See example for [ADD_ATTRIBUTE Function Signature 1](#) on page 10-2

ADD_INLINE_CODE Procedure

This procedure adds a code snippet that is included inline into the HTML output. For example, you can use this procedure to add new functions or global variable declarations. If you want to execute code you should use [ADD_ONLOAD_CODE Procedure](#).

Syntax

```
APEX_JAVASCRIPT.ADD_INLINE_CODE (
    p_code      IN VARCHAR2,
    p_key       IN VARCHAR2 DEFAULT NULL);
```

Parameters

[Table 10–5](#) describes the parameters available in the ADD_INLINE_CODE procedure.

Table 10–5 ADD_INLINE_CODE Parameters

Parameter	Description
p_code	JavaScript code snippet. For example: <code>\$s('P1_TEST',123);</code>
p_key	Identifier for the code snippet. If specified and a code snippet with the same name has already been added the new code snippet will be ignored. If p_key is NULL the snippet will always be added.

Example

The following example includes the JavaScript function `initMySuperWidget` in the HTML output. If the plug-in is used multiple times on the page and the `add_inline_code` is called multiple times, it is added once to the HTML output because all calls have the same value for `p_key`.

```
apex_javascript.add_inline_code (
    p_code => 'function initMySuperWidget(){'|chr(10)||
              '  // do something'|chr(10)||
              '};',
    p_key  => 'my_super_widget_function' );
```

ADD_LIBRARY Procedure

This procedure adds the script tag to load a JavaScript library. If a library has been added it will not be added a second time.

Syntax

```
APEX_JAVASCRIPT.ADD_LIBRARY (
    p_name          IN VARCHAR2,
    p_directory     IN VARCHAR2,
    p_version       IN VARCHAR2 DEFAULT NULL,
    p_check_to_add_minified IN BOOLEAN DEFAULT FALSE,
    p_skip_extension IN BOOLEAN  DEFAULT FALSE,
    p_key           IN VARCHAR2 DEFAULT NULL);
```

Parameters

Table 10–6 describes the parameters available in the ADD_LIBRARY procedure.

Table 10–6 ADD_LIBRARY Parameters

Parameter	Description
p_name	Name of the JavaScript file. Must not use .js when specifying.
p_directory	Directory where JavaScript library is loaded. Must have a trailing slash.
p_version	Version identifier.
p_check_to_add_minified	If TRUE, the procedure will test if it is appropriate to add .min extension and add it if appropriate. This will be added if an application is not running in DEBUG mode, and omitted when in DEBUG mode.
p_skip_extension	If TRUE the extension .js is NOT added.
p_key	Name used to indicate if the library has already been loaded. If not specified, defaults to p_directory p_name p_version.

Example

The following example includes the JavaScript library file named my_library.1.2.min.js (if the application is not running in DEBUG mode), or my_library.1.2.js (if the application is running in DEBUG mode), from the directory specified by p_plugin.file_prefix. The addition of the .min extension if the application is not running in DEBUG mode is carried out because p_check_to_add_minified is set to true. Since p_skip_extension is not specified, this defaults to .js. Also, since p_key is not specified, the key defaults to p_plugin.file_prefix|mylibrary.1.2.

```
apex_javascript.add_library (
    p_name          => 'mylibrary.1.2',
    p_directory     => p_plugin.file_prefix,
    p_check_to_add_minified => true );
```

ADD_ONLOAD_CODE Procedure

This procedure adds a javascript code snippet to the HTML output which is executed by the onload event. If an entry with the same key exists it will be ignored. If `p_key` is NULL the snippet will always be added.

Syntax

```
APEX_JAVASCRIPT.ADD_ONLOAD_CODE (
    p_code      IN VARCHAR2,
    p_key       IN VARCHAR2 DEFAULT NULL);
```

Parameters

[Table 10–7](#) describes the parameters available in the `ADD_ONLOAD_CODE` procedure.

Table 10–7 *ADD_ONLOAD_CODE Parameters*

Parameter	Description
<code>p_code</code>	Javascript code snippet to be executed during the onload event.
<code>p_key</code>	Any name to identify the specified code snippet. If specified, the code snippet is added if there has been no other call with the same <code>p_key</code> . If <code>p_key</code> is NULL the code snippet is always added.

Example

Adds the JavaScript call `initMySuperWidget()` to the onload buffer. If the plug-in is used multiple times on the page and the `add_onload_code` is called multiple times, it is added once to the HTML output because all calls have the same value for `p_key`

```
apex_javascript.add_onload_code (
    p_code => 'initMySuperWidget();'
    p_key  => 'my_super_widget' );
```

ADD_VALUE Function Signature 1

This function returns the escaped text surrounded by double quotes. For example, this string could be returned "That\'s a test".

Note: This function does not escape HTML tags. It only prevents HTML tags from breaking the JavaScript object attribute assignment. To prevent XSS (cross site scripting) attacks, you must also call `SYS.HTF.ESCAPE_SC` to prevent embedded JavaScript code from being executed when you inject the string into the HTML page.

Syntax

```
APEX_JAVASCRIPT.ADD_VALUE (  
    p_value          IN VARCHAR2,  
    p_add_comma      IN BOOLEAN :=TRUE)  
RETURN VARCHAR2;
```

Parameters

[Table 10–8](#) describes the parameters available in the ADD_VALUE signature 1 function.

Table 10–8 ADD_VALUE Signature 1 Parameters

Parameter	Description
p_value	Text to be escaped and wrapped by double quotes.
p_add_comma	If p_add_comma is TRUE a trailing comma is added.

Example

This example adds some JavaScript code to the onload buffer. The value of `p_item.attribute_01` is first escaped with `htf.escape_sc` to prevent XSS attacks and then assigned to the JavaScript variable `lTest` by calling `apex_javascript.add_value`. `Add_value` takes care of properly escaping the value and wrapping it into double quotes. Because commas are not wanted, `p_add_comma` is set to `FALSE`.

```
apex_javascript.add_onload_code (  
    'var lTest = '||apex_javascript.add_value(sys.htf.escape_sc(p_item.attribute_  
01), FALSE)||';'||chr(10)||  
    'showMessage(lTest);' );
```

ADD_VALUE Function Signature 2

This function returns `p_value` as JavaScript number, if `p_value` is NULL the value null is returned.

Syntax

```
APEX_JAVASCRIPT.ADD_VALUE (  
    p_value          IN NUMBER,  
    p_add_comma      IN BOOLEAN :=TRUE)  
RETURN VARCHAR2;
```

Parameters

[Table 10–8](#) describes the parameters available in the `ADD_VALUE` signature 2 function.

Table 10–9 *ADD_VALUE Signature 2 Parameters*

Parameter	Description
<code>p_value</code>	Number which should be returned as JavaScript number.
<code>p_add_comma</code>	If <code>p_add_comma</code> is TRUE a trailing comma is added. Default is TRUE.

Example

See example for [ADD_VALUE Function Signature 1](#) on page 10-10.

ADD_VALUE Function Signature 3

This function returns `p_value` as JavaScript boolean. If `p_value` is NULL the value null is returned.

Syntax

```
APEX_JAVASCRIPT.ADD_VALUE (  
    p_value          IN BOOLEAN,  
    p_add_comma      IN BOOLEAN :=TRUE)  
RETURN VARCHAR2;
```

Parameters

[Table 10–10](#) describes the parameters available in the `ADD_VALUE` signature 3 function.

Table 10–10 *ADD_VALUE Signature 3 Parameters*

Parameter	Description
<code>p_value</code>	Boolean which should be returned as JavaScript boolean.
<code>p_add_comma</code>	If <code>p_add_comma</code> is TRUE a trailing comma is added. Default is TRUE.

Example

See example for [ADD_VALUE Function Signature 1](#) on page 10-10.

ADD_VALUE Function Signature 4

This function returns p_value as JavaScript date object, if p_value is NULL the value null is returned.

Syntax

```
APEX_JAVASCRIPT.ADD_VALUE (  
    p_value          IN NUMBER,  
    p_add_comma      IN BOOLEAN :=TRUE)  
RETURN VARCHAR2;
```

Parameters

[Table 10–11](#) describes the parameters available in the ADD_VALUE signature 4 function.

Table 10–11 ADD_VALUE Signature 4 Parameters

Parameter	Description
p_value	Date which should be returned as JavaScript date object.
p_add_comma	If p_add_comma is TRUE a trailing comma is added. Default is TRUE.

Example

See example for [ADD_VALUE Function Signature 1](#) on page 10-10.

Escape Function

This function escapes text to be used in JavaScript. This function makes the following replacements:

Table 10–12 Table of Replacement Values

Replacement	After replacement
<	\u003c
>	\u003e
\	\\
/	\/
"	\u0022
'	\u0027
tab	\t
chr(10)	\n

Note: This function prevents HTML tags from breaking the JavaScript object attribute assignment and also escapes the HTML tags '<' and '>'. It does not escape other HTML tags, therefore to be sure to prevent XSS (cross site scripting) attacks, you must also call `SYS.HTF.ESCAPE_SC` to prevent embedded JavaScript code from being executed when you inject the string into the HTML page.

Syntax

```
APEX_JAVASCRIPT.ESCAPE (
    p_text IN VARCHAR2)
RETURN VARCHAR2;
```

Parameters

[Table 10–13](#) describes the parameters available in the `ESCAPE` function.

Table 10–13 ESCAPE Parameters

Parameter	Description
p_text	Text to be escaped.

Example

Adds some JavaScript code to the onload buffer. The value of `p_item.attribute_01` is first escaped with `htf.escape_sc` to prevent XSS attacks and then escaped with `apex_javascript.escape` to prevent that special characters like a quote break the JavaScript code.

```
apex_javascript.add_onload_code (
    'var lTest = "' || apex_javascript.escape(sys.htf.escape_sc(p_item.attribute_
01)) || '" ;' || chr(10) ||
    'showMessage(lTest);' );
```

You can use APEX_LANG API to translate messages.

Topics:

- [LANG Function](#)
- [MESSAGE Function](#)

LANG Function

This function is used to return a translated text string for translations defined in dynamic translations.

Syntax

```
APEX_LANG.LANG (
    p_primary_text_string IN VARCHAR2 DEFAULT NULL,
    p0 IN VARCHAR2 DEFAULT NULL,
    p1 IN VARCHAR2 DEFAULT NULL,
    p2 IN VARCHAR2 DEFAULT NULL,
    ...
    p9 IN VARCHAR2 DEFAULT NULL,
    p_primary_language IN VARCHAR2 DEFAULT NULL)
RETURN VARCHAR2;
```

Parameters

[Table 11–1](#) describes the parameters available in the APEX_LANG.LANG function.

Table 11–1 LANG Parameters

Parameter	Description
p_primary_text_string	Text string of the primary language. This will be the value of the Translate From Text in the dynamic translation.
p0 through p9	Dynamic substitution value: p0 corresponds to 0% in the translation string; p1 corresponds to 1% in the translation string; p2 corresponds to 2% in the translation string, and so on.
p_primary_language	Language code for the message to be retrieved. If not specified, Oracle Application Express uses the current language for the user as defined in the Application Language Derived From attribute. See also: Specifying the Primary Language for an Application in the <i>Oracle Application Express Application Builder User's Guide</i> .

Example

Suppose you have a table that defines all primary colors. You could define a dynamic message for each color and then apply the LANG function to the defined values in a query. For example:

```
SELECT APEX_LANG.LANG(color)
FROM my_colors
```

If you were running the application in German, RED was a value for the color column in the my_colors table, and you defined the German word for red, the previous example would return ROT.

MESSAGE Function

Use this function to translate text strings (or messages) generated from PL/SQL stored procedures, functions, triggers, packaged procedures, and functions.

Syntax

```
APEX_LANG.MESSAGE (
    p_name IN VARCHAR2 DEFAULT NULL,
    p0 IN VARCHAR2 DEFAULT NULL,
    p1 IN VARCHAR2 DEFAULT NULL,
    p2 IN VARCHAR2 DEFAULT NULL,
    ...
    p9 IN VARCHAR2 DEFAULT NULL,
    p_lang IN VARCHAR2 DEFAULT NULL)
RETURN VARCHAR2;
```

Parameters

[Table 11–2](#) describes the parameters available in the APEX_LANG.MESSAGE function.

Table 11–2 MESSAGE Parameters

Parameter	Description
p_name	Name of the message as defined in Shared Components > Text Messages of your application in Oracle Application Express.
p0 through p9	Dynamic substitution value: p0 corresponds to 0% in the translation string; p1 corresponds to 1% in the translation string; p2 corresponds to 2% in the translation string, and so on.
p_lang	Language code for the message to be retrieved. If not specified, Oracle Application Express uses the current language for the user as defined in the Application Language Derived From attribute. See also: Specifying the Primary Language for an Application in the <i>Oracle Application Express Application Builder User's Guide</i> .

Example

The following example assumes you have defined a message called GREETING_MSG in your application in English as Good morning%0 and in German as Guten Tag%1. The following example demonstrates how you could invoke this message from PL/SQL:

```
BEGIN
--
-- Print the greeting
--
APEX_LANG.MESSAGE('GREETING_MSG', V('APP_USER'));
END;
```

How the p_lang attribute is defined depends on how the Application Express engine derives the Application Primary Language. For example, if you are running the application in German and the previous call is made to the APEX_LANG.MESSAGE API, the Application Express engine first looks for a message called GREETING_MSG with a LANG_CODE of de. If it does not find anything, then it will revert to the Application Primary Language attribute. If it still does not find anything, the

Application Express engine looks for a message by this name with a language code of en.

See also: Specifying the Primary Language for an Application in the *Oracle Application Express Application Builder User's Guide*.

You can use APEX_LDAP to perform various operations related to Lightweight Directory Access Protocol (LDAP) authentication.

Topics:

- [AUTHENTICATE Function](#)
- [GET_ALL_USER_ATTRIBUTES Procedure](#)
- [GET_USER_ATTRIBUTES Procedure](#)
- [IS_MEMBER Function](#)
- [MEMBER_OF Function](#)
- [MEMBER_OF2 Function](#)

AUTHENTICATE Function

The AUTHENTICATE function returns a boolean true if the user name and password can be used to perform a SIMPLE_BIND_S, call using the provided search base, host, and port.

Syntax

```
APEX_LDAP.AUTHENTICATE(  
    p_username      IN VARCHAR2 DEFAULT NULL,  
    p_password      IN VARCHAR2 DEFAULT NULL,  
    p_search_base   IN VARCHAR2,  
    p_host          IN VARCHAR2,  
    p_port          IN VARCHAR2 DEFAULT 389,  
    p_use_ssl       IN VARCHAR2 DEFAULT 'N')  
RETURN BOOLEAN;
```

Parameters

[Table 12–1](#) describes the parameters available in the AUTHENTICATE function.

Table 12–1 AUTHENTICATE Parameters

Parameter	Description
p_username	Login name of the user.
p_password	Password for p_username.
p_search_base	LDAP search base, for example, dc=users,dc=my,dc=org.
p_host	LDAP server host name.
p_port	LDAP server port number.
p_use_ssl	Set to 'Y' to use SSL in bind to LDAP server. Set to 'A' to use SSL with one way authentication (requires LDAP server certificate configured in an Oracle wallet). Set to 'N' to not use SSL (default).

Example

The following example demonstrates how to use the APEX_LDAP.AUTHENTICATE function to verify user credentials against an LDAP Server.

```
IF APEX_LDAP.AUTHENTICATE(  
    p_username =>'firstname.lastname',  
    p_password =>'abcdef',  
    p_search_base =>'cn=user,l=amer,dc=my_company,dc=com',  
    p_host =>'our_ldap_sever.my_company.com',  
    p_port =>389) THEN  
    dbms_output.put_line('authenticated');  
ELSE  
    dbms_output.put_line('authentication failed');  
END IF;
```


GET_ALL_USER_ATTRIBUTES Procedure

The `GET_ALL_USER_ATTRIBUTES` procedure returns two OUT arrays of `user_` attribute names and values for the user name designated by `p_username` (with password if required) using the provided auth base, host, and port.

Syntax

```
APEX_LDAP.GET_ALL_USER_ATTRIBUTES(
    p_username      IN VARCHAR2 DEFAULT NULL,
    p_pass          IN VARCHAR2 DEFAULT NULL,
    p_auth_base     IN VARCHAR2 DEFAULT NULL,
    p_host          IN VARCHAR2,
    p_port          IN VARCHAR2 DEFAULT 389,
    p_use_ssl       IN VARCHAR2 DEFAULT 'N',
    p_attributes     OUT wwv_flow_global.vc_arr2,
    p_attribute_values OUT wwv_flow_global.vc_arr2);
```

Parameters

[Table 12–2](#) describes the parameters for the `GET_ALL_USER_ATTRIBUTES` procedure.

Table 12–2 *GET_ALL_USER_ATTRIBUTES Parameters*

Parameter	Description
<code>p_username</code>	Login name of the user.
<code>p_pass</code>	Password for <code>p_username</code> .
<code>p_auth_base</code>	LDAP search base, for example, <code>dc=users,dc=my,dc=org</code> .
<code>p_host</code>	LDAP server host name.
<code>p_port</code>	LDAP server port number.
<code>p_use_ssl</code>	Set to 'Y' to use SSL in bind to LDAP server. Set to 'A' to use SSL with one way authentication (requires LDAP server certificate configured in an Oracle wallet). Set to 'N' to not use SSL (default).
<code>p_attributes</code>	An array of attribute names returned.
<code>p_attribute_values</code>	An array of values returned for each corresponding attribute name returned in <code>p_attributes</code> .

Example

The following example demonstrates how to use the `APEX_LDAP.GET_ALL_USER_ATTRIBUTES` procedure to retrieve all attribute value's associated to a user.

```
DECLARE
    L_ATTRIBUTES      wwv_flow_global.vc_arr2;
    L_ATTRIBUTE_VALUES wwv_flow_global.vc_arr2;
BEGIN
    APEX_LDAP.GET_ALL_USER_ATTRIBUTES(
        p_username      => 'firstname.lastname',
        p_pass          => 'abcdef',
        p_auth_base     => 'cn=user,l=amer,dc=my_company,dc=com',
        p_host          => 'our_ldap_sever.my_company.com',
        p_port          => '389',
        p_attributes     => L_ATTRIBUTES,
        p_attribute_values => L_ATTRIBUTE_VALUES);
```

```
FOR i IN L_ATTRIBUTES.FIRST..L_ATTRIBUTES.LAST LOOP
    http.p('attribute name: ' || L_ATTRIBUTES(i));
    http.p('attribute value: ' || L_ATTRIBUTE_VALUES(i));
END LOOP;
END;
```

GET_USER_ATTRIBUTES Procedure

The GET_USER_ATTRIBUTES procedure returns an OUT array of user_attribute values for the user name designated by p_username (with password if required) corresponding to the attribute names passed in p_attributes using the provided auth base, host, and port.

Syntax

```
APEX_LDAP.GET_USER_ATTRIBUTES(
    p_username      IN VARCHAR2 DEFAULT NULL,
    p_pass          IN VARCHAR2 DEFAULT NULL,
    p_auth_base     IN VARCHAR2,
    p_host          IN VARCHAR2,
    p_port          IN VARCHAR2 DEFAULT 389,
    p_use_ssl       IN VARCHAR2 DEFAULT 'N',
    p_attributes    IN wwv_flow_global.vc_arr2,
    p_attribute_values OUT wwv_flow_global.vc_arr2);
```

Parameters

Table 12–3 describes the parameters available in the GET_USER_ATTRIBUTES procedure.

Table 12–3 GET_USER_ATTRIBUTES Parameters

Parameter	Description
p_username	Login name of the user.
p_pass	Password for p_username.
p_auth_base	LDAP search base, for example, dc=users,dc=my,dc=org.
p_host	LDAP server host name.
p_port	LDAP server port number.
p_use_ssl	Set to 'Y' to use SSL in bind to LDAP server. Set to 'A' to use SSL with one way authentication (requires LDAP server certificate configured in an Oracle wallet). Set to 'N' to not use SSL (default).
p_attributes	An array of attribute names for which values are to be returned.
p_attribute_values	An array of values returned for each corresponding attribute name in p_attributes.

Example

The following example demonstrates how to use the APEX_LDAP.GET_USER_ATTRIBUTES procedure to retrieve a specific attribute value associated to a user.

```
DECLARE
    L_ATTRIBUTES wwv_flow_global.vc_arr2;
    L_ATTRIBUTE_VALUES wwv_flow_global.vc_arr2;
BEGIN
    L_ATTRIBUTES(1) := 'xxxxxxxxx'; /* name of the employee number attribute */
    APEX_LDAP.GET_USER_ATTRIBUTES(
        p_username => 'firstname.lastname',
        p_pass => NULL,
        p_auth_base => 'cn=user,l=amer,dc=my_company,dc=com',
        p_host => 'our_ldap_sever.my_company.com',
        p_port => '389',
```

```
        p_attributes => L_ATTRIBUTES,  
        p_attribute_values => L_ATTRIBUTE_VALUES);  
END;
```

IS_MEMBER Function

The `IS_MEMBER` function returns a boolean true if the user named by `p_username` (with password if required) is a member of the group specified by the `p_group` and `p_group_base` parameters using the provided auth base, host, and port.

Syntax

```
APEX_LDAP.IS_MEMBER (
    p_username      IN VARCHAR2,
    p_pass          IN VARCHAR2 DEFAULT NULL,
    p_auth_base     IN VARCHAR2,
    p_host          IN VARCHAR2,
    p_port          IN VARCHAR2 DEFAULT 389,
    p_use_ssl       IN VARCHAR2 DEFAULT 'N',
    p_group         IN VARCHAR2,
    p_group_base    IN VARCHAR2)
RETURN BOOLEAN;
```

Parameters

[Table 12–4](#) describes the parameters available in the `IS_MEMBER` function.

Table 12–4 *IS_MEMBER Parameters*

Parameter	Description
<code>p_username</code>	Login name of the user.
<code>p_pass</code>	Password for <code>p_username</code> .
<code>p_auth_base</code>	LDAP search base, for example, <code>dc=users,dc=my,dc=org</code> .
<code>p_host</code>	LDAP server host name.
<code>p_port</code>	LDAP server port number.
<code>p_use_ssl</code>	Set to 'Y' to use SSL in bind to LDAP server. Set to 'A' to use SSL with one way authentication (requires LDAP server certificate configured in an Oracle wallet). Set to 'N' to not use SSL.
<code>p_group</code>	Name of the group to be search for membership.
<code>p_group_base</code>	The base from which the search should be started.

Example

The following example demonstrates how to use the `APEX_LDAP.IS_MEMBER` function to verify whether a user is a member of a group against an LDAP server.

```
DECLARE
    L_VAL boolean;
BEGIN
    L_VAL := APEX_LDAP.IS_MEMBER (
        p_username => 'firstname.lastname',
        p_pass => 'abcdef',
        p_auth_base => 'cn=user,l=amer,dc=my_company,dc=com',
        p_host => 'our_ldap_sever.my_company.com',
        p_port => 389,
        p_group => 'group_name',
        p_group_base => 'group_base');
    IF L_VAL THEN
        http.p('Is a member.');
```

```
ELSE  
    http.p('Not a member.');
```

END IF;

END;

MEMBER_OF Function

The `MEMBER_OF` function returns an array of groups the user name designated by `p_username` (with password if required) belongs to, using the provided auth base, host, and port.

Syntax

```
APEX_LDAP.MEMBER_OF (
    p_username    IN VARCHAR2 DEFAULT NULL,
    p_pass        IN VARCHAR2 DEFAULT NULL,
    p_auth_base   IN VARCHAR2,
    p_host        IN VARCHAR2,
    p_port        IN VARCHAR2 DEFAULT 389,
    p_use_ssl     IN VARCHAR2 DEFAULT 'N')
RETURN wwv_flow_global.vc_arr2;
```

Parameters

[Table 12–5](#) describes the parameters available in the `MEMBER_OF` function.

Table 12–5 MEMBER_OF Parameters

Parameter	Description
<code>p_username</code>	Login name of the user.
<code>p_pass</code>	Password for <code>p_username</code> .
<code>p_auth_base</code>	LDAP search base, for example, <code>dc=users,dc=my,dc=org</code> .
<code>p_host</code>	LDAP server host name.
<code>p_port</code>	LDAP server port number.
<code>p_use_ssl</code>	Set to 'Y' to use SSL in bind to LDAP server. Set to 'A' to use SSL with one way authentication (requires LDAP server certificate configured in an Oracle wallet). Set to 'N' to not use SSL (default).

Example

The following example demonstrates how to use the `APEX_LDAP.MEMBER_OF` function to retrieve all the groups designated by the specified username.

```
DECLARE
    L_MEMBERSHIP      wwv_flow_global.vc_arr2;
BEGIN
    L_MEMBERSHIP := APEX_LDAP.MEMBER_OF (
        p_username    => 'firstname.lastname',
        p_pass        => 'abcdef',
        p_auth_base   => 'cn=user,l=amer,dc=my_company,dc=com',
        p_host        => 'our_ldap_sever.my_company.com',
        p_port        => '389');
    FOR i IN L_MEMBERSHIP.FIRST..L_MEMBERSHIP.LAST LOOP
        http.p('Member of: '||L_MEMBERSHIP(i));
    END LOOP;
END;
```

MEMBER_OF2 Function

The `MEMBER_OF2` function returns a `VARCHAR2` colon delimited list of groups the user name designated by `p_username` (with password if required) belongs to, using the provided auth base, host, and port.

Syntax

```
APEX_LDAP.MEMBER_OF2(  
    p_username    IN VARCHAR2 DEFAULT NULL,  
    p_pass        IN VARCHAR2 DEFAULT NULL,  
    p_auth_base   IN VARCHAR2,  
    p_host        IN VARCHAR2,  
    p_port        IN VARCHAR2 DEFAULT 389,  
    p_use_ssl     IN VARCHAR2 DEFAULT 'N')  
RETURN VARCHAR2;
```

Parameters

[Table 12–6](#) describes the parameters available in the `MEMBER_OF2` function.

Table 12–6 *MEMBER_OF2 Parameters*

Parameter	Description
<code>p_username</code>	Login name of the user.
<code>p_pass</code>	Password for <code>p_username</code> .
<code>p_auth_base</code>	LDAP search base, for example, <code>dc=users,dc=my,dc=org</code> .
<code>p_host</code>	LDAP server host name.
<code>p_port</code>	LDAP server port number.
<code>p_use_ssl</code>	Set to 'Y' to use SSL in bind to LDAP server. Set to 'A' to use SSL with one way authentication (requires LDAP server certificate configured in an Oracle wallet). Set to 'N' to not use SSL (default).

Example

The following example demonstrates how to use the `APEX_LDAP.MEMBER_OF2` function to retrieve all the groups designated by the specified username.

```
DECLARE  
    L_VAL varchar2(4000);  
BEGIN  
    L_VAL := APEX_LDAP.MEMBER_OF2(  
        p_username => 'firstname.lastname',  
        p_pass => 'abcdef',  
        p_auth_base => 'cn=user,l=amer,dc=my_company,dc=com',  
        p_host => 'our_ldap_sever.my_company.com',  
        p_port => 389);  
    http.p('Is Member of:' || L_VAL);  
END;
```


You can use the APEX_MAIL package to send an email from an Oracle Application Express application. This package is built on top of the Oracle supplied UTL_SMTP package. Because of this dependence, the UTL_SMTP package must be installed and functioning in order to use APEX_MAIL.

See Also: *Oracle Database PL/SQL Packages and Types Reference* for more information about the UTL_SMTP package

APEX_MAIL contains three procedures. Use APEX_MAIL.SEND to send an outbound email message from your application. Use APEX_MAIL.PUSH_QUEUE to deliver mail messages stored in APEX_MAIL_QUEUE. Use APEX_MAIL.ADD_ATTACHMENT to send an outbound email message from your application as an attachment.

Topics:

- [About Configuring Oracle Application Express to Send Email](#)
- [ADD_ATTACHMENT Procedure](#)
- [PUSH_QUEUE Procedure](#)
- [SEND Procedure](#)

Note: The most efficient approach to sending email is to create a background job (using the DBMS_JOB or DBMS_SCHEDULER package) to periodically send all mail messages stored in the active mail queue. In order to call the APEX_MAIL package from outside the context of an Application Express application, you must call apex_util.set_security_group_id as in the following example:

```
for c1 in (
    select workspace_id
    from apex_applications
    where application_id = p_app_id )
loop
    apex_util.set_security_group_id(p_security_group_id =>
c1.workspace_id);
end loop;
```

See Also: "Sending Email from an Application" in *Oracle Application Express Application Builder User's Guide*

About Configuring Oracle Application Express to Send Email

Before you can send email from an Application Builder application, you must:

1. Log in to Oracle Application Express Administration Services and configure the email settings on the Instance Settings page. See in Oracle Application Express Administration Guide.
2. If you are running Oracle Application Express with Oracle Database 11g release 1 (11.1), you must enable outbound mail. In Oracle Database 11g release 1 (11.1), the ability to interact with network services is disabled by default. See "Enabling Network Services in Oracle Database 11g" in *Oracle Application Express Application Builder User's Guide*.

Tip: You can configure Oracle Application Express to automatically email users their login credentials when a new workspace request has been approved. To learn more, see "Specifying a Provisioning Mode" in *Oracle Application Express Administration Guide*.

ADD_ATTACHMENT Procedure

This procedure sends an outbound email message from an application as an attachment. To add multiple attachments to a single email, `APEX_MAIL.ADD_ATTACHMENT` can be called repeatedly for a single email message.

Syntax

```
APEX_MAIL.ADD_ATTACHMENT(
    p_mail_id          IN     NUMBER,
    p_attachment       IN     BLOB,
    p_filename         IN     VARCHAR2,
    p_mime_type        IN     VARCHAR2);
```

Parameters

[Table 13–1](#) describes the parameters available in the `ADD_ATTACHMENT` procedure.

Table 13–1 *ADD_ATTACHMENT Parameters*

Parameter	Description
<code>p_mail_id</code>	The numeric ID associated with the email. This is the numeric identifier returned from the call to <code>APEX_MAIL.SEND</code> to compose the email body.
<code>p_attachment</code>	A BLOB variable containing the binary content to be attached to the email message.
<code>p_filename</code>	The filename associated with the email attachment.
<code>p_mime_type</code>	A valid MIME type (or Internet media type) to associate with the email attachment.

Examples

The following example demonstrates how to access files stored in `APEX_APPLICATION_FILES` and add them to an outbound email message

```
DECLARE
    l_id NUMBER;
BEGIN
    l_id := APEX_MAIL.SEND(
        p_to      => 'fred@flintstone.com',
        p_from    => 'barney@rubble.com',
        p_subj    => 'APEX_MAIL with attachment',
        p_body    => 'Please review the attachment.',
        p_body_html => '<b>Please</b> review the attachment');
    FOR c1 IN (SELECT filename, blob_content, mime_type
               FROM APEX_APPLICATION_FILES
               WHERE ID IN (123,456)) LOOP
        APEX_MAIL.ADD_ATTACHMENT(
            p_mail_id  => l_id,
            p_attachment => c1.blob_content,
            p_filename  => c1.filename,
            p_mime_type => c1.mime_type);
    END LOOP;
    COMMIT;
END;
```

PUSH_QUEUE Procedure

Oracle Application Express stores unsent email messages in a table named `APEX_MAIL_QUEUE`. You can manually deliver mail messages stored in this queue to the specified SMTP gateway by invoking the `APEX_MAIL.PUSH_QUEUE` procedure.

Oracle Application Express logs successfully submitted message in the table `APEX_MAIL_LOG` with the timestamp reflecting your server's local time. Keep in mind, the most efficient approach to sending email is to create a background job (using a `DBMS_JOB` package) to periodically send all mail messages stored in the active mail queue.

See Also: "Sending an Email from an Application" in *Oracle Application Express Application Builder User's Guide*

Syntax

```
APEX_MAIL.PUSH_QUEUE(  
    p_smtp_hostname      IN    VARCHAR2 DEFAULT NULL,  
    p_smtp_portno        IN    NUMBER   DEFAULT NULL);
```

Parameters

[Table 13–2](#) describes the parameters available in the `PUSH_QUEUE` procedure.

Table 13–2 *PUSH_QUEUE Parameters*

Parameters	Description
<code>p_smtp_hostname</code>	SMTP gateway host name
<code>p_smtp_portno</code>	SMTP gateway port number

Note that these parameter values are provided for backward compatibility, but their respective values are ignored. The SMTP gateway hostname and SMTP gateway port number are exclusively derived from values entered on the Manage Environment Settings when sending email.

See Also: "Configuring Email Settings" in *Oracle Application Express Administration Guide*

Example

The following example demonstrates the use of the `APEX_MAIL.PUSH_QUEUE` procedure using a shell script. This example only applies to UNIX/LINUX installations.

```
SQLPLUS / <<EOF  
APEX_MAIL.PUSH_QUEUE;  
DISCONNECT  
EXIT  
EOF
```

See Also: "Sending Email from an Application" in *Oracle Application Express Application Builder User's Guide*

SEND Procedure

This procedure sends an outbound email message from an application. Although you can use this procedure to pass in either a VARCHAR2 or a CLOB to `p_body` and `p_body_html`, the data types must be the same. In other words, you cannot pass a CLOB to `P_BODY` and a VARCHAR2 to `p_body_html`.

When using `APEX_MAIL.SEND`, remember the following:

- **No single line may exceed 1000 characters.** The SMTP/MIME specification dictates that no single line shall exceed 1000 characters. To comply with this restriction, you must add a carriage return or line feed characters to break up your `p_body` or `p_body_html` parameters into chunks of 1000 characters or less. Failing to do so will result in erroneous email messages, including partial messages or messages with extraneous exclamation points.
- **Plain text and HTML email content.** Passing a value to `p_body`, but not `p_body_html` results in a plain text message. Passing a value to `p_body` and `p_body_html` yields a multi-part message that includes both plain text and HTML content. The settings and capabilities of the recipient's email client determine what displays. Although most modern email clients can read an HTML formatted email, remember that some users disable this functionality to address security issues.
- **Avoid images.** When referencing images in `p_body_html` using the `` tag, remember that the images must be accessible to the recipient's email client in order for them to see the image.

For example, suppose you reference an image on your network called `hello.gif` as follows:

```

```

In this example, the image is not attached to the email, but is referenced by the email. For the recipient to see it, they must be able to access the image using a Web browser. If the image is inside a firewall and the recipient is outside of the firewall, the image will not display. For this reason, avoid using images. If you must include images, be sure to include the ALT attribute to provide a textual description in the event the image is not accessible.

Syntax

```
APEX_MAIL.SEND(
    p_to           IN    VARCHAR2,
    p_from         IN    VARCHAR2,
    p_body         IN    [ VARCHAR2 | CLOB ],
    p_body_html    IN    [ VARCHAR2 | CLOB ] DEFAULT NULL,
    p_subj         IN    VARCHAR2 DEFAULT NULL,
    p_cc           IN    VARCHAR2 DEFAULT NULL,
    p_bcc          IN    VARCHAR2 DEFAULT NULL,
    p_replyto      IN    VARCHAR2);
```

Parameters

[Table 13–3](#) describes the parameters available in the `SEND` procedure.

Table 13–3 SEND Parameters

Parameter	Description
p_to	Valid email address to which the email will be sent (required). For multiple email addresses, use a comma-separated list
p_from	Email address from which the email will be sent (required). This email address must be a valid address. Otherwise, the message will not be sent
p_body	Body of the email in plain text, not HTML (required). If a value is passed to p_body_html, then this is the only text the recipient sees. If a value is not passed to p_body_html, then this text only displays for email clients that do not support HTML or have HTML disabled. A carriage return or line feed (CRLF) must be included every 1000 characters.
p_body_html	Body of the email in HTML format. This must be a full HTML document including the <html> and <body> tags. A single line cannot exceed 1000 characters without a carriage return or line feed (CRLF)
p_subj	Subject of the email
p_cc	Valid email addresses to which the email is copied. For multiple email addresses, use a comma-separated list
p_bcc	Valid email addresses to which the email is blind copied. For multiple email addresses, use a comma-separated list
p_replyto	Address of the Reply-To mail header. You can use this parameter as follows: <ul style="list-style-type: none"> ■ If you omit the p_replyto parameter, the Reply-To mail header is set to the value specified in the p_from parameter ■ If you include the p_replyto parameter, but provide a NULL value, the Reply-To mail header is set to NULL. This results in the suppression of automatic email replies ■ If you include p_replyto parameter, but provide a non-null value (for example, a valid email address), you will send these messages, but the automatic replies will go to the value specified (for example, the email address)

Examples

The following example demonstrates how to use APEX_MAIL.SEND to send a plain text email message from an application.

```
-- Example One: Plain Text only message
DECLARE
    l_body      CLOB;
BEGIN
    l_body := 'Thank you for your interest in the APEX_MAIL
package.'||utl_tcp.crlf||utl_tcp.crlf;
    l_body := l_body || ' Sincerely,'||utl_tcp.crlf;
    l_body := l_body || ' The APEX Dev Team'||utl_tcp.crlf;
    apex_mail.send(
        p_to      => 'some_user@somewhere.com',    -- change to your email address
        p_from    => 'some_sender@somewhere.com', -- change to a real senders
        email address
        p_body    => l_body,
        p_subj    => 'APEX_MAIL Package - Plain Text message');
END;
/
```

The following example demonstrates how to use `APEX_MAIL.SEND` to send an HTML email message from an application. Remember, you must include a carriage return or line feed (CRLF) every 1000 characters. The example that follows uses `utl_tcp.crlf`.

```
-- Example Two: Plain Text / HTML message
DECLARE
    l_body          CLOB;
    l_body_html     CLOB;
BEGIN
    l_body := 'To view the content of this message, please use an HTML enabled
mail client.'||utl_tcp.crlf;

    l_body_html := '<html>
<head>
<style type="text/css">
    body{font-family: Arial, Helvetica, sans-serif;
    font-size:10pt;
    margin:30px;
    background-color:#ffffff;}

    span.sig{font-style:italic;
    font-weight:bold;
    color:#811919;}
</style>
</head>
<body>'||utl_tcp.crlf;
    l_body_html := l_body_html || '<p>Thank you for your interest in the
<strong>APEX_MAIL</strong> package.</p>'||utl_tcp.crlf;
    l_body_html := l_body_html || '    Sincerely,<br />'||utl_tcp.crlf;
    l_body_html := l_body_html || '    <span class="sig">The APEX Dev Team</span><br
/>'||utl_tcp.crlf;
    l_body_html := l_body_html || '</body></html>';
    apex_mail.send(
        p_to  => 'some_user@somewhere.com',    -- change to your email address
        p_from => 'some_sender@somewhere.com', -- change to a real senders email
        address
        p_body      => l_body,
        p_body_html => l_body_html,
        p_subj      => 'APEX_MAIL Package - HTML formatted message');
END;
/
```

APEX_PLSQL_JOB

You can use APEX_PLSQL_JOB package to run PL/SQL code in the background of your application. This is an effective approach for managing long running operations that do not need to complete for a user to continue working with your application.

Topics:

- [About the APEX_PLSQL_JOB Package](#)
- [JOBS_ARE_ENABLED Function](#)
- [PURGE_PROCESS Procedure](#)
- [SUBMIT_PROCESS Function](#)
- [TIME_ELAPSED Function](#)
- [UPDATE_JOB_STATUS Procedure](#)

About the APEX_PLSQL_JOB Package

APEX_PLSQL_JOB is a wrapper package around DBMS_JOB functionality offered in the Oracle database. Note that the APEX_PLSQL_JOB package only exposes that functionality which is necessary to run PL/SQL in the background.

Table 14–1 describes the functions available in the APEX_PLSQL_JOB package.

Table 14–1 APEX_PLSQL_JOB Package: Available Functions

Function or Procedure	Description
SUBMIT_PROCESS	Use this procedure to submit background PL/SQL. This procedure returns a unique job number. Because you can use this job number as a reference point for other procedures and functions in this package, it may be useful to store it in your own schema.
UPDATE_JOB_STATUS	Call this procedure to update the status of the currently running job. This procedure is most effective when called from the submitted PL/SQL.
TIME_ELAPSED	Use this function to determine how much time has elapsed since the job was submitted.
JOBS_ARE_ENABLED	Call this function to determine whether the database is currently in a mode that supports submitting jobs to the APEX_PLSQL_JOB package.
PURGE_PROCESS	Call this procedure to clean up submitted jobs. Submitted jobs stay in the APEX_PLSQL_JOBS view until either Oracle Application Express cleans out those records, or you call PURGE_PROCESS to manually remove them.

You can view all jobs submitted to the APEX_PLSQL_JOB package using the APEX_PLSQL_JOBS view.

JOBS_ARE_ENABLED Function

Call this function to determine whether or not the database is currently in a mode that supports submitting jobs to the APEX_PLSQL_JOB package.

Syntax

```
APEX_PLSQL_JOB.JOBS_ARE_ENABLED  
RETURN BOOLEAN;
```

Parameters

None.

Example

The following example shows how to use the JOBS_ARE_ENABLED function. In the example, if the function returns TRUE the message 'Jobs are enabled on this database instance' is displayed, otherwise the message 'Jobs are not enabled on this database instance' is displayed.

```
BEGIN  
  IF APEX_PLSQL_JOB.JOBS_ARE_ENABLED THEN  
    HTP.P('Jobs are enabled on this database instance.');
```



```
  ELSE  
    HTP.P('Jobs are not enabled on this database instance.');
```



```
  END IF;  
END;
```

PURGE_PROCESS Procedure

Call this procedure to clean up submitted jobs. Submitted jobs stay in the APEX_PLSQL_JOBS view until either Oracle Application Express cleans out those records, or you call PURGE_PROCESS to manually remove them.

Syntax

```
APEX_PLSQL_JOB.PURGE_PROCESS (  
    p_job IN NUMBER);
```

Parameters

Table 14–2 describes the parameters available in the PURGE_PROCESS procedure.

Table 14–2 *PURGE_PROCESS Parameters*

Parameter	Description
p_job	The job number that identifies the submitted job you wish to purge.

Example

The following example shows how to use the PURGE_PROCESS procedure to purge the submitted job identified by a job number of 161. You could also choose to purge all or some of the current submitted jobs by referencing the APEX_PLSQL_JOBS view.

```
BEGIN  
    APEX_PLSQL_JOB.PURGE_PROCESS (  
        p_job => 161);  
END;
```

SUBMIT_PROCESS Function

Use this function to submit background PL/SQL. This function returns a unique job number. Because you can use this job number as a reference point for other procedures and functions in this package, it may be useful to store it in your own schema.

Syntax

```
APEX_PLSQL_JOB.SUBMIT_PROCESS (
    p_sql IN VARCHAR2,
    p_when IN DATE DEFAULT SYSDATE,
    p_status IN VARCHAR2 DEFAULT 'PENDING')
RETURN NUMBER;
```

Parameters

[Table 14–3](#) describes the parameters available in the SUBMIT_PROCESS function.

Table 14–3 SUBMIT_PROCESS Parameters

Parameter	Description
p_sql	The process you wish to run in your job. This can be any valid anonymous block, for example: <pre>'BEGIN <your code> END;'</pre> or <pre>'DECLARE <your declaration> BEGIN <your code> END;'</pre>
p_when	When you want to run it. The default is SYSDATE which means the job will run as soon as possible. You can also set the job to run in the future, for example: <pre>sysdate + 1</pre> - The job will run in 1 days time. <pre>sysdate + (1/24)</pre> - The job will run in 1 hours time. <pre>sysdate + (10/24/60)</pre> - The job will run in 10 minutes time.
p_status	Plain text status information for this job.

Example

The following example shows how to use the SUBMIT_PROCESS function to submit a background process that will start as soon as possible.

```
DECLARE
    l_sql VARCHAR2(4000);
    l_job NUMBER;
BEGIN
    l_sql := 'BEGIN MY_PACKAGE.MY_PROCESS; END;';
    l_job := APEX_PLSQL_JOB.SUBMIT_PROCESS(
        p_sql => l_sql,
        p_status => 'Background process submitted');
    --store l_job for later reference
END;
```

TIME_ELAPSED Function

Use this function to determine how much time has elapsed since the job was submitted.

Syntax

```
APEX_PLSQL_JOB.TIME_ELAPSED(  
    p_job IN NUMBER)  
RETURN NUMBER;
```

Parameters

[Table 14–4](#) describes the parameters available in the `TIME_ELAPSED` function.

Table 14–4 *TIME_ELAPSED Parameters*

Parameter	Description
p_job	The job ID for the job you wish to see how long since it was submitted.

Example

The following example shows how to use the `TIME_ELAPSED` function to get the time elapsed for the submitted job identified by the job number 161.

```
DECLARE  
    l_time NUMBER;  
BEGIN  
    l_time := APEX_PLSQL_JOB.TIME_ELAPSED(p_job => 161);  
END;
```

UPDATE_JOB_STATUS Procedure

Call this procedure to update the status of the currently running job. This procedure is most effective when called from the submitted PL/SQL.

Syntax

```
APEX_PLSQL_JOB.UPDATE_JOB_STATUS (
    p_job IN NUMBER,
    p_status IN VARCHAR2);
```

Parameters

[Table 14–5](#) describes the parameters available in the UPDATE_JOB_STATUS procedure.

Table 14–5 UPDATE_JOB_STATUS Parameters

Parameter	Description
p_job	The job ID for the job you want to update the status of.
p_status	The string of up to 100 characters to be used as the current status of the job.

Example

The following example shows how to use the UPDATE_JOB_STATUS procedure. In this example, note that:

- Lines 002 to 010 run a loop that inserts 100 records into the emp table.
- APP_JOB is referenced as a bind variable inside the VALUES clause of the INSERT, and specified as the p_job parameter value in the call to UPDATE_JOB_STATUS.
- APP_JOB represents the job number which will be assigned to this process as it is submitted to APEX_PLSQL_JOB. By specifying this reserved item inside your process code, it will be replaced for you at execution time with the actual job number.
- Note that this example calls to UPDATE_JOB_STATUS every ten records, inside the block of code. Normally, Oracle transaction rules dictate updates made inside code blocks will not be seen until the entire transaction is committed. The APEX_PLSQL_JOB.UPDATE_JOB_STATUS procedure, however, has been implemented in such a way that the update will happen regardless of whether or not the job succeeds or fails. This last point is important for two reasons:
 1. Even if your status shows "100 rows inserted", it does not mean the entire operation was successful. If an error occurred at the time the block of code tried to commit, the user_status column of APEX_PLSQL_JOBS would not be affected because status updates are committed separately.
 2. Updates are performed autonomously. You can view the job status before the job has completed. This gives you the ability to display status text about ongoing operations in the background as they are happening.

```
BEGIN
  FOR i IN 1 .. 100 LOOP
    INSERT INTO emp(a,b) VALUES (:APP_JOB,i);
    IF MOD(i,10) = 0 THEN
```

```
        APEX_PLSQL_JOB.UPDATE_JOB_STATUS(  
            P_JOB => :APP_JOB,  
            P_STATUS => i || ' rows inserted');  
    END IF;  
    APEX_UTIL.PAUSE(2);  
END LOOP;  
END;
```


The `APEX_PLUGIN` package provides the interface declarations and some utility functions to work with plug-ins.

Topics:

- [Data Types](#)
- [GET AJAX_IDENTIFIER Function](#)
- [GET_INPUT_NAME_FOR_PAGE_ITEM Function](#)

Data Types

The data types used by the APEX_PLUGIN package are described in this section.

Data Types:

- [c_*](#)
- [t_authentication](#)
- [t_authentication_ajax_result](#)
- [t_authentication_auth_result](#)
- [t_authentication_inval_result](#)
- [t_authentication_logout_result](#)
- [t_authentication_sentry_result](#)
- [t_dynamic_action](#)
- [t_dynamic_action_ajax_result](#)
- [t_dynamic_action_render_result](#)
- [t_page_item](#)
- [t_page_item_ajax_result](#)
- [t_page_item_render_result](#)
- [t_page_item_validation_result](#)
- [t_plugin](#)
- [t_process](#)
- [t_process_exec_result](#)
- [t_region](#)
- [t_region_ajax_result](#)
- [t_region_render_result](#)

[c_*](#)

The following constants are used for `display_location` in the page item validation function result type `t_page_item_validation_result`.

```
c_inline_with_field          constant varchar2(40) := 'INLINE_WITH_FIELD';
c_inline_with_field_and_notif constant varchar2(40) := 'INLINE_WITH_FIELD_AND_
NOTIFICATION';
c_inline_in_notification      constant varchar2(40) := 'INLINE_IN_NOTIFICATION';
c_on_error_page               constant varchar2(40) := 'ON_ERROR_PAGE';
```

[t_authentication](#)

```
type t_authentication is record (
  id              number,
  name            varchar2(255),
  invalid_session_url varchar2(4000),
  logout_url      varchar2(4000),
  plsqli_code     clob,
  attribute_01     varchar2(32767),
```

```

attribute_02      varchar2(32767),
attribute_03      varchar2(32767),
attribute_04      varchar2(32767),
attribute_05      varchar2(32767),
attribute_06      varchar2(32767),
attribute_07      varchar2(32767),
attribute_08      varchar2(32767),
attribute_09      varchar2(32767),
attribute_10      varchar2(32767),
attribute_11      varchar2(32767),
attribute_12      varchar2(32767),
attribute_13      varchar2(32767),
attribute_14      varchar2(32767),
attribute_15      varchar2(32767),
--
session_id        number,
username          varchar2(255) );

```

t_authentication_ajax_result

```

type t_authentication_ajax_result is record (
    dummy          boolean );

```

t_authentication_auth_result

```

type t_authentication_auth_result is record (
    is_authenticated    boolean,
    redirect_url         varchar2(4000),
    log_code             number,
    log_text             varchar2(4000),
    display_text         varchar2(4000) );

```

t_authentication_inval_result

```

type t_authentication_inval_result is record (
    redirect_url         varchar2(4000) );

```

t_authentication_logout_result

```

type t_authentication_logout_result is record (
    redirect_url         varchar2(4000) );

```

t_authentication_sentry_result

```

type t_authentication_sentry_result is record (
    is_valid            boolean );

```

t_dynamic_action

The following type is passed into all dynamic action plug-in functions and contains information about the current dynamic action.

```

type t_dynamic_action is record (
    id                number,
    action            varchar2(50),
    attribute_01      varchar2(32767),
    attribute_02      varchar2(32767),
    attribute_03      varchar2(32767),
    attribute_04      varchar2(32767),
    attribute_05      varchar2(32767),
    attribute_06      varchar2(32767),
    attribute_07      varchar2(32767),
    attribute_08      varchar2(32767),

```

```
attribute_09 varchar2(32767),
attribute_10 varchar2(32767) );
```

t_dynamic_action_ajax_result

The following type is used as the result type for the AJAX function of a dynamic action type plug-in.

```
type t_dynamic_action_ajax_result is record (
    dummy boolean /* not used yet */
);
```

t_dynamic_action_render_result

The following type is used as the result type for the rendering function of a dynamic action plug-in.

```
type t_dynamic_action_render_result is record (
    javascript_function varchar2(32767),
    ajax_identifier      varchar2(255),
    attribute_01         varchar2(32767),
    attribute_02         varchar2(32767),
    attribute_03         varchar2(32767),
    attribute_04         varchar2(32767),
    attribute_05         varchar2(32767),
    attribute_06         varchar2(32767),
    attribute_07         varchar2(32767),
    attribute_08         varchar2(32767),
    attribute_09         varchar2(32767),
    attribute_10         varchar2(32767) );
```

t_page_item

The following type is passed into all item type plug-in functions and contains information about the current page item.

```
type t_page_item is record (
    id                number,
    name              varchar2(255),
    label             varchar2(4000),
    plain_label       varchar2(4000),
    format_mask       varchar2(255),
    is_required       boolean,
    lov_definition     varchar2(4000),
    lov_display_extra  boolean,
    lov_display_null   boolean,
    lov_null_text      varchar2(255),
    lov_null_value     varchar2(255),
    lov_cascade_parent_items varchar2(255),
    ajax_items_to_submit varchar2(255),
    ajax_optimize_refresh boolean,
    element_width      number,
    element_max_length number,
    element_height     number,
    element_attributes varchar2(2000),
    element_option_attributes varchar2(4000),
    escape_output       boolean,
    attribute_01        varchar2(32767),
    attribute_02        varchar2(32767),
    attribute_03        varchar2(32767),
    attribute_04        varchar2(32767),
    attribute_05        varchar2(32767),
```

```

attribute_06          varchar2(32767),
attribute_07          varchar2(32767),
attribute_08          varchar2(32767),
attribute_09          varchar2(32767),
attribute_10          varchar2(32767) );

```

t_page_item_ajax_result

The following type is used as the result type for the AJAX function of an item type plug-in.

```

type t_page_item_ajax_result is record (
    dummy boolean /* not used yet */
);

```

t_page_item_render_result

The following type is used as the result type for the rendering function of an item type plug-in.

```

type t_page_item_render_result is record (
    is_navigable        boolean default false,
    navigable_dom_id    varchar2(255)          /* should only be set if navigable
element is not equal to item name */
);

```

t_page_item_validation_result

The following type is used as the result type for the validation function of an item type plug-in.

```

type t_page_item_validation_result is record (
    message              varchar2(32767),
    display_location    varchar2(40),      /* if not set the application default will
be used */
    page_item_name      varchar2(255) ); /* if not set the validated page item name
will be used */

```

t_plugin

The following type is passed into all plug-in functions and contains information about the current plug-in.

```

type t_plugin is record (
    name                varchar2(45),
    file_prefix         varchar2(4000),
    attribute_01        varchar2(32767),
    attribute_02        varchar2(32767),
    attribute_03        varchar2(32767),
    attribute_04        varchar2(32767),
    attribute_05        varchar2(32767),
    attribute_06        varchar2(32767),
    attribute_07        varchar2(32767),
    attribute_08        varchar2(32767),
    attribute_09        varchar2(32767),
    attribute_10        varchar2(32767) );

```

t_process

The following type is passed into all process type plug-in functions and contains information about the current process.

```

type t_process is record (
    id                  number,

```

```
name          varchar2(255),
success_message varchar2(32767),
attribute_01   varchar2(32767),
attribute_02   varchar2(32767),
attribute_03   varchar2(32767),
attribute_04   varchar2(32767),
attribute_05   varchar2(32767),
attribute_06   varchar2(32767),
attribute_07   varchar2(32767),
attribute_08   varchar2(32767),
attribute_09   varchar2(32767),
attribute_10   varchar2(32767) );
```

t_process_exec_result

The following type is used as the result type for the execution function of a process type plug-in.

```
type t_process_exec_result is record (
    success_message varchar2(32767)
);
```

t_region

The following type is passed into all region type plug-in functions and contains information about the current region.

```
type t_region is record (
    id          number,
    static_id    varchar2(255),
    name        varchar2(255),
    type        varchar2(255),
    source      varchar2(32767),
    ajax_items_to_submit varchar2(32767),
    escape_output boolean,
    attribute_01 varchar2(32767),
    attribute_02 varchar2(32767),
    attribute_03 varchar2(32767),
    attribute_04 varchar2(32767),
    attribute_05 varchar2(32767),
    attribute_06 varchar2(32767),
    attribute_07 varchar2(32767),
    attribute_08 varchar2(32767),
    attribute_09 varchar2(32767),
    attribute_10 varchar2(32767),
    attribute_11 varchar2(32767),
    attribute_12 varchar2(32767),
    attribute_13 varchar2(32767),
    attribute_14 varchar2(32767),
    attribute_15 varchar2(32767) );
```

t_region_ajax_result

The following type is used as result type for the AJAX function of a region type plug-in.

```
type t_region_ajax_result is record (
    dummy boolean /* not used yet */
);
```

t_region_render_result

The following type is used as the result type for the rendering function of a region type plug-in.

```
type t_region_render_result is record (  
    dummy boolean /* not used yet */  
);
```

GET_AJAX_IDENTIFIER Function

This function returns the AJAX identifier used to call the AJAX callback function defined for the plug-in.

Note: This function will only work in the context of a plug-in rendering function call and only if the plug-in has defined an AJAX function callback in the plug-in definition.

Syntax

```
APEX_PLUGIN.GET_AJAX_IDENTIFIER  
RETURN VARCHAR2;
```

Parameters

None.

Example

This is an example of a dynamic action plug-in rendering function that supports an AJAX callback.

```
function render_set_value (  
    p_dynamic_action in apex_plugin.t_dynamic_action )  
    return apex_plugin.t_dynamic_action_render_result  
is  
    l_result          apex_plugin.t_dynamic_action_render_result;  
begin  
    l_result.javascript_function := 'com_oracle_apex_set_value';  
    l_result.ajax_identifier     := wwv_flow_plugin.get_ajax_identifier;  
    return l_result;  
end;
```


GET_INPUT_NAME_FOR_PAGE_ITEM Function

This function is used when you want to render an HTML input element in the rendering function of an item type plug-in.

For the HTML input element, for example, `<input type="text" id="P1_TEST" name="xxx">`, you have to provide a value for the name attribute so that Oracle Application Express is able to map the submitted value to the actual page item in session state. This function returns the mapping name for your page item. If the HTML input element has multiple values, such as a select list with `multiple="multiple"`, then set `p_is_multi_value` to true.

Note: This function is only useful when called in the rendering function of an item type plug-in.

Syntax

```
APEX_PLUGIN.GET_INPUT_NAME_FOR_PAGE_ITEM (
    p_is_multi_value IN BOOLEAN)
RETURN VARCHAR2;
```

Parameters

[Table 15–1](#) describes the parameters available in the GET_INPUT_NAME_FOR_PAGE_ITEM function.

Table 15–1 GET_INPUT_NAME_FOR_PAGE_ITEM Parameters

Parameter	Description
<code>p_is_multi_value</code>	Set to TRUE if the HTML input element has multiple values. If not, set to FALSE. HTML input elements with multiple values can be checkboxes and multi select lists.

Example

The following example outputs the necessary HTML code to render a text field where the value gets stored in session state when the page is submitted.

```
sys.http.prn (
    '<input type="text" id="' || p_item.name || '" ' ||
    'name="' || wwv_flow_plugin.get_input_name_for_page_item(false) || '" ' ||
    'value="' || sys.htf.escape_sc(p_value) || '" ' ||
    'size="' || p_item.element_width || '" ' ||
    'maxlength="' || p_item.element_max_length || '" ' ||
    coalesce(p_item.element_attributes, 'class="text_field") ||' /> ');
```

APEX_PLUGIN_UTIL

The APEX_PLUGIN_UTIL package provides utility functions that solve common problems when writing a plug-in.

Topics:

- [DEBUG_DYNAMIC_ACTION Procedure](#)
- [DEBUG_PAGE_ITEM Procedure Signature 1](#)
- [DEBUG_PAGE_ITEM Procedure Signature 2](#)
- [DEBUG_PROCESS Procedure](#)
- [DEBUG_REGION Procedure Signature 1](#)
- [DEBUG_REGION Procedure Signature 2](#)
- [ESCAPE Function](#)
- [EXECUTE_PLSQL_CODE Procedure](#)
- [GET_DATA Function](#)
- [GET_DATA2 Function](#)
- [GET_DISPLAY_DATA Function Signature 1](#)
- [GET_DISPLAY_DATA Function Signature 2](#)
- [GET_PLSQL_EXPRESSION_RESULT Function](#)
- [GET_PLSQL_FUNCTION_RESULT Function](#)
- [GET_POSITION_IN_LIST Function](#)
- [GET_SEARCH_STRING Function](#)
- [IS_EQUAL Function](#)
- [PAGE_ITEM_NAMES_TO_JQUERY Function](#)
- [PRINT_DISPLAY_ONLY Procedure](#)
- [PRINT_ESCAPED_VALUE Procedure](#)
- [PRINT_HIDDEN_IF_READONLY Procedure](#)
- [PRINT_JSON_HTTP_HEADER Procedure](#)
- [PRINT_LOV_AS_JSON Procedure](#)
- [PRINT_OPTION Procedure](#)
- [REPLACE_SUBSTITUTIONS Function](#)

DEBUG_DYNAMIC_ACTION Procedure

This procedure writes the data of the dynamic action meta data to the debug output if debugging is enabled.

Syntax

```
APEX_PLUGIN_UTIL.DEBUG_DYNAMIC_ACTION (  
    p_plugin          IN apex_plugin.t_plugin,  
    p_dynamic_action IN apex_plugin.t_dynamic_action);
```

Parameters

[Table 16–2](#) describes the parameters available in the `DEBUG_DYNAMIC_ACTION` procedure.

Table 16–1 *DEBUG_DYNAMIC_ACTION Parameters*

Parameter	Description
<code>p_plugin</code>	This is the <code>p_plugin</code> parameter of your plug-in function.
<code>p_dynamic_action</code>	This is the <code>p_dynamic_action</code> parameter of your plug-in function.

Example

This example shows how to collect helpful debug information during the plug-in development cycle to see what values are actually passed into the rendered function or AJAX callback function of the plug-in.

```
apex_plugin_util.debug_dynamic_action (  
    p_plugin          => p_plugin,  
    p_dynamic_action => p_dynamic_action );
```

DEBUG_PAGE_ITEM Procedure Signature 1

This procedure writes the data of the page item meta data to the debug output if debugging is enabled.

Syntax

```
APEX_PLUGIN_UTIL.DEBUG_PAGE_ITEM (  
    p_plugin      IN apex_plugin.t_plugin,  
    p_page_item  IN apex_plugin.t_page_item);
```

Parameters

[Table 16–2](#) describes the parameters available in the `DEBUG_PAGE_ITEM` procedure.

Table 16–2 *DEBUG_PAGE_ITEM Parameters*

Parameter	Description
p_plugin	This is the p_plugin parameter of your plug-in function.
p_page_item	This is the p_page_item parameter of your plug-in function.

Example

This example shows how to collect helpful debug information during the plug-in development cycle to see what values are actually passed into the renderer, AJAX callback or validation function.

```
apex_plugin_util.debug_page_item (  
    p_plugin      => p_plugin,  
    p_page_item => p_page_item );
```

DEBUG_PAGE_ITEM Procedure Signature 2

This procedure writes the data of the page item meta data to the debug output if debugging is enabled.

Syntax

```
APEX_PLUGIN_UTIL.DEBUG_PAGE_ITEM (  
    p_plugin           IN apex_plugin.t_plugin,  
    p_page_item        IN apex_plugin.t_page_item,  
    p_value            IN VARCHAR2,  
    p_is_readonly      IN BOOLEAN,  
    p_is_printer_friendly IN BOOLEAN);
```

Parameters

[Table 16–3](#) describes the parameters available in the `DEBUG_PAGE_ITEM` procedure.

Table 16–3 *DEBUG_PAGE_ITEM* Parameters

Parameter	Description
<code>p_plugin</code>	This is the <code>p_plugin</code> parameter of your plug-in function.
<code>p_page_item</code>	This is the <code>p_page_item</code> parameter of your plug-in function.
<code>p_value</code>	This is the <code>p_value</code> parameter of your plug-in function.
<code>p_is_readonly</code>	This is the <code>p_is_readonly</code> parameter of your plug-in function.
<code>p_is_printer_friendly</code>	This is the <code>p_is_printer_friendly</code> parameter of your plug-in function.

Example

This example shows how to collect helpful debug information during the plug-in development cycle to see what values are actually passed into the renderer, AJAX callback or validation function.

```
apex_plugin_util.debug_page_item (  
    p_plugin      => p_plugin,  
    p_page_item   => p_page_item,  
    p_value       => p_value,  
    p_is_readonly => p_is_readonly,  
    p_is_printer_friendly => p_is_printer_friendly);
```

DEBUG_PROCESS Procedure

This procedure writes the data of the process meta data to the debug output if debugging is enabled.

Syntax

```
APEX_PLUGIN_UTIL.DEBUG_PROCESS (  
    p_plugin      IN apex_plugin.t_plugin,  
    p_process     IN apex_plugin.t_process);
```

Parameters

[Table 16–4](#) describes the parameters available in the `DEBUG_PROCESS` procedure.

Table 16–4 *DEBUG_PROCESS Parameters*

Parameter	Description
<code>p_plugin</code>	This is the <code>p_plugin</code> parameter of your plug-in function.
<code>p_process</code>	This is the <code>p_process</code> parameter of your plug-in function.

Example

This example shows how to collect helpful debug information during the plug-in development cycle to see what values are actually passed into the execution function of the plug-in.

```
apex_plugin_util.debug_process (  
    p_plugin      => p_plugin,  
    p_process     => p_process);
```

DEBUG_REGION Procedure Signature 1

This procedure writes the data of the region meta data to the debug output if debugging is enabled.

Syntax

```
APEX_PLUGIN_UTIL.DEBUG_REGION (  
    p_plugin          IN apex_plugin.t_plugin,  
    p_region          IN apex_plugin.t_region);
```

Parameters

[Table 16–5](#) describes the parameters available in the `DEBUG_REGION` procedure.

Table 16–5 *DEBUG_REGION Signature 1 Parameters*

Parameter	Description
p_plugin	This is the p_plugin parameter of your plug-in function.
p_region	This is the p_region parameter of your plug-in function.

Example

This example shows how to collect helpful debug information during the plug-in development cycle to see what values are actually passed into the render function or AJAX callback function of the plug-in.

```
apex_plugin_util.debug_process (  
    p_plugin          => p_plugin,  
    p_region          => p_region);
```

DEBUG_REGION Procedure Signature 2

This procedure writes the data of the region meta data to the debug output if debugging is enabled. This is the advanced version of the debugging procedure which should be used for the rendering function of a region plug-in.

Syntax

```
APEX_PLUGIN_UTIL.DEBUG_REGION (  
    p_plugin          IN apex_plugin.t_plugin,  
    p_region          IN apex_plugin.t_region,  
    p_is_printer_friendly IN BOOLEAN);
```

Parameters

[Table 16–6](#) describes the parameters available in the `DEBUG_REGION` procedure.

Table 16–6 *DEBUG_REGION Signature 2 Parameters*

Parameter	Description
<code>p_plugin</code>	This is the <code>p_plugin</code> parameter of your plug-in function
<code>p_region</code>	This is the <code>p_region</code> parameter of your plug-in function
<code>p_is_printer_friendly</code>	This is the <code>p_is_printer_friendly</code> parameter of your plug-in function

Example

This example shows how to collect helpful debug information during the plug-in development cycle to see what values are actually passed into the render function or AJAX callback function of the plug-in.

```
apex_plugin_util.debug_process (  
    p_plugin          => p_plugin,  
    p_region          => p_region,  
    p_is_printer_friendly => p_is_printer_friendly);
```

ESCAPE Function

This function should be used if you have checked the standard attribute "Has Escape Output Attribute" option for your item type plug-in which allows a developer to decide if the output should be escaped or not.

Syntax

```
APEX_PLUGIN_UTIL.ESCAPE (  
    p_value  IN VARCHAR2,  
    p_escape IN BOOLEAN)  
RETURN VARCHAR2;
```

Parameters

[Table 16–7](#) describes the parameters available in the ESCAPE function.

Table 16–7 *ESCAPE Parameters*

Parameter	Description
p_value	This is the value you want to escape depending on the p_escape parameter.
p_escape	If set to TRUE, the return value is escaped. If set to FALSE, the value is not escaped.

Example

This example outputs all values of the array `l_display_value_list` as a HTML list and escapes the value of the array depending on the setting the developer as picked when using the plug-in.

```
for i in 1 .. l_display_value_list.count  
loop  
    sys.http.prn (  
        '<li>' ||  
        apex_plugin_util.escape (  
            p_value => l_display_value_list(i),  
            p_escape => p_item.escape_output ) ||  
        '</li>' );  
end loop;
```

EXECUTE_PLSQL_CODE Procedure

This procedure executes a PL/SQL code block and performs binding of bind variables in the provided PL/SQL code. This procedure is usually used for plug-in attributes of type PL/SQL Code.

Syntax

```
APEX_PLUGIN_UTIL.EXECUTE_PLSQL_CODE (  
    p_plsql_code  IN VARCHAR2);
```

Parameters

[Table 16–8](#) describes the parameters available in the EXECUTE_PLSQL_CODE procedure.

Table 16–8 EXECUTE_PLSQL_CODE Parameters

Parameter	Description
p_plsql_code	PL/SQL code to be executed.

Example

Text which should be escaped and then printed to the HTTP buffer.

```
declare  
    l_plsql_code VARCHAR(32767) := p_process.attribute_01;  
begin  
    apex_plugin_util.execute_plsql_code (  
        p_plsql_code => l_plsql_code );  
end;
```

GET_DATA Function

Executes the specified SQL query restricted by the provided search string (optional) and returns the values for each column. All column values are returned as a string, independent of their data types. Before this function call, `prepare_query` must be called.

Syntax

```
APEX_PLUGIN_UTIL.GET_DATA (  
    p_sql_statement      IN VARCHAR2,  
    p_min_columns        IN NUMBER,  
    p_max_columns        IN NUMBER,  
    p_component_name     IN VARCHAR2,  
    p_search_type         IN VARCHAR2 DEFAULT 2,  
    p_search_column_no   IN VARCHAR2 DEFAULT 2,  
    p_search_string      IN VARCHAR2 DEFAULT NULL,  
    p_first_row          IN NUMBER DEFAULT NULL,  
    p_max_rows           IN NUMBER DEFAULT NULL)  
RETURN t_column_value_list;
```

Parameters

[Table 16–9](#) describes the parameters available in the `GET_DATA` function.

Table 16–9 *GET_DATA Parameters*

Parameters	Description
<code>p_sql_statement</code>	SQL statement used for the lookup.
<code>p_min_columns</code>	Minimum number of return columns.
<code>p_max_columns</code>	Maximum number of return columns.
<code>p_component_name</code>	In case an error is returned, this is the name of the page item or report column used to display the error message.
<code>p_search_type</code>	Must be one of the <code>c_search_*</code> constants. They are as follows: <code>c_search_contains_case</code> , <code>c_search_contains_ignore</code> , <code>c_search_exact_case</code> , <code>c_search_exact_ignore</code>
<code>p_search_column_no</code>	Number of the column used to restrict the SQL statement. Must be within the <code>p_min_columns</code> through <code>p_max_columns</code> range.
<code>p_search_string</code>	Value used to restrict the query.
<code>p_first_row</code>	Start query at the specified row. All rows before the specified row are skipped.
<code>p_max_rows</code>	Maximum number of return rows allowed.

Return

[Table 16–10](#) describes the return value by the `GET_DATA` function.

Table 16–10 *GET_DATA Return*

Return	Description
<code>t_column_value_list</code>	Table of <code>wwv_flow_global.vc_arr2</code> indexed by column number.

Example

The following example shows a simple item type plug-in rendering function which executes the LOV defined for the page item and does a case sensitive LIKE filtering with the current value of the page item. The result is then generated as a HTML list.

```
function render_list (
    p_item          in apex_plugin.t_page_item,
    p_value          in varchar2,
    p_is_readonly    in boolean,
    p_is_printer_friendly in boolean )
return apex_plugin.t_page_item_render_result
is
    l_column_value_list apex_plugin_util.t_column_value_list;
begin
    l_column_value_list :=
        apex_plugin_util.get_data (
            p_sql_statement => p_item.lov_definition,
            p_min_columns   => 2,
            p_max_columns   => 2,
            p_component_name => p_item.name,
            p_search_type    => apex_plugin_util.c_search_contains_case,
            p_search_column_no => 1,
            p_search_string  => p_value );

    sys.http.p('<ul>');
    for i in 1 .. l_column_value_list(1).count
    loop
        sys.http.p(
            '<li>' ||
            sys.htf.escape_sc(l_column_value_list(1)(i)) || -- display column
            '-' ||
            sys.htf.escape_sc(l_column_value_list(2)(i)) || -- return column
            '</li>');
    end loop;
    sys.http.p('</ul>');
end render_list;
```

GET_DATA2 Function

Executes the specified SQL query restricted by the provided search string (optional) and returns the values for each column. All column values are returned along with their original data types.

Syntax

```
APEX_PLUGIN_UTIL.GET_DATA2 (
    p_sql_statement      IN VARCHAR2,
    p_min_columns        IN NUMBER,
    p_max_columns        IN NUMBER,
    p_data_type_list     IN WWV_GLOBAL.VC_ARR2 DEFAULT C_EMPTY_DATA_TYPE_LIST,
    p_component_name     IN VARCHAR2,
    p_search_type        IN VARCHAR2 DEFAULT 2,
    p_search_column_no   IN VARCHAR2 DEFAULT 2,
    p_search_string      IN VARCHAR2 DEFAULT NULL,
    p_first_row          IN NUMBER DEFAULT NULL,
    p_max_rows           IN NUMBER DEFAULT NULL)
RETURN t_column_value_list2;
```

Parameters

[Table 16–11](#) describes the parameters available in the GET_DATA2 function.

Table 16–11 GET_DATA2 Parameters

Parameter	Description
p_sql_statement	SQL statement used for the lookup.
p_min_columns	Minimum number of return columns.
p_max_columns	Maximum number of return columns.
p_data_type_list	If provided, checks to make sure the data type for each column matches the specified data type in the array. Use the constants c_data_type_* for available data types.
p_component_name	In case an error is returned, this is the name of the page item or report column used to display the error message.
p_search_type	Must be one of the c_search_* constants. They are as follows: c_search_contains_case, c_search_contains_ignore, c_search_exact_case, c_search_exact_ignore
p_search_column_no	Number of the column used to restrict the SQL statement. Must be within the p_min_columns though p_max_columns range.
p_search_string	Value used to restrict the query.
p_first_row	Start query at the specified row. All rows before the specified row are skipped.
p_max_rows	Maximum number of return rows allowed.

Return

[Table 16–12](#) describes the return value by the GET_DATA2 function.

Table 16–12 GET_DATA2 Return

Return	Description
t_column_value_list2	Table of t_column_values indexed by column number.

Example

The following example is a simple item type plug-in rendering function which executes the LOV defined for the page item and does a case sensitive LIKE filtering with the current value of the page item. The result is then generated as a HTML list. This time we will also check that the first column of the LOV SQL statement is of type VARCHAR2 and the second is of type number.

```
function render_list (
    p_item          in apex_plugin.t_page_item,
    p_value          in varchar2,
    p_is_readonly    in boolean,
    p_is_printer_friendly in boolean )
return apex_plugin.t_page_item_render_result
is
    l_data_type_list  wwv_flow_global.vc_arr2;
    l_column_value_list apex_plugin_util.t_column_value_list2;
begin
    -- The first LOV column has to be a string and the second a number
    l_data_type_list(1) := apex_plugin_util.c_data_type_varchar2;
    l_data_type_list(2) := apex_plugin_util.c_data_type_number;
    --
    l_column_value_list :=
        apex_plugin_util.get_data2 (
            p_sql_statement => p_item.lov_definition,
            p_min_columns   => 2,
            p_max_columns   => 2,
            p_data_type_list => l_data_type_list,
            p_component_name => p_item.name,
            p_search_type    => apex_plugin_util.c_search_contains_case,
            p_search_column_no => 1,
            p_search_string  => p_value );
    --
    sys.htp.p('<ul>');
    for i in 1 .. l_column_value_list.count(1)
    loop
        sys.htp.p(
            '<li>' ||
            sys.htf.escape_sc(l_column_value_list(1).value_list(i).varchar2_
value) || -- display column
            '-' ||
            sys.htf.escape_sc(l_column_value_list(2).value_list(i).number_value) ||
-- return column
            '</li>');
    end loop;
    sys.htp.p('</ul>');
end render_list;
```

GET_DISPLAY_DATA Function Signature 1

This function gets the display lookup value for the value specified in `p_search_string`.

Syntax

```
APEX_PLUGIN_UTIL.GET_DISPLAY_DATA (  
    p_sql_statement      IN VARCHAR2,  
    p_min_columns        IN NUMBER,  
    p_max_columns        IN NUMBER,  
    p_component_name     IN VARCHAR2,  
    p_display_column_no  IN BINARY_INTEGER DEFAULT 1,  
    p_search_column_no   IN BINARY_INTEGER DEFAULT 2,  
    p_search_string      IN VARCHAR2 DEFAULT NULL,  
    p_display_extra      IN BOOLEAN DEFAULT TRUE)  
RETURN VARCHAR2;
```

Parameters

[Table 16–13](#) describes the parameters available in the `GET_DISPLAY_DATA` function signature 1.

Table 16–13 *GET_DISPLAY_DATA Signature 1 Parameters*

Parameter	Description
<code>p_sql_statement</code>	SQL statement used for the lookup.
<code>p_min_columns</code>	Minimum number of return columns.
<code>p_max_columns</code>	Maximum number of return columns.
<code>p_component_name</code>	In case an error is returned, this is the name of the page item or report column used to display the error message.
<code>p_display_column_no</code>	Number of the column returned from the SQL statement. Must be within the <code>p_min_columns</code> through <code>p_max_columns</code> range.
<code>p_search_column_no</code>	Number of the column used to restrict the SQL statement. Must be within the <code>p_min_columns</code> through <code>p_max_columns</code> range.
<code>p_search_string</code>	Value used to restrict the query.
<code>p_display_extra</code>	If set to <code>TRUE</code> , and a value is not found, the search value will be added to the result instead.

Return

[Table 16–14](#) describes the return value by the `GET_DISPLAY_DATA` function signature 1.

Table 16–14 *GET_DISPLAY_DATA Signature 1 Return*

Return	Description
<code>VARCHAR2</code>	Value of the first record of the column specified by <code>p_display_column_no</code> . If no record was found it will contain the value of <code>p_search_string</code> if the parameter <code>p_display_extra</code> is set to <code>TRUE</code> . Otherwise <code>NULL</code> is returned.

Example

The following example does a lookup with the value provided in p_value and returns the display column of the LOV query.

```
function render_value (
    p_item          in apex_plugin.t_page_item,
    p_value          in varchar2,
    p_is_readonly    in boolean,
    p_is_printer_friendly in boolean )
    return apex_plugin.t_page_item_render_result
is
begin
    sys.http.p(sys.htf.escape_sc(
        apex_plugin_util.get_display_data (
            p_sql_statement      => p_item.lov_definition,
            p_min_columns       => 2,
            p_max_columns       => 2,
            p_component_name    => p_item.name,
            p_display_column_no => 1,
            p_search_column_no  => 2,
            p_search_string     => p_value )));
end render_value;
```

GET_DISPLAY_DATA Function Signature 2

This function will look up all the values provided in the `p_search_value_list` instead of just a single value lookup.

Syntax

```
APEX_PLUGIN_UTIL.GET_DISPLAY_DATA (
    p_sql_statement      IN VARCHAR2,
    p_min_columns        IN NUMBER,
    p_max_columns        IN NUMBER,
    p_component_name     IN VARCHAR2,
    p_display_column_no  IN BINARY_INTEGER DEFAULT 1,
    p_search_column_no   IN BINARY_INTEGER DEFAULT 2,
    p_search_value_list  IN ww_flow_global.vc_arr2,
    p_display_extra       IN BOOLEAN DEFAULT TRUE)
RETURN wwv_flow_global.vc_arr2;
```

Parameters

[Table 16–15](#) describes the parameters available in the `GET_DISPLAY_DATA` function signature 2.

Table 16–15 *GET_DISPLAY_DATA Signature 2 Parameters*

Parameter	Description
<code>p_sql_statement</code>	SQL statement used for the lookup.
<code>p_min_columns</code>	Minimum number of return columns.
<code>p_max_columns</code>	Maximum number of return columns.
<code>p_component_name</code>	In case an error is returned, this is the name of the page item or report column used to display the error message.
<code>p_display_column_no</code>	Number of the column returned from the SQL statement. Must be within the <code>p_min_columns</code> through <code>p_max_columns</code> range.
<code>p_search_column_no</code>	Number of the column used to restrict the SQL statement. Must be within the <code>p_min_columns</code> through <code>p_max_columns</code> range.
<code>p_search_value_list</code>	Array of values to look up.
<code>p_display_extra</code>	If set to <code>TRUE</code> , and a value is not found, the search value will be added to the result instead.

Return

[Table 16–16](#) describes the return value by the `GET_DISPLAY_DATA` function signature 2.

Table 16–16 *GET_DISPLAY_DATA Signature 2 Return*

Return	Description
<code>wwv_flow_global.vc_arr2</code>	List of <code>VARCHAR2</code> indexed by <code>pls_integer</code> . For each entry in <code>p_search_value_list</code> the resulting array contains the value of the first record of the column specified by <code>p_display_column_no</code> in the same order as in <code>p_search_value_list</code> . If no record is found it contains the value of <code>p_search_string</code> if the parameter <code>p_display_extra</code> is set to <code>TRUE</code> . Otherwise the value is skipped.

Example

Looks up the values 7863, 7911 and 7988 and generates a HTML list with the value of the corresponding display column in the LOV query.

```
function render_list (
    p_plugin          in apex_plugin.t_plugin,
    p_item            in apex_plugin.t_page_item,
    p_value           in varchar2,
    p_is_readonly     in boolean,
    p_is_printer_friendly in boolean )
    return apex_plugin.t_page_item_render_result
is
    l_search_list wwv_flow_global.vc_arr2;
    l_result_list wwv_flow_global.vc_arr2;
begin
    l_search_list(1) := '7863';
    l_search_list(2) := '7911';
    l_search_list(3) := '7988';
    --
    l_result_list :=
        apex_plugin_util.get_display_data (
            p_sql_statement      => p_item.lov_definition,
            p_min_columns       => 2,
            p_max_columns       => 2,
            p_component_name    => p_item.name,
            p_search_column_no  => 1,
            p_search_value_list => l_search_list );
    --
    sys.http.p('<ul>');
    for i in 1 .. l_result_list.count
    loop
        sys.http.p(
            '<li>' ||
            sys.htf.escape_sc(l_result_list(i)) ||
            '</li>');
    end loop;
    sys.http.p('</ul>');
end render_list;
```

GET_PLSQL_EXPRESSION_RESULT Function

This function executes a PL/SQL expression and returns a result. This function also performs the binding of any bind variables in the provided PL/SQL expression. This function is usually used for plug-in attributes of type PL/SQL Expression.

Syntax

```
APEX_PLUGIN_UTIL.GET_PLSQL_EXPRESSION_RESULT (  
    p_plsql_expression IN VARCHAR2)  
RETURN VARCHAR2;
```

Parameters

[Table 16–17](#) describes the parameters available in the GET_PLSQL_EXPRESSION_RESULT function.

Table 16–17 GET_PLSQL_EXPRESSION_RESULT Parameters

Parameter	Description
p_plsql_expression_result	A PL/SQL expression that returns a string.

Return

[Table 16–18](#) describes the return value by the function GET_PLSQL_EXPRESSION_RESULT.

Table 16–18 GET_PLSQL_EXPRESSION_RESULT Return

Return	Description
VARCHAR2	String result value returned by the PL/SQL Expression.

Example

This example executes and returns the result of the PL/SQL expression which is specified in attribute_03 of an item type plug-in attribute of type "PL/SQL Expression".

```
l_result := apex_plugin_util.get_plsql_expression_result (  
    p_plsql_expression => p_item.attribute_03 );
```

GET_PLSQL_FUNCTION_RESULT Function

This function executes a PL/SQL function block and returns the result. This function also performs binding of bind variables in the provided PL/SQL Function Body. This function is usually used for plug-in attributes of type PL/SQL Function Body.

Syntax

```
APEX_PLUGIN_UTIL.GET_PLSQL_FUNCTION_RESULT (  
    p_plsql_function IN VARCHAR2)  
RETURN VARCHAR2;
```

Parameters

[Table 16–19](#) describes the parameters available in the GET_PLSQL_FUNCTION_RESULT function.

Table 16–19 GET_PLSQL_FUNCTION_RESULT Parameters

Parameter	Description
p_plsql_function	A PL/SQL function block that returns a result of type string.

Return

[Table 16–20](#) describes the return value by the function GET_PLSQL_FUNCTION_RESULT.

Table 16–20 GET_PLSQL_FUNCTION_RESULT Return

Return	Description
VARCHAR2	String result value returned by the PL/SQL function block.

Example

The following example executes and returns the result of the PL/SQL function body that is specified in attribute_03 of an item type plug-in attribute of type PL/SQL Function Body.

```
l_result := apex_plugin_util.get_plsql_function_result (  
    p_plsql_function => p_item.attribute_03 );
```

GET_POSITION_IN_LIST Function

This function returns the position in the list where p_value is stored. If it is not found, null is returned.

Syntax

```
APEX_PLUGIN_UTIL.GET_POSITION_IN_LIST(  
    p_list IN wwv_flow_global.vc_arr2,  
    p_value IN VARCHAR2)  
RETURN NUMBER;
```

Parameters

[Table 16–21](#) describes the parameters available in the GET_POSITION_IN_LIST function.

Table 16–21 GET_POSITION_IN_LIST Parameters

Parameter	Description
p_list	Array of type wwv_flow_global.vc_arr2 that contains entries of type VARCHAR2.
p_value	Value located in the p_list array.

Return

[Table 16–22](#) describes the return value by the GET_POISTION_IN_LIST function.

Table 16–22 GET_POSITION_IN_LIST Return

Return	Description
NUMBER	Returns the position of p_value in the array p_list. If it is not found NULL is returned.

Example

The following example will search for "New York" in the provided list and will return 2 into l_position.

```
declare  
    l_list      wwv_flow_global.vc_arr2;  
    l_position number;  
begin  
    l_list(1) := 'Rome';  
    l_list(2) := 'New York';  
    l_list(3) := 'Vienna';  
  
    l_position := apex_plugin_util.get_position_in_list (  
        p_list => l_list,  
        p_value => 'New York' );  
end;
```

GET_SEARCH_STRING Function

Based on the provided value in `p_search_type` the passed in value of `p_search_string` is returned unchanged or is converted to uppercase. This function is used in conjunction with the `p_search_string` parameter of `get_data` and `get_data2`.

Syntax

```
APEX_PLUGIN_UTIL.GET_SEARCH_STRING(
    p_search_type IN VARCHAR2,
    p_search_string IN VARCHAR2)
RETURN VARCHAR2;
```

Parameters

[Table 16–23](#) describes the parameters available in the `GET_SEARCH_STRING` function.

Table 16–23 *GET_SEARCH_STRING Parameters*

Parameter	Description
<code>p_search_type</code>	Type of search when used with <code>get_data</code> and <code>get_data2</code> . Use one of the <code>c_search_*</code> constants.
<code>p_search_string</code>	Search string used for the search with <code>get_data</code> and <code>get_data2</code> .

Return

[Table 16–24](#) describes the return value by the function `GET_SEARCH_STRING`.

Table 16–24 *GET_SEARCH_STRING Return*

Return	Description
VARCHAR2	Returns <code>p_search_string</code> unchanged or in uppercase if <code>p_search_type</code> is of type <code>c_search_contains_ignore</code> or <code>c_search_exact_ignore</code> .

Example

This example uses a call to `get_data` or `get_data2` to make sure the search string is using the correct case.

```
l_column_value_list :=
    apex_plugin_util.get_data (
        p_sql_statement    => p_item.lov_definition,
        p_min_columns      => 2,
        p_max_columns      => 2,
        p_component_name   => p_item.name,
        p_search_type       => apex_plugin_util.c_search_contains_ignore,
        p_search_column_no => 1,
        p_search_string     => apex_plugin_util.get_search_string (
            p_search_type   => apex_plugin_util.c_search_contains_ignore,
            p_search_string => p_value ) );
```

IS_EQUAL Function

This function returns `TRUE` if both values are equal and `FALSE` if not. If both values are `NULL`, `TRUE` is returned.

Syntax

```
APEX_PLUGIN_UTIL.IS_EQUAL (  
    p_value1 IN VARCHAR2  
    p_value2 IN VARCHAR2)  
RETURN BOOLEAN;
```

Parameters

[Table 16–25](#) describes the parameters available in the `IS_EQUAL` function.

Table 16–25 *IS_EQUAL Parameters*

Parameter	Description
<code>p_value1</code>	First value to compare.
<code>p_value2</code>	Second value to compare.

Return

[Table 16–26](#) describes the return value by the function `IS_EQUAL`.

Table 16–26 *IS_EQUAL Return*

Return	Description
<code>BOOLEAN</code>	Returns <code>TRUE</code> if both values are equal or both values are <code>NULL</code> , otherwise it returns <code>FALSE</code> .

Example

In the following example, if the value in the database is different from what is entered, the code in the `if` statement is executed.

```
if NOT apex_plugin_util.is_equal(l_database_value, l_current_value) then  
    -- value has changed, do something  
    null;  
end if;
```


PAGE_ITEM_NAMES_TO_JQUERY Function

This function returns a jQuery selector based on a comma delimited string of page item names. For example, you could use this function for a plug-in attribute called "Page Items to Submit" where the JavaScript code has to read the values of the specified page items.

Syntax

```
APEX_PLUGIN_UTIL.PAGE_ITEM_NAMES_TO_JQUERY (
    p_page_item_names IN VARCHAR2)
RETURN VARCHAR2;
```

Parameters

[Table 16–27](#) describes the parameters available in the PAGE_ITEM_NAMES_TO_JQUERY function.

Table 16–27 PAGE_ITEM_NAMES_TO_JQUERY Parameters

Parameter	Description
p_page_item_names	Comma delimited list of page item names.

Return

[Table 16–26](#) describes the return value by the PAGE_ITEM_NAMES_TO_JQUERY function.

Table 16–28 PAGE_ITEM_NAMES_TO_JQUERY Return

Return	Description
VARCHAR2	Transforms the page items specified in p_page_item_names into a jQuery selector.

Example

The following example shows the code to construct the initialization call for a JavaScript function called myOwnWidget . This function gets an object with several attributes where one attribute is pageItemsToSubmit which is expected to be a jQuery selector.

```
apex_javascript.add_onload_code (
    p_code => 'myOwnWidget('||
        '"#'||p_item.name||','||
        '{'||
            apex_javascript.add_attribute('ajaxIdentifier',      apex_
plugin.get_ajax_identifier)||
            apex_javascript.add_attribute('dependingOnSelector', apex_
plugin_util.page_item_names_to_jquery(p_item.lov_cascade_parent_items))||
            apex_javascript.add_attribute('optimizeRefresh',    p_
item.ajax_optimize_refresh)||
            apex_javascript.add_attribute('pageItemsToSubmit',  apex_
plugin_util.page_item_names_to_jquery(p_item.ajax_items_to_submit))||
            apex_javascript.add_attribute('nullValue',          p_item.lov_
null_value, false, false)||
        '});' );
```

PRINT_DISPLAY_ONLY Procedure

This procedure outputs a SPAN tag for a display only field.

Syntax

```
APEX_PLUGIN_UTIL.PRINT_DISPLAY_ONLY (  
    p_item_name          IN VARCHAR2,  
    p_display_value      IN VARCHAR2,  
    p_show_line_breaks   IN BOOLEAN,  
    p_attributes         IN VARCHAR2,  
    p_id_postfix         IN VARCHAR2 DEFAULT '_DISPLAY');
```

Parameters

[Table 16–29](#) describes the parameters available in the PRINT_DISPLAY_ONLY procedure.

Table 16–29 PRINT_DISPLAY_ONLY Parameter

Parameter	Description
p_item_name	Name of the page item. This parameter should be called with p_item.name.
p_display_value	Text to be displayed.
p_show_line_breaks	If set to TRUE line breaks in p_display_value are changed to so that the browser renders them as line breaks.
p_attributes	Additional attributes added to the SPAN tag.
p_id_postfix	Postfix which is getting added to the value in p_item_name to get the ID for the SPAN tag. Default is _DISPLAY.

Example

The following code could be used in an item type plug-in to render a display only page item.

```
apex_plugin_util.print_display_only (  
    p_item_name      => p_item.name,  
    p_display_value  => p_value,  
    p_show_line_breaks => false,  
    p_escape         => true,  
    p_attributes     => p_item.element_attributes );
```

PRINT_ESCAPED_VALUE Procedure

This procedure outputs the value in an escaped form and chunks big strings into smaller outputs.

Syntax

```
APEX_PLUGIN_UTIL.PRINT_ESCAPED_VALUE (  
    p_value    IN VARCHAR2);
```

Parameters

[Table 16–30](#) describes the parameters available in the PRINT_ESCAPED_VALUE procedure.

Table 16–30 PRINT_ESCAPED_VALUE Parameter

Parameter	Description
p_value	Text which should be escaped and then printed to the HTTP buffer.

Example

Prints a hidden field with the current value of the page item.

```
sys.http.prn('<input type="hidden" name="' || l_name || '" id="' || p_item_name || '"  
value="');  
print_escaped_value(p_value);  
sys.http.prn('>');
```

PRINT_HIDDEN_IF_READONLY Procedure

This procedure outputs a hidden field to store the page item value if the page item is rendered as readonly and is not printer friendly. If this procedure is called in an item type plug-in, the parameters of the plug-in interface should directly be passed in.

Syntax

```
APEX_PLUGIN_UTIL.PRINT_HIDDEN_IF_READ_ONLY (  
    p_item_name    IN VARCHAR2,  
    p_value        IN VARCHAR2,  
    p_is_readonly  IN BOOLEAN,  
    p_is_printer_friendly IN BOOLEAN,  
    p_id_postfix   IN VARCHAR2 DEFAULT NULL);
```

Parameters

[Table 16–31](#) describes the parameters available in the PRINT_HIDDEN_IF_READONLY procedure.

Table 16–31 PRINT_HIDDEN_IF_READONLY Parameters

Parameter	Description
p_item_name	Name of the page item. For this parameter the p_item.name should be passed in.
p_value	Current value of the page item. For this parameter p_value should be passed in.
p_is_readonly	Is the item rendered readonly. For this parameter p_is_readonly should be passed in.
p_is_printer_friendly	Is the item rendered in printer friendly mode. For this parameter p_is_printer_friendly should be passed in.
p_id_postfix	Used to generate the ID attribute of the hidden field. It is build based on p_item_name and the value in p_id_postfix.

Example

Writes a hidden field with the current value to the HTTP output if p_is_readonly is TRUE and p_printer_friendly is FALSE.

```
apex_plugin_util.print_hidden_if_readonly (  
    p_item_name    => p_item.name,  
    p_value        => p_value,  
    p_is_readonly  => p_is_readonly,  
    p_is_printer_friendly => p_is_printer_friendly );
```

PRINT_JSON_HTTP_HEADER Procedure

This procedure outputs a standard HTTP header for a JSON output.

Syntax

```
APEX_PLUGIN_UTIL.PRINT_JSON_HTTP_HEADER;
```

Parameters

None.

Example

This example shows how to use this procedure in the AJAX callback function of a plugin. This code outputs a JSON structure in the following format:

```
[{"d":"Display 1","r":"Return 1"}, {"d":"Display 2","r":"Return 2"}]
```

```
-- Write header for the JSON stream.
apex_plugin_util.print_json_http_header;
-- initialize the JSON structure
sys.http.p('[');
-- loop through the value array
for i in 1 .. l_values.count
loop
    -- add array entry
    sys.http.p (
        case when i > 1 then ',' end||
        '{' ||
        apex_javascript.add_attribute('d', sys.htf.escape_sc(l_values(i).display_
value), false, true)||
        apex_javascript.add_attribute('r', sys.htf.escape_sc(l_values(i).return_
value), false, false)||
        '}' );
end loop;
-- close the JSON structure
sys.http.p(']');
```

PRINT_LOV_AS_JSON Procedure

This procedure outputs a JSON response based on the result of a two column LOV in the format:

```
[{"d":"display","r":"return"}, {"d":....,"r":....},....]
```

Note: The HTTP header is initialized with MIME type "application/json" as well.

Syntax

```
APEX_PLUGIN_UTIL.PRINT_LOV_AS_JSON (
    p_sql_statement          IN VARCHAR2,
    p_component_name         IN VARCHAR2,
    p_escape                 IN BOOLEAN,
    p_replace_substitutions  IN BOOLEAN DEFAULT FALSE);
```

Parameters

[Table 16–32](#) describes the parameters available in the PRINT_LOV_AS_JSON procedure.

Table 16–32 PRINT_LOV_AS_JSON Parameters

Parameter	Description
p_sql_statement	A SQL statement which returns two columns from the SELECT.
p_component_name	The name of the page item or report column that is used in case an error is displayed.
p_escape	If set to TRUE the value of the display column will be escaped, otherwise it will be output as is.
p_replace_substitutions	If set to TRUE, apex_plugin_util.replace_substitutions is called for the value of the display column, otherwise, it is output as is.

Example

This example shows how to use the procedure in an AJAX callback function of an item type plug-in. The following call writes the LOV result as a JSON array to the HTTP output.

```
apex_plugin_util.print_lov_as_json (
    p_sql_statement => p_item.lov_definition,
    p_component_name => p_item.name,
    p_escape        => true );
```

PRINT_OPTION Procedure

This procedure outputs an OPTION tag.

Syntax

```
APEX_PLUGIN_UTIL.PRINT_OPTION (
    p_display_value      IN VARCHAR2,
    p_return_value       IN VARCHAR2,
    p_is_selected        IN BOOLEAN,
    p_attributes         IN VARCHAR2,
    p_escape             IN BOOLEAN DEFAULT TRUE);
```

Parameters

Table 16–33 describes the parameters available in the PRINT_OPTION procedure.

Table 16–33 PRINT_OPTION Parameters

Parameter	Description
p_display_value	Text which is displayed by the option.
p_return_value	Value which will be set when the option is picked.
p_is_selected	Set to TRUE if the selected attribute should be set for this option.
p_attributes	Additional HTML attributes which should be set for the OPTION tag.
p_escape	Set to TRUE if special characters in p_display_value should be escaped.

Example

The following example could be used in an item type plug-in to create a SELECT list. apex_plugin_util.is_equal is used to find out which list entry should be marked as current.

```
sys.http.p('<select id="'||p_item.name||'" size="'||nvl(p_item.element_height,
5)||'" '||coalesce(p_item.element_attributes, 'class="new_select_list"')||'>');
-- loop through the result and add list entries
for i in 1 .. l_values.count
loop
    apex_plugin_util.print_option (
        p_display_value => l_values(i).display_value,
        p_return_value  => l_values(i).return_value,
        p_is_selected   => apex_plugin_util.is_equal(l_values(i).return_value, p_
value),
        p_attributes    => p_item.element_option_attributes,
        p_escape        => true );
end loop;
sys.http.p('</select>');
```

REPLACE_SUBSTITUTIONS Function

This function replaces any &ITEM. substitution references with their actual value. If p_escape is set to TRUE, any special characters contained in the value of the referenced item are escaped to prevent Cross-site scripting (XSS) attacks.

Syntax

```
apex_plugin_util.replace_substitutions (
    p_value      in varchar2,
    p_escape     in boolean default true )
return varchar2;
```

Parameters

[Table 16–34](#) describes the parameters available in the REPLACE_SUBSTITUTION function.

Table 16–34 REPLACE_SUBSTITUTION Parameters

Parameter	Description
p_value	This value is a string which can contain several &ITEM. references which are replaced by their actual page item values.
p_escape	If set to TRUE any special characters contained in the value of the referenced item are escaped to prevent Cross-site scripting (XSS) attacks. If set to FALSE, the referenced items are not escaped.

Example

The following example replaces any substitution syntax references in the region plug-in attribute 05 with their actual values. Any special characters in the values will be escaped.

```
l_advanced_formatting := apex_plugin_util.replace_substitutions (
    p_value => p_region.attribute_05,
    p_escape => true );
```

APEX_UI_DEFAULT_UPDATE

The APEX_UI_DEFAULT_UPDATE package provides procedures to access user interface defaults from within SQL Developer or SQL*Plus.

You can use this package to set the user interface defaults associated with a table within a schema. The package must be called from within the schema that owns the table you are updating.

User interface defaults enable you to assign default user interface properties to a table, column, or view within a specified schema. When you create a form or report using a wizard, the wizard uses this information to create default values for region and item properties. Utilizing user interface defaults can save valuable development time and has the added benefit of providing consistency across multiple pages in an application.

Topics:

- [ADD_AD_COLUMN Procedure](#)
- [ADD_AD_SYNONYM Procedure](#)
- [DEL_AD_COLUMN Procedure](#)
- [DEL_AD_SYNONYM Procedure](#)
- [DEL_COLUMN Procedure](#)
- [DEL_GROUP Procedure](#)
- [DEL_TABLE Procedure](#)
- [SYNCH_TABLE Procedure](#)
- [UPD_AD_COLUMN Procedure](#)
- [UPD_AD_SYNONYM Procedure](#)
- [UPD_COLUMN Procedure](#)
- [UPD_DISPLAY_IN_FORM Procedure](#)
- [UPD_DISPLAY_IN_REPORT Procedure](#)
- [UPD_FORM_REGION_TITLE Procedure](#)
- [UPD_GROUP Procedure](#)
- [UPD_ITEM_DISPLAY_HEIGHT Procedure](#)
- [UPD_ITEM_DISPLAY_WIDTH Procedure](#)
- [UPD_ITEM_FORMAT_MASK Procedure](#)
- [UPD_ITEM_HELP Procedure](#)

-
- [UPD_LABEL Procedure](#)
 - [UPD_REPORT_ALIGNMENT Procedure](#)
 - [UPD_REPORT_FORMAT_MASK Procedure](#)
 - [UPD_REPORT_REGION_TITLE Procedure](#)
 - [UPD_TABLE Procedure](#)

See Also: "Managing User Interface Defaults" in *Oracle Application Express SQL Workshop Guide*

ADD_AD_COLUMN Procedure

Adds a User Interface Default Attribute Dictionary entry with the provided definition. Up to three synonyms can be provided during the creation. Additional synonyms can be added post-creation using `apex_ui_default_update.add_ad_synonym`. Synonyms share the column definition of their base column.

Syntax

```
APEX_UI_DEFAULT_UPDATE.ADD_AD_COLUMN (
    p_column_name      IN  VARCHAR2,
    p_label            IN  VARCHAR2  DEFAULT NULL,
    p_help_text        IN  VARCHAR2  DEFAULT NULL,
    p_format_mask       IN  VARCHAR2  DEFAULT NULL,
    p_default_value     IN  VARCHAR2  DEFAULT NULL,
    p_form_format_mask  IN  VARCHAR2  DEFAULT NULL,
    p_form_display_width IN  VARCHAR2  DEFAULT NULL,
    p_form_display_height IN VARCHAR2  DEFAULT NULL,
    p_form_data_type    IN  VARCHAR2  DEFAULT NULL,
    p_report_format_mask IN  VARCHAR2  DEFAULT NULL,
    p_report_col_alignment IN VARCHAR2  DEFAULT NULL,
    p_syn_name1         IN  VARCHAR2  DEFAULT NULL,
    p_syn_name2         IN  VARCHAR2  DEFAULT NULL,
    p_syn_name3         IN  VARCHAR2  DEFAULT NULL);
```

Parameters

[Table 17–5](#) describes the parameters available in the `ADD_AD_COLUMN` procedure.

Table 17–1 *ADD_AD_COLUMN Parameters*

Parameter	Description
<code>p_column_name</code>	Name of column to be created.
<code>p_label</code>	Used for item label and report column heading.
<code>p_help_text</code>	Used for help text for items and interactive report columns
<code>p_format_mask</code>	Used as the format mask for items and report columns. Can be overwritten by report for form specific format masks.
<code>p_default_value</code>	Used as the default value for items.
<code>p_form_format_mask</code>	If provided, used as the format mask for items, overriding any value for the general format mask.
<code>p_form_display_width</code>	Used as the width of any items using this Attribute Definition.
<code>p_form_display_height</code>	Used as the height of any items using this Attribute Definition (only used by item types such as text areas and shuttles).
<code>p_form_data_type</code>	Used as the data type for items (results in an automatic validation). Valid values are VARCHAR, NUMBER and DATE.
<code>p_report_format_mask</code>	If provided, used as the format mask for report columns, overriding any value for the general format mask.
<code>p_report_col_alignment</code>	Used as the alignment for report column data (e.g. number are usually right justified). Valid values are LEFT, CENTER, and RIGHT.

Table 17–1 (Cont.) ADD_AD_COLUMN Parameters

Parameter	Description
p_syn_name1	Name of synonym to be created along with this column. For more than 3, use APEX_UI_DEFAULT_UPDATE.ADD_AD_SYNONYM.
p_syn_name2	Name of second synonym to be created along with this column. For more than 3, use APEX_UI_DEFAULT_UPDATE.ADD_AD_SYNONYM.
p_syn_name3	Name of third synonym to be created along with this column. For more than 3, use APEX_UI_DEFAULT_UPDATE.ADD_AD_SYNONYM.

Example

The following example creates a new attribute to the UI Defaults Attribute Dictionary within the workspace associated with the current schema. It also creates a synonym for that attribute.

```

BEGIN
    apex_ui_default_update.add_ad_column (
        p_column_name      => 'CREATED_BY',
        p_label            => 'Created By',
        p_help_text        => 'User that created the record.',
        p_form_display_width => 30,
        p_form_data_type    => 'VARCHAR',
        p_report_col_alignment => 'LEFT',
        p_syn_name1        => 'CREATED_BY_USER' );
END;
```

ADD_AD_SYNONYM Procedure

If the column name is found within the User Interface Default Attribute Dictionary, the synonym provided is created and associated with that column. Synonyms share the column definition of their base column.

Syntax

```
APEX_UI_DEFAULT_UPDATE.ADD_AD_SYNONYM (  
    p_column_name      IN VARCHAR2,  
    p_syn_name         IN VARCHAR2);
```

Parameters

[Table 17–2](#) describes the parameters available in the ADD_AD_SYNONYM procedure.

Table 17–2 ADD_AD_SYNONYM Parameters

Parameter	Description
p_column_name	Name of column with the Attribute Dictionary that the synonym is being created for.
p_syn_name	Name of synonym to be created.

Example

The following example add the synonym CREATED_BY_USER to the CREATED_BY attribute of the UI Defaults Attribute Dictionary within the workspace associated with the current schema.

```
BEGIN  
    apex_ui_default_update.add_ad_synonym (  
        p_column_name => 'CREATED_BY',  
        p_syn_name    => 'CREATED_BY_USER' );  
END;
```

DEL_AD_COLUMN Procedure

If the column name is found within the User Interface Default Attribute Dictionary, the column, along with any associated synonyms, is deleted.

Syntax

```
APEX_UI_DEFAULT_UPDATE.DEL_AD_COLUMN (  
    p_column_name          IN VARCHAR2);
```

Parameters

[Table 17–3](#) describes the parameters available in the DEL_AD_COLUMN procedure.

Table 17–3 DEL_AD_COLUMN Parameters

Parameter	Description
p_column_name	Name of column to be deleted

Example

The following example deletes the attribute CREATED_BY from the UI Defaults Attribute Dictionary within the workspace associated with the current schema.

```
BEGIN  
    apex_ui_default_update.del_ad_column (  
        p_column_name => 'CREATED_BY' );  
END;
```

DEL_AD_SYNONYM Procedure

If the synonym name is found within the User Interface Default Attribute Dictionary, the synonym name is deleted.

Syntax

```
APEX_UI_DEFAULT_UPDATE.DEL_AD_SYNONYM (  
    p_syn_name          IN VARCHAR2);
```

Parameters

[Table 17–4](#) describes the parameters available in the DEL_AD_SYNONYM procedure.

Table 17–4 DEL_AD_SYNONYM Parameters

Parameter	Description
p_syn_name	Name of synonym to be deleted

Example

The following example deletes the synonym CREATED_BY_USER from the UI Defaults Attribute Dictionary within the workspace associated with the current schema.

```
BEGIN  
    apex_ui_default_update.del_ad_synonym (  
        p_syn_name      => 'CREATED_BY_USER' );  
END;
```

DEL_COLUMN Procedure

If the provided table and column exists within the user's schema's table based User Interface Defaults, the UI Defaults for it are deleted.

Syntax

```
APEX_UI_DEFAULT_UPDATE.DEL_COLUMN (  
    p_table_name          IN VARCHAR2,  
    p_column_name         IN VARCHAR2);
```

Parameters

[Table 17–5](#) describes the parameters available in the DEL_COLUMN procedure.

Table 17–5 DEL_COLUMN Parameters

Parameter	Description
p_table_name	Name of table whose column's UI Defaults are to be deleted.
p_column_name	Name of columns whose UI Defaults are to be deleted.

Example

The following example deletes the column CREATED_BY from the EMP table definition within the UI Defaults Table Dictionary within the current schema.

```
BEGIN  
    apex_ui_default_update.del_column (  
        p_table_name => 'EMP',  
        p_column_name => 'CREATED_BY' );  
END;
```

DEL_GROUP Procedure

If the provided table and group exists within the user's schema's table based User Interface Defaults, the UI Defaults for it are deleted and any column within the table that references that group has the group_id set to null.

Syntax

```
APEX_UI_DEFAULT_UPDATE.DEL_GROUP (  
    p_table_name          IN VARCHAR2,  
    p_group_name          IN VARCHAR2);
```

Parameters

[Table 17–6](#) describes the parameters available in the DEL_GROUP procedure.

Table 17–6 DEL_GROUP Parameters

Parameter	Description
p_table_name	Name of table whose group UI Defaults are to be deleted
p_group_name	Name of group whose UI Defaults are to be deleted

Example

The following example deletes the group AUDIT_INFO from the EMP table definition within the UI Defaults Table Dictionary within the current schema.

```
BEGIN  
    apex_ui_default_update.del_group (  
        p_table_name => 'EMP',  
        p_group_name => 'AUDIT_INFO' );  
END;
```

DEL_TABLE Procedure

If the provided table exists within the user's schema's table based User Interface Defaults, the UI Defaults for it is deleted. This includes the deletion of any groups defined for the table and all the columns associated with the table.

Syntax

```
APEX_UI_DEFAULT_UPDATE.DEL_TABLE (
    p_table_name          IN VARCHAR2);
```

Parameters

[Table 17–7](#) describes the parameters available in the DEL_TABLE procedure.

Table 17–7 DEL_TABLE Parameters

Parameter	Description
p_table_name	Table name

Example

The following example removes the UI Defaults for the EMP table that are associated with the current schema.

```
begin
    apex_ui_default_update.del_table (
        p_table_name => 'EMP' );
end;
/
```

SYNCH_TABLE Procedure

If the Table Based User Interface Defaults for the table do not already exist within the user's schema, they are defaulted. If they do exist, they are synchronized, meaning, the columns in the table will be matched against the column in the UI Defaults Table Definitions. Additions and deletions are used to make them match.

Syntax

```
APEX_UI_DEFAULT_UPDATE.SYNCH_TABLE (  
    p_table_name          IN VARCHAR2);
```

Parameters

[Table 17–8](#) describes the parameters available in the SYNCH_TABLE procedure.

Table 17–8 SYNCH_TABLE Parameters

Parameter	Description
p_table_name	Table name

Example

The following example synchronizes the UI Defaults for the EMP table that are associated with the current schema.

```
BEGIN  
    apex_ui_default_update.synch_table (  
        p_table_name => 'EMP' );  
END;
```

UPD_AD_COLUMN Procedure

If the column name is found within the User Interface Default Attribute Dictionary, the column entry is updated using the provided parameters. If 'null%' is passed in, the value of the associated parameter is set to null.

Syntax

```
APEX_UI_DEFAULT_UPDATE.UPD_AD_COLUMN (  
    p_column_name          IN  VARCHAR2 ,  
    p_new_column_name      IN  VARCHAR2  DEFAULT NULL ,  
    p_label                IN  VARCHAR2  DEFAULT NULL ,  
    p_help_text            IN  VARCHAR2  DEFAULT NULL ,  
    p_format_mask          IN  VARCHAR2  DEFAULT NULL ,  
    p_default_value        IN  VARCHAR2  DEFAULT NULL ,  
    p_form_format_mask     IN  VARCHAR2  DEFAULT NULL ,  
    p_form_display_width   IN  VARCHAR2  DEFAULT NULL ,  
    p_form_display_height  IN  VARCHAR2  DEFAULT NULL ,  
    p_form_data_type       IN  VARCHAR2  DEFAULT NULL ,  
    p_report_format_mask   IN  VARCHAR2  DEFAULT NULL ,  
    p_report_col_alignment IN  VARCHAR2  DEFAULT NULL );
```

Parameters

[Table 17–9](#) describes the parameters available in the UPD_AD_COLUMN procedure.

Table 17–9 UPD_AD_COLUMN Parameters

Parameter	Description
p_column_name	Name of column to be updated
p_new_column_name	New name for column, if column is being renamed
p_label	Used for item label and report column heading
p_help_text	Used for help text for items and interactive report columns
p_format_mask	Used as the format mask for items and report columns. Can be overwritten by report for form specific format masks.
p_default_value	Used as the default value for items.
p_form_format_mask	If provided, used as the format mask for items, overriding any value for the general format mask.
p_form_display_width	Used as the width of any items using this Attribute Definition.
p_form_display_height	Used as the height of any items using this Attribute Definition (only used by item types such as text areas and shuttles).
p_form_data_type	Used as the data type for items (results in an automatic validation). Valid values are VARCHAR, NUMBER and DATE.
p_report_format_mask	If provided, used as the format mask for report columns, overriding any value for the general format mask.
p_report_col_alignment	Used as the alignment for report column data (e.g. number are usually right justified). Valid values are LEFT, CENTER, and RIGHT.

Note: If `p_label` through `p_report_col_alignment` are set to 'null%', the value will be nullified. If no value is passed in, that column will not be updated.

Example

The following example updates the `CREATED_BY` column in the UI Defaults Attribute Dictionary within the workspace associated with the current schema, setting the `form_format_mask` to null.

```
BEGIN
  apex_ui_default_update.upd_ad_column (
    p_column_name      => 'CREATED_BY',
    p_form_format_mask => 'null%');
END;
```

UPD_AD_SYNONYM Procedure

If the synonym name is found within the User Interface Default Attribute Dictionary, the synonym name is updated.

Syntax

```
APEX_UI_DEFAULT_UPDATE.UPD_AD_SYNONYM (  
    p_syn_name          IN VARCHAR2,  
    p_new_syn_name      IN VARCHAR2 DEFAULT NULL);
```

Parameters

[Table 17–10](#) describes the parameters available in the UPD_AD_SYNONYM procedure.

Table 17–10 UPD_AD_SYNONYM Parameters

Parameter	Description
p_syn_name	Name of synonym to be updated
p_new_syn_name	New name for synonym

Example

The following example updates the CREATED_BY_USER synonym in the UI Defaults Attribute Dictionary within the workspace associated with the current schema.

```
BEGIN  
    apex_ui_default_update.upd_ad_synonym (  
        p_syn_name      => 'CREATED_BY_USER',  
        p_new_syn_name => 'USER_CREATED_BY');  
END;
```

UPD_COLUMN Procedure

If the provided table and column exists within the user's schema's table based User Interface Defaults, the provided parameters are updated. If 'null%' is passed in, the value of the associated parameter is set to null.

Syntax

```
APEX_UI_DEFAULT_UPDATE.UPD_COLUMN (
    p_table_name          IN VARCHAR2,
    p_column_name         IN VARCHAR2,
    p_group_id            IN VARCHAR2  DEFAULT NULL,
    p_label               IN VARCHAR2  DEFAULT NULL,
    p_help_text           IN VARCHAR2  DEFAULT NULL,
    p_display_in_form     IN VARCHAR2  DEFAULT NULL,
    p_display_seq_form    IN VARCHAR2  DEFAULT NULL,
    p_mask_form           IN VARCHAR2  DEFAULT NULL,
    p_default_value       IN VARCHAR2  DEFAULT NULL,
    p_required            IN VARCHAR2  DEFAULT NULL,
    p_display_width       IN VARCHAR2  DEFAULT NULL,
    p_max_width           IN VARCHAR2  DEFAULT NULL,
    p_height              IN VARCHAR2  DEFAULT NULL,
    p_display_in_report   IN VARCHAR2  DEFAULT NULL,
    p_display_seq_report  IN VARCHAR2  DEFAULT NULL,
    p_mask_report         IN VARCHAR2  DEFAULT NULL,
    p_alignment           IN VARCHAR2  DEFAULT NULL);
```

Parameters

[Table 17–11](#) describes the parameters available in the UPD_COLUMN procedure.

Table 17–11 UPD_COLUMN Parameters

Parameter	Description
p_table_name	Name of table whose column's UI Defaults are being updated
p_column_name	Name of column whose UI Defaults are being updated
p_group_id	id of group to be associated with the column
p_label	When creating a form against this table or view, this will be used as the label for the item if this column is included. When creating a report or tabular form, this will be used as the column heading if this column is included.
p_help_text	When creating a form against this table or view, this becomes the help text for the resulting item.
p_display_in_form	When creating a form against this table or view, this determines whether this column will be displayed in the resulting form page. Valid values are Y and N.
p_display_seq_form	When creating a form against this table or view, this determines the sequence in which the columns will be displayed in the resulting form page.
p_mask_form	When creating a form against this table or view, this specifies the mask that will be applied to the item, such as 999-99-9999. This is not used for character based items.
p_default_value	When creating a form against this table or view, this specifies the default value for the item resulting from this column.

Table 17-11 (Cont.) UPD_COLUMN Parameters

Parameter	Description
p_required	When creating a form against this table or view, this specifies to generate a validation in which the resulting item must be NOT NULL. Valid values are Y and N.
p_display_width	When creating a form against this table or view, this specifies the display width of the item resulting from this column.
p_max_width	When creating a form against this table or view, this specifies the maximum string length that a user is allowed to enter in the item resulting from this column.
p_height	When creating a form against this table or view, this specifies the display height of the item resulting from this column.
p_display_in_report	When creating a report against this table or view, this determines whether this column will be displayed in the resulting report. Valid values are Y and N.
p_display_seq_report	When creating a report against this table or view, this determines the sequence in which the columns will be displayed in the resulting report.
p_mask_report	When creating a report against this table or view, this specifies the mask that will be applied against the data, such as 999-99-9999. This is not used for character based items.
p_alignment	When creating a report against this table or view, this determines the alignment for the resulting report column. Valid values are L for Left, C for Center, and R for Right.

Note: If `p_group_id` through `p_alignment` are set to 'null%', the value will be nullified. If no value is passed in, that column will not be updated.

Example

The following example updates the column `DEPT_NO` within the `EMP` table definition within the UI Defaults Table Dictionary within the current schema, setting the `group_id` to null.

```
BEGIN
    apex_ui_default_update.upd_column (
        p_table_name      => 'EMP',
        p_column_name     => 'DEPT_NO',
        p_group_id        => 'null%' );
END;
```


UPD_DISPLAY_IN_FORM Procedure

The UPD_DISPLAY_IN_FORM procedure sets the display in form user interface defaults. This user interface default will be used by wizards when you select to create a form based upon the table. It controls whether the column is included by default or not.

Syntax

```
APEX_UI_DEFAULT_UPDATE.UPD_DISPLAY_IN_FORM (
    p_table_name          IN VARCHAR2,
    p_column_name         IN VARCHAR2,
    p_display_in_form     IN VARCHAR2);
```

Parameters

[Table 17–12](#) describes the parameters available in the UPD_DISPLAY_IN_FORM procedure.

Table 17–12 UPD_DISPLAY_IN_FORM Parameters

Parameter	Description
p_table_name	Table name
p_column_name	Column name
p_display_in_form	Determines whether or not to display in the form by default, valid values are Y and N

Example

In the following example, when creating a Form against the DEPT table, the display option on the DEPTNO column defaults to 'No'.

```
APEX_UI_DEFAULT_UPDATE.UPD_DISPLAY_IN_FORM(
    p_table_name => 'DEPT',
    p_column_name => 'DEPTNO',
    p_display_in_form => 'N');
```

UPD_DISPLAY_IN_REPORT Procedure

The `UPD_DISPLAY_IN_REPORT` procedure sets the display in report user interface default. This user interface default is used by wizards when you select to create a report based upon the table and controls whether the column is included by default or not.

Syntax

```
APEX_UI_DEFAULT_UPDATE.UPD_DISPLAY_IN_REPORT (  
    p_table_name           IN VARCHAR2,  
    p_column_name          IN VARCHAR2,  
    p_display_in_report    IN VARCHAR2);
```

Parameters

[Table 17-13](#) describes the parameters available in the `UPD_DISPLAY_IN_REPORT` procedure.

Table 17-13 *UPD_DISPLAY_IN_REPORT Parameters*

Parameter	Description
<code>p_table_name</code>	Table name
<code>p_column_name</code>	Column name
<code>p_display_in_report</code>	Determines whether or not to display in the report by default, valid values are Y and N

Example

In the following example, when creating a Report against the `DEPT` table, the display option on the `DEPTNO` column defaults to 'No'.

```
APEX_UI_DEFAULT_UPDATE.UPD_DISPLAY_IN_REPORT(  
    p_table_name => 'DEPT',  
    p_column_name => 'DEPTNO',  
    p_display_in_report => 'N');
```

UPD_FORM_REGION_TITLE Procedure

The UPD_FORM_REGION_TITLE procedure updates the Form Region Title user interface default. User interface defaults are used in wizards when you create a form based upon the specified table.

Syntax

```
APEX_UI_DEFAULT_UPDATE.UPD_FORM_REGION_TITLE (  
    p_table_name           IN VARCHAR2,  
    p_form_region_title    IN VARCHAR2 DEFAULT NULL);
```

Parameters

[Table 17-14](#) describes the parameters available in the UPD_FORM_REGION_TITLE procedure.

Table 17-14 *UPDATE_FORM_REGION_TITLE Parameters*

Parameter	Description
p_table_name	Table name
p_form_region_title	Desired form region title

Example

This example demonstrates how to set the Forms Region Title user interface default on the DEPT table.

```
APEX_UI_DEFAULT_UPDATE.UPD_FORM_REGION_TITLE (  
    p_table_name           => 'DEPT',  
    p_form_region_title    => 'Department Details');
```

UPD_GROUP Procedure

If the provided table and group exist within the user's schema's table based User Interface Defaults, the group name, description and display sequence of the group are updated. If 'null%' is passed in for p_description or p_display_sequence, the value is set to null.

Syntax

```
APEX_UI_DEFAULT_UPDATE.UPD_GROUP (  
    p_table_name          IN VARCHAR2,  
    p_group_name          IN VARCHAR2,  
    p_new_group_name      IN VARCHAR2 DEFAULT NULL,  
    p_description         IN VARCHAR2 DEFAULT NULL,  
    p_display_sequence    IN VARCHAR2 DEFAULT NULL);
```

Parameters

[Table 17–15](#) describes the parameters available in the UPD_GROUP procedure.

Table 17–15 UPD_GROUP Parameters

Parameter	Description
p_table_name	Name of table whose group is being updated
p_group_name	Group being updated
p_new_group_name	New name for group, if group is being renamed
p_description	Description of group
p_display_sequence	Display sequence of group.

Note: If p_description or p_display_sequence are set to 'null%', the value will be nullified. If no value is passed in, that column will not be updated.

Example

The following example updates the description of the group AUDIT_INFO within the EMP table definition within the UI Defaults Table Dictionary within the current schema.

```
BEGIN  
    apex_ui_default_update.upd_group (  
        p_table_name => 'EMP',  
        p_group_name => 'AUDIT_INFO',  
        p_description => 'Audit columns' );  
END;
```

UPD_ITEM_DISPLAY_HEIGHT Procedure

The `UPD_ITEM_DISPLAY_HEIGHT` procedure sets the item display height user interface default. This user interface default is used by wizards when you select to create a form based upon the table and include the specified column. Display height controls if the item is a text box or a text area.

Syntax

```
APEX_UI_DEFAULT_UPDATE.UPD_ITEM_DISPLAY_HEIGHT (
    p_table_name          IN VARCHAR2,
    p_column_name         IN VARCHAR2,
    p_display_height      IN NUMBER);
```

Parameters

[Table 17–16](#) describes the parameters available in the `UPD_ITEM_DISPLAY_HEIGHT` procedure.

Table 17–16 *UPD_ITEM_DISPLAY_HEIGHT Parameters*

Parameter	Description
<code>p_table_name</code>	Table name
<code>p_column_name</code>	Column name
<code>p_display_height</code>	Display height of any items created based upon this column

Example

The following example sets a default item height of 3 when creating an item on the `DNAME` column against the `DEPT` table.

```
APEX_UI_DEFAULT_UPDATE.UPD_ITEM_DISPLAY_HEIGHT(
    p_table_name => 'DEPT',
    p_column_name => 'DNAME',
    p_display_height => 3);
```

UPD_ITEM_DISPLAY_WIDTH Procedure

The `UPD_ITEM_DISPLAY_WIDTH` procedure sets the item display width user interface default. This user interface default is used by wizards when you select to create a form based upon the table and include the specified column.

Syntax

```
APEX_UI_DEFAULT_UPDATE.UPD_ITEM_DISPLAY_WIDTH (  
    p_table_name           IN VARCHAR2,  
    p_column_name          IN VARCHAR2,  
    p_display_width        IN NUMBER);
```

Parameters

[Table 17-17](#) describes the parameters available in the `UPD_ITEM_DISPLAY_WIDTH` procedure.

Table 17-17 *UPD_ITEM_DISPLAY_WIDTH Parameters*

Parameter	Description
<code>p_table_name</code>	Table name
<code>p_column_name</code>	Column name
<code>p_display_width</code>	Display width of any items created based upon this column

Example

The following example sets a default item width of 5 when creating an item on the DEPTNO column against the DEPT table.

```
APEX_UI_DEFAULT_UPDATE.UPD_ITEM_DISPLAY_WIDTH(  
    p_table_name => 'DEPT',  
    p_column_name => 'DEPTNO',  
    p_display_width => 5);
```

UPD_ITEM_FORMAT_MASK Procedure

The `UPD_ITEM_FORMAT_MASK` procedure sets the item format mask user interface default. This user interface default is used by wizards when you select to create a form based upon the table and include the specified column. Item format mask is typically used to format numbers and dates.

Syntax

```
APEX_UI_DEFAULT_UPDATE.UPD_ITEM_FORMAT_MASK (
    p_table_name          IN VARCHAR2,
    p_column_name         IN VARCHAR2,
    p_format_mask         IN VARCHAR2 DEFAULT NULL);
```

Parameters

[Table 17-18](#) describes the parameters available in the `UPD_ITEM_FORMAT_MASK` procedure.

Table 17-18 *UPD_ITEM_FORMAT_MASK Parameters*

Parameter	Description
<code>p_table_name</code>	Table name
<code>p_column_name</code>	Column name
<code>p_format_mask</code>	Format mask to be associated with the column

Example

In the following example, when creating a Form against the EMP table, the default item format mask on the HIREDATE column is set to 'DD-MON-YYYY'.

```
APEX_UI_DEFAULT_UPDATE.UPD_ITEM_FORMAT_MASK (
    p_table_name => 'EMP',
    p_column_name => 'HIREDATE',
    p_format_mask=> 'DD-MON-YYYY');
```

UPD_ITEM_HELP Procedure

The UPD_ITEM_HELP procedure updates the help text for the specified table and column. This user interface default is used when you create a form based upon the table and select to include the specified column.

Syntax

```
APEX_UI_DEFAULT_UPDATE.UPD_ITEM_HELP (  
    p_table_name           IN VARCHAR2,  
    p_column_name          IN VARCHAR2,  
    p_help_text            IN VARCHAR2 DEFAULT NULL);
```

Parameters

[Table 17–19](#) describes the parameters available in the UPD_ITEM_HELP procedure.

Table 17–19 UPD_ITEM_HELP Parameters

Parameter	Description
p_table_name	Table name
p_column_name	Column name
p_help_text	Desired help text

Example

This example demonstrates how to set the User Interface Item Help Text default for the DEPTNO column in the DEPT table.

```
APEX_UI_DEFAULT_UPDATE.UPD_ITEM_HELP(  
    p_table_name => 'DEPT',  
    p_column_name => 'DEPTNO',  
    p_help_text => 'The number assigned to the department.');
```

UPD_LABEL Procedure

The UPD_LABEL procedure sets the label used for items. This user interface default is used when you create a form or report based on the specified table and include a specific column.

Syntax

```
APEX_UI_DEFAULT_UPDATE.UPD_LABEL (  
    p_table_name          IN VARCHAR2,  
    p_column_name         IN VARCHAR2,  
    p_label               IN VARCHAR2 DEFAULT NULL);
```

Parameters

[Table 17–20](#) describes the parameters available in the UPD_LABEL procedure.

Table 17–20 UPD_LABEL Parameters

Parameter	Description
p_table_name	Table name
p_column_name	Column name
p_label	Desired item label

Example

This example demonstrates how to set the User Interface Item Label default for the DEPTNO column in the DEPT table.

```
APEX_UI_DEFAULT_UPDATE.UPD_LABEL (  
    p_table_name => 'DEPT',  
    p_column_name => 'DEPTNO',  
    p_label => 'Department Number');
```

UPD_REPORT_ALIGNMENT Procedure

The UPD_REPORT_ALIGNMENT procedure sets the report alignment user interface default. This user interface default is used by wizards when you select to create a report based upon the table and include the specified column and determines if the report column should be left, center, or right justified.

Syntax

```
APEX_UI_DEFAULT_UPDATE.UPD_REPORT_ALIGNMENT (
    p_table_name           IN VARCHAR2,
    p_column_name          IN VARCHAR2,
    p_report_alignment     IN VARCHAR2);
```

Parameters

[Table 17-21](#) describes the parameters available in the UPD_REPORT_ALIGNMENT procedure.

Table 17-21 UPD_REPORT_ALIGNMENT Parameters

Parameter	Description
p_table_name	Table name.
p_column_name	Column name.
p_report_alignment	Defines the alignment of the column in a report. Valid values are L (left), C (center) and R (right).

Example

In the following example, when creating a Report against the DEPT table, the default column alignment on the DEPTNO column is set to Right justified.

```
APEX_UI_DEFAULT_UPDATE.UPD_REPORT_ALIGNMENT (
    p_table_name => 'DEPT',
    p_column_name => 'DEPTNO',
    p_report_alignment => 'R');
```

UPD_REPORT_FORMAT_MASK Procedure

The UPD_REPORT_FORMAT_MASK procedure sets the report format mask user interface default. This user interface default is used by wizards when you select to create a report based upon the table and include the specified column. Report format mask is typically used to format numbers and dates.

Syntax

```
APEX_UI_DEFAULT_UPDATE.UPD_REPORT_FORMAT_MASK (
    p_table_name          IN VARCHAR2,
    p_column_name         IN VARCHAR2,
    p_format_mask         IN VARCHAR2 DEFAULT NULL);
```

Parameters

[Table 17-22](#) describes the parameters available in the UPD_REPORT_FORMAT_MASK procedure.

Table 17-22 UPD_REPORT_FORMAT_MASK Parameters

Parameter	Description
p_table_name	Table name
p_column_name	Column name
p_format_mask	Format mask to be associated with the column whenever it is included in a report

Example

In the following example, when creating a Report against the EMP table, the default format mask on the HIREDATE column is set to 'DD-MON-YYYY'.

```
APEX_UI_DEFAULT_UPDATE.UPD_REPORT_FORMAT_MASK (
    p_table_name => 'EMP',
    p_column_name => 'HIREDATE',
    p_format_mask=> 'DD-MON-YYYY');
```

UPD_REPORT_REGION_TITLE Procedure

The UPD_REPORT_REGION_TITLE procedure sets the Report Region Title. User interface defaults are used in wizards when a report is created on a table.

Syntax

```
APEX_UI_DEFAULT_UPDATE.UPD_REPORT_REGION_TITLE (
    p_table_name           IN VARCHAR2,
    p_report_region_title  IN VARCHAR2 DEFAULT NULL);
```

Parameters

[Table 17-23](#) describes the parameters available in the UPD_REPORT_REGION_TITLE procedure.

Table 17-23 UPD_REPORT_REGION_TITLE Parameters

Parameter	Description
p_table_name	Table name
p_report_region_title	Desired report region title

Example

This example demonstrates how to set the Reports Region Title user interface default on the DEPT table.

```
APEX_UI_DEFAULT_UPDATE.UPD_REPORT_REGION_TITLE (
    p_table_name           => 'DEPT',
    p_report_region_title  => 'Departments');
```

UPD_TABLE Procedure

If the provided table exists within the user's schema's table based User Interface Defaults, the form region title and report region title are updated to match those provided. If 'null%' is passed in for p_form_region_title or p_report_region_title, the value is set to null.

Syntax

```
APEX_UI_DEFAULT_UPDATE.UPD_TABLE (
    p_table_name           IN VARCHAR2,
    p_form_region_title     IN VARCHAR2 DEFAULT NULL,
    p_report_region_title   IN VARCHAR2 DEFAULT NULL);
```

Parameters

Table 17–24 describes the parameters available in the UPD_TABLE procedure.

Table 17–24 UPD_TABLE Parameters

Parameter	Description
p_table_name	Name of table being updated.
p_form_region_title	Region title used for forms.
p_report_region_title	Region title used for reports and tabular forms.

Note: if 'null%' is passed in for p_form_region_title or p_report_region_title, the value is set to null. If no value is passed in, that column will not be updated.

Example

The following example updates the EMP table definition within the UI Defaults Table Dictionary within the current schema.

```
begin
    apex_ui_default_update.upd_table (
        p_table_name           => 'EMP',
        p_form_region_title     => 'Employee Details',
        p_report_region_title   => 'Employees' );
end;
/
```


The APEX_UTIL package provides utilities you can use when programming in the Oracle Application Express environment. You can use the APEX_UTIL package to get and set session state, get files, check authorizations for users, reset different states for users, get and purge cache information and also to get and set preferences for users.

Topics:

- [CACHE_GET_DATE_OF_PAGE_CACHE Function](#)
- [CACHE_GET_DATE_OF_REGION_CACHE Function](#)
- [CACHE_PURGE_BY_APPLICATION Procedure](#)
- [CACHE_PURGE_BY_PAGE Procedure](#)
- [CACHE_PURGE_STALE Procedure](#)
- [CHANGE_CURRENT_USER_PW Procedure](#)
- [CHANGE_PASSWORD_ON_FIRST_USE Function](#)
- [CLEAR_APP_CACHE Procedure](#)
- [CLEAR_PAGE_CACHE Procedure](#)
- [CLEAR_USER_CACHE Procedure](#)
- [COUNT_CLICK Procedure](#)
- [CREATE_USER Procedure](#)
- [CREATE_USER_GROUP Procedure](#)
- [CURRENT_USER_IN_GROUP Function](#)
- [CUSTOM_CALENDAR Procedure](#)
- [DELETE_USER_GROUP Procedure Signature 1](#)
- [DELETE_USER_GROUP Procedure Signature 2](#)
- [DOWNLOAD_PRINT_DOCUMENT Procedure Signature 1](#)
- [DOWNLOAD_PRINT_DOCUMENT Procedure Signature 2](#)
- [DOWNLOAD_PRINT_DOCUMENT Procedure Signature 3](#)
- [DOWNLOAD_PRINT_DOCUMENT Procedure Signature 4](#)
- [EDIT_USER Procedure](#)
- [END_USER_ACCOUNT_DAYS_LEFT Function](#)
- [EXPIRE_END_USER_ACCOUNT Procedure](#)

-
- EXPIRE_WORKSPACE_ACCOUNT Procedure
 - EXPORT_USERS Procedure
 - FETCH_APP_ITEM Function
 - FETCH_USER Procedure Signature 1
 - FETCH_USER Procedure Signature 2
 - FETCH_USER Procedure Signature 3
 - FIND_SECURITY_GROUP_ID Function
 - FIND_WORKSPACE Function
 - GET_ACCOUNT_LOCKED_STATUS Function
 - GET_ATTRIBUTE Function
 - GET_AUTHENTICATION_RESULT Function
 - GET_BLOB_FILE_SRC Function
 - GET_CURRENT_USER_ID Function
 - GET_DEFAULT_SCHEMA Function
 - GET_EDITION Function
 - GET_EMAIL Function
 - GET_FEEDBACK_FOLLOW_UP Function
 - GET_FILE Procedure
 - GET_FILE_ID Function
 - GET_FIRST_NAME Function
 - GET_GROUPS_USER_BELONGS_TO Function
 - GET_GROUP_ID Function
 - GET_GROUP_NAME Function
 - GET_HIGH_CONTRAST_MODE_TOGGLE Function
 - GET_LAST_NAME Function
 - GET_NUMERIC_SESSION_STATE Function
 - GET_PREFERENCE Function
 - GET_PRINT_DOCUMENT Function Signature 1
 - GET_PRINT_DOCUMENT Function Signature 2
 - GET_PRINT_DOCUMENT Function Signature 3
 - GET_PRINT_DOCUMENT Function Signature 4
 - GET_SCREEN_READER_MODE_TOGGLE Function
 - GET_SESSION_LANG Function
 - GET_SESSION_STATE Function
 - GET_SESSION_TERRITORY Function
 - GET_SESSION_TIME_ZONE Function
 - GET_USER_ID Function

-
- GET_USER_ROLES Function
 - GET_USERNAME Function
 - HOST_URL Function
 - HTML_PCT_GRAPH_MASK Function
 - INCREMENT_CALENDAR Procedure
 - IR_CLEAR Procedure
 - IR_DELETE_REPORT Procedure
 - IR_DELETE_SUBSCRIPTION Procedure
 - IR_FILTER Procedure
 - IR_RESET Procedure
 - IS_HIGH_CONTRAST_SESSION Function
 - IS_HIGH_CONTRAST_SESSION_YN Function
 - IS_LOGIN_PASSWORD_VALID Function
 - IS_SCREEN_READER_SESSION Function
 - IS_SCREEN_READER_SESSION_YN Function
 - IS_USERNAME_UNIQUE Function
 - KEYVAL_NUM Function
 - KEYVAL_VC2 Function
 - LOCK_ACCOUNT Procedure
 - PASSWORD_FIRST_USE_OCCURRED Function
 - PREPARE_URL Function
 - PUBLIC_CHECK_AUTHORIZATION Function
 - PURGE_REGIONS_BY_APP Procedure
 - PURGE_REGIONS_BY_NAME Procedure
 - PURGE_REGIONS_BY_PAGE Procedure
 - REDIRECT_URL Procedure
 - REMOVE_PREFERENCE Procedure
 - REMOVE_SORT_PREFERENCES Procedure
 - REMOVE_USER Procedure
 - RESET_AUTHORIZATIONS Procedure
 - RESET_PW Procedure
 - SAVEKEY_NUM Function
 - SAVEKEY_VC2 Function
 - SET_ATTRIBUTE Procedure
 - SET_AUTHENTICATION_RESULT Procedure
 - SET_BUILD_OPTION_STATUS Procedure
 - SET_COMPATIBILITY_MODE Procedure

-
- SET_CUSTOM_AUTH_STATUS Procedure
 - SET_EDITION Procedure
 - SET_EMAIL Procedure
 - SET_FIRST_NAME Procedure
 - SET_LAST_NAME Procedure
 - SET_PREFERENCE Procedure
 - SET_SECURITY_GROUP_ID Procedure
 - SET_SESSION_HIGH_CONTRAST_OFF Procedure
 - SET_SESSION_HIGH_CONTRAST_ON Procedure
 - SET_SESSION_LANG Procedure
 - SET_SESSION_LIFETIME_SECONDS Procedure
 - SET_SESSION_MAX_IDLE_SECONDS Procedure
 - SET_SESSION_SCREEN_READER_OFF Procedure
 - SET_SESSION_SCREEN_READER_ON Procedure
 - SET_SESSION_STATE Procedure
 - SET_SESSION_TERRITORY Procedure
 - SET_SESSION_TIME_ZONE Procedure
 - SET_USERNAME Procedure
 - SHOW_HIGH_CONTRAST_MODE_TOGGLE Procedure
 - SHOW_SCREEN_READER_MODE_TOGGLE Procedure
 - STRING_TO_TABLE Function
 - SHOW_SCREEN_READER_MODE_TOGGLE Procedure
 - STRONG_PASSWORD_VALIDATION Function
 - SUBMIT_FEEDBACK Procedure
 - SUBMIT_FEEDBACK_FOLLOWUP Procedure
 - TABLE_TO_STRING Function
 - UNEXPIRE_END_USER_ACCOUNT Procedure
 - UNEXPIRE_WORKSPACE_ACCOUNT Procedure
 - UNLOCK_ACCOUNT Procedure
 - URL_ENCODE Function
 - WORKSPACE_ACCOUNT_DAYS_LEFT Function

CACHE_GET_DATE_OF_PAGE_CACHE Function

This function returns the date and time a specified application page was cached either for the user issuing the call, or for all users if the page was not set to be cached by user.

Syntax

```
APEX_UTIL.CACHE_GET_DATE_OF_PAGE_CACHE (  
    p_application IN    NUMBER,  
    p_page       IN    NUMBER)  
RETURN DATE;
```

Parameters

[Table 18–1](#) describes the parameters available in the CACHE_GET_DATE_OF_PAGE_CACHE procedure.

Table 18–1 *CACHE_GET_DATE_OF_PAGE_CACHE Parameters*

Parameter	Description
p_application	The identification number (ID) of the application.
p_page	The page number (ID).

Example

The following example demonstrates how to use the CACHE_GET_DATE_OF_PAGE_CACHE function to retrieve the cache date and time for page 9 of the currently executing application. If page 9 has been cached, the cache date and time is output using the HTP package. The page could have been cached either by the user issuing the call, or for all users if the page was not to be cached by the user.

```
DECLARE  
    l_cache_date DATE DEFAULT NULL;  
BEGIN  
    l_cache_date := APEX_UTIL.CACHE_GET_DATE_OF_PAGE_CACHE(  
        p_application => :APP_ID,  
        p_page => 9);  
    IF l_cache_date IS NOT NULL THEN  
        HTP.P('Cached on ' || TO_CHAR(l_cache_date, 'DD-MON-YY HH24:MI:SS'));  
    END IF;  
END;
```

CACHE_GET_DATE_OF_REGION_CACHE Function

This function returns the date and time a specified region was cached either for the user issuing the call, or for all users if the page was not set to be cached by user.

Syntax

```
APEX_UTIL.CACHE_GET_DATE_OF_REGION_CACHE (  
    p_application IN    NUMBER,  
    p_page        IN    NUMBER,  
    p_region_name IN    VARCHAR2)  
RETURN DATE;
```

Parameters

[Table 18–2](#) describes the parameters available in the `CACHE_GET_DATE_OF_REGION_CACHE` function.

Table 18–2 *CACHE_GET_DATE_OF_REGION_CACHE Parameters*

Parameter	Description
<code>p_application</code>	The identification number (ID) of the application
<code>p_page</code>	The page number (ID)
<code>p_region_name</code>	The region name

Example

The following example demonstrates how to use the `CACHE_GET_DATE_OF_REGION_CACHE` function to retrieve the cache date and time for the region named `Cached Region` on page 13 of the currently executing application. If the region has been cached, the cache date and time is output using the `HTP` package. The region could have been cached either by the user issuing the call, or for all users if the page was not to be cached by user.

```
DECLARE  
    l_cache_date DATE DEFAULT NULL;  
BEGIN  
    l_cache_date := APEX_UTIL.CACHE_GET_DATE_OF_REGION_CACHE(  
        p_application => :APP_ID,  
        p_page => 13,  
        p_region_name => 'Cached Region');  
    IF l_cache_date IS NOT NULL THEN  
        HTP.P('Cached on ' || TO_CHAR(l_cache_date, 'DD-MON-YY HH24:MI:SS'));  
    END IF;  
END;
```

CACHE_PURGE_BY_APPLICATION Procedure

This procedure purges all cached pages and regions for a given application.

Syntax

```
APEX_UTIL.CACHE_PURGE_BY_APPLICATION (  
    p_application IN NUMBER);
```

Parameters

[Table 18–3](#) describes the parameters available in the CACHE_PURGE_BY_APPLICATION procedure.

Table 18–3 *CACHE_PURGE_BY_APPLICATION Parameters*

Parameter	Description
p_application	The identification number (ID) of the application.

Example

The following example demonstrates how to use the CACHE_PURGE_BY_APPLICATION procedure to purge all the cached pages and regions for the application currently executing.

```
BEGIN  
    APEX_UTIL.CACHE_PURGE_BY_APPLICATION(p_application => :APP_ID);  
END;
```

CACHE_PURGE_BY_PAGE Procedure

This procedure purges the cache for a given application and page. If the page itself is not cached but contains one or more cached regions, then the cache for these will also be purged.

Syntax

```
APEX_UTIL.CACHE_PURGE_BY_PAGE (  
    p_application IN    NUMBER,  
    p_page        IN    NUMBER,  
    p_user_name   IN    VARCHAR2 DEFAULT NULL);
```

Parameters

[Table 18–4](#) describes the parameters available in the `CACHE_PURGE_BY_PAGE` procedure.

Table 18–4 *CACHE_PURGE_BY_PAGE Parameters*

Parameter	Description
<code>p_application</code>	The identification number (ID) of the application.
<code>p_page</code>	The page number (ID).
<code>p_user_name</code>	The user associated with cached pages and regions.

Example

The following example demonstrates how to use the `CACHE_PURGE_BY_PAGE` procedure to purge the cache for page 9 of the application currently executing. Additionally, if the `p_user_name` parameter is supplied, this procedure would be further restricted by a specific users cache (only relevant if the cache is set to be by user).

```
BEGIN  
    APEX_UTIL.CACHE_PURGE_BY_PAGE(  
        p_application => :APP_ID,  
        p_page => 9);  
END;
```

CACHE_PURGE_STALE Procedure

This procedure deletes all cached pages and regions for a specified application that have passed the defined active time period. When you cache a page or region, you specify an active time period (or Cache Timeout). Once that period has passed, the cache will no longer be used, thus removing those unusable pages or regions from the cache.

Syntax

```
APEX_UTIL.CACHE_PURGE_STALE (  
    p_application IN    NUMBER);
```

Parameters

[Table 18–5](#) describes the parameters available in the CACHE_PURGE_STALE procedure.

Table 18–5 *CACHE_PURGE_STALE Parameters*

Parameter	Description
p_application	The identification number (ID) of the application.

Example

The following example demonstrates how to use the CACHE_PURGE_STALE procedure to purge all the stale pages and regions in the application currently executing.

```
BEGIN  
    APEX_UTIL.CACHE_PURGE_STALE(p_application => :APP_ID);  
END;
```

CHANGE_CURRENT_USER_PW Procedure

This procedure changes the password of the currently authenticated user, assuming Application Express user accounts are in use.

Syntax

```
APEX_UTIL.CHANGE_CURRENT_USER_PW(  
    p_new_password IN VARCHAR2);
```

Parameters

[Table 18–6](#) describes the parameters available in the CHANGE_CURRENT_USER_PW procedure.

Table 18–6 *CHANGE_CURRENT_USER_PW Parameters*

Parameter	Description
p_new_password	The new password value in clear text

Example

The following example demonstrates how to use the CHANGE_CURRENT_USER_PW procedure to change the password for the user who is currently authenticated, assuming Application Express accounts are in use.

```
BEGIN  
    APEX_UTIL.CHANGE_CURRENT_USER_PW ('secret99');  
END;
```

See Also: ["RESET_PW Procedure"](#) on page 18-113

CHANGE_PASSWORD_ON_FIRST_USE Function

Enables a developer to check whether this property is enabled or disabled for an end user account. This function returns true if the account password must be changed upon first use (after successful authentication) after the password is initially set and after it is changed on the Administration Service, Edit User page. This function returns false if the account does not have this property.

This function may be run in a page request context by any authenticated user.

Syntax

```
APEX_UTIL.CHANGE_PASSWORD_ON_FIRST_USE (
    p_user_name IN VARCHAR2)
RETURN BOOLEAN;
```

Parameters

[Table 18–7](#) describes the parameters available in the CHANGE_PASSWORD_ON_FIRST_USE function.

Table 18–7 *CHANGE_PASSWORD_ON_FIRST_USE Parameters*

Parameter	Description
p_user_name	The user name of the user account

Example

The following example demonstrates how to use the CHANGE_PASSWORD_ON_FIRST_USE function. Use this function to check if the password of an Application Express user account (workspace administrator, developer, or end user) in the current workspace must be changed by the user the first time it is used.

```
BEGIN
    FOR c1 IN (SELECT user_name FROM wwv_flow_users) LOOP
        IF APEX_UTIL.CHANGE_PASSWORD_ON_FIRST_USE(p_user_name => c1.user_name)
        THEN
            http.p('User: ' || c1.user_name || ' requires password to be changed the
first time it is used.');
```

See Also: ["PASSWORD_FIRST_USE_OCCURRED Function"](#) on page 18-101

CLEAR_APP_CACHE Procedure

This procedure removes session state for a given application for the current session.

Syntax

```
APEX_UTIL.CLEAR_APP_CACHE (  
    p_app_id    IN    VARCHAR2 DEFAULT NULL);
```

Parameters

[Table 18–8](#) describes the parameters available in the CLEAR_APP_CACHE procedure.

Table 18–8 *CLEAR_APP_CACHE Parameters*

Parameter	Description
p_app_id	The ID of the application for which session state will be cleared for current session

Example

The following example demonstrates how to use the CLEAR_APP_CACHE procedure to clear all the current sessions state for the application with an ID of 100.

```
BEGIN  
    APEX_UTIL.CLEAR_APP_CACHE('100');  
END;
```

CLEAR_PAGE_CACHE Procedure

This procedure removes session state for a given page for the current session.

Syntax

```
APEX_UTIL.CLEAR_PAGE_CACHE (  
    p_page IN NUMBER DEFAULT NULL);
```

Parameters

[Table 18–9](#) describes the parameters available in the CLEAR_PAGE_CACHE procedure.

Table 18–9 CLEAR_PAGE_CACHE Parameters

Parameter	Description
p_page	The ID of the page in the current application for which session state will be cleared for current session.

Example

The following example demonstrates how to use the CLEAR_PAGE_CACHE procedure to clear the current session's state for the page with an ID of 10.

```
BEGIN  
    APEX_UTIL.CLEAR_PAGE_CACHE('10');  
END;
```

CLEAR_USER_CACHE Procedure

This procedure removes session state and application system preferences for the current user's session. Run this procedure if you reuse session IDs and want to run applications without the benefit of existing session state.

Syntax

```
APEX_UTIL.CLEAR_USER_CACHE;
```

Parameters

None.

Example

The following example demonstrates how to use the `CLEAR_USER_CACHE` procedure to clear all session state and application system preferences for the current user's session.

```
BEGIN
    APEX_UTIL.CLEAR_USER_CACHE;
END;
```

COUNT_CLICK Procedure

This procedure counts clicks from an application built in Application Builder to an external site. You can also use the shorthand version, procedure Z, in place of APEX_UTIL.COUNT_CLICK.

Syntax

```
APEX_UTIL.COUNT_CLICK (
    p_url      IN    VARCHAR2,
    p_cat      IN    VARCHAR2,
    p_id       IN    VARCHAR2    DEFAULT NULL,
    p_user     IN    VARCHAR2    DEFAULT NULL,
    p_workspace IN    VARCHAR2    DEFAULT NULL);
```

Parameters

[Table 18–10](#) describes the parameters available in the COUNT_CLICK procedure.

Table 18–10 COUNT_CLICK Parameters

Parameter	Description
p_url	The URL to which to redirect
p_cat	A category to classify the click
p_id	Secondary ID to associate with the click (optional)
p_user	The application user ID (optional)
p_workspace	The workspace associated with the application (optional)

Example

The following example demonstrates how to use the COUNT_CLICK procedure to log how many user's click on the `http://yahoo.com` link specified. Note that once this information is logged, you can view it via the APEX_WORKSPACE_CLICKS view and in the reports on this view available to workspace and site administrators.

```
DECLARE
    l_url VARCHAR2(255);
    l_cat VARCHAR2(30);
    l_workspace_id VARCHAR2(30);
BEGIN
    l_url := 'http://yahoo.com';
    l_cat := 'yahoo';
    l_workspace_id := TO_CHAR(APEX_UTIL.FIND_SECURITY_GROUP_ID('MY_WORKSPACE'));

    HTP.P('<a href=APEX_UTIL.COUNT_CLICK?p_url=' || l_url || '&p_cat=' || l_cat ||
    '&p_workspace=' || l_workspace_id || '>Click</a>');
END;
```

See Also: ["FIND_SECURITY_GROUP_ID Function"](#) on page 18-47 in this document and "Purging the External Click Count Log" in *Oracle Application Express Administration Guide*, Defining Authorized URLs in *Oracle Application Express Administration Guide*

CREATE_USER Procedure

This procedure creates a new account record in the Application Express user account table. To execute this procedure, the current user must have administrative privileges.

Syntax

```
APEX_UTIL.CREATE_USER(
    p_user_id                IN          NUMBER          DEFAULT NULL,
    p_user_name              IN          VARCHAR2,
    p_first_name             IN          VARCHAR2        DEFAULT NULL,
    p_last_name              IN          VARCHAR2        DEFAULT NULL,
    p_description            IN          VARCHAR2        DEFAULT NULL,
    p_email_address          IN          VARCHAR2        DEFAULT NULL,
    p_web_password           IN          VARCHAR2,
    p_web_password_format    IN          VARCHAR2        DEFAULT 'CLEAR_TEXT',
    p_group_ids              IN          VARCHAR2        DEFAULT NULL,
    p_developer_privs        IN          VARCHAR2        DEFAULT NULL,
    p_default_schema         IN          VARCHAR2        DEFAULT NULL,
    p_allow_access_to_schemas IN          VARCHAR2        DEFAULT NULL,
    p_account_expiry         IN          DATE            DEFAULT TRUNC(SYSDATE),
    p_account_locked         IN          VARCHAR2        DEFAULT 'N',
    p_failed_access_attempts IN          NUMBER          DEFAULT 0,
    p_change_password_on_first_use IN          VARCHAR2  DEFAULT 'Y',
    p_first_password_use_occurred IN          VARCHAR2    DEFAULT 'N',
    p_attribute_01           IN          VARCHAR2        DEFAULT NULL,
    p_attribute_02           IN          VARCHAR2        DEFAULT NULL,
    p_attribute_03           IN          VARCHAR2        DEFAULT NULL,
    p_attribute_04           IN          VARCHAR2        DEFAULT NULL,
    p_attribute_05           IN          VARCHAR2        DEFAULT NULL,
    p_attribute_06           IN          VARCHAR2        DEFAULT NULL,
    p_attribute_07           IN          VARCHAR2        DEFAULT NULL,
    p_attribute_08           IN          VARCHAR2        DEFAULT NULL,
    p_attribute_09           IN          VARCHAR2        DEFAULT NULL,
    p_attribute_10           IN          VARCHAR2        DEFAULT NULL);
```

Parameters

[Table 18–11](#) describes the parameters available in the CREATE_USER procedure.

Table 18–11 CREATE_USER Procedure Parameters

Parameter	Description
p_user_id	Numeric primary key of user account
p_user_name	Alphanumeric name used for login
p_first_name	Informational
p_last_name	Informational
p_description	Informational
p_email_address	Email address
p_web_password	Clear text password
p_web_password_format	If the value your passing for the p_web_password parameter is in clear text format then use CLEAR_TEXT, otherwise use HEX_ENCODED_DIGEST_V2.
p_group_ids	Colon separated list of numeric group IDs

Table 18–11 (Cont.) CREATE_USER Procedure Parameters

Parameter	Description
p_developer_privs	<p>Colon separated list of developer privileges. If p_developer_privs is not null, the user is given access to Team Development. If p_developer_privs contains ADMIN, the user is given Application Builder and SQL Workshop access. If p_developer_privs does not contain ADMIN but contains EDIT, the user is given Application Builder Access. If p_developer_privs does not contain ADMIN but contains SQL, the user is given SQL Workshop access. The following are acceptable values for this parameter:</p> <p>null - To create an end user (a user who can only authenticate to developed applications).</p> <p>CREATE:DATA_LOADER:EDIT:HELP:MONITOR:SQL - To create a user with developer privileges with access to Application Builder and SQL Workshop.</p> <p>ADMIN:CREATE:DATA_LOADER:EDIT:HELP:MONITOR:SQL - To create a user with full workspace administrator and developer privileges with access to Application Builder, SQL Workshop and Team Development.</p> <p>Note: Currently this parameter is named inconsistently between the CREATE_USER, EDIT_USER and FETCH_USER APIs, although they all relate to the DEVELOPER_ROLE field stored in the named user account record. CREATE_USER uses p_developer_privs, EDIT_USER uses p_developer_roles and FETCH_USER uses p_developer_role.</p>
p_default_schema	A database schema assigned to the user's workspace, used by default for browsing.
p_allow_access_to_schemas	Colon separated list of schemas assigned to the user's workspace to which the user is restricted (leave null for all).
p_account_expiry	Date password was last updated, which will default to today's date on creation.
p_account_locked	'Y' or 'N' indicating if account is locked or unlocked.
p_failed_access_attempts	Number of consecutive login failures that have occurred, defaults to 0 on creation.
p_change_password_on_first_use	'Y' or 'N' to indicate whether password must be changed on first use, defaults to 'Y' on creation.
p_first_password_use_occurred	'Y' or 'N' to indicate whether login has occurred since password change, defaults to 'N' on creation.
p_attribute_01	Arbitrary text accessible with an API
...	
p_attribute_10	

Example 1

The following simple example creates an 'End User' called 'NEWUSER1' with a password of 'secret99'. Note an 'End User' can only authenticate to developed applications.

```
BEGIN
  APEX_UTIL.CREATE_USER(
    p_user_name      => 'NEWUSER1',
    p_web_password   => 'secret99');
```

```
END;
```

Example 2

The following example creates a 'Workspace Administrator' called 'NEWUSER2'. Where the user 'NEWUSER2':

- Has full workspace administration and developer privilege (p_developer_privs parameter set to 'ADMIN:CREATE:DATA_LOADER:EDIT:HELP:MONITOR:SQL').
- Has access to 2 schemas, both their browsing default 'MY_SCHEMA' (p_default_schema parameter set to 'MY_SCHEMA') and also 'MY_SCHEMA2' (p_allow_access_to_schemas parameter set to 'MY_SCHEMA2').
- Does not have to change their password when they first login (p_change_password_on_first_use parameter set to 'N').
- Has their phone number stored in the first additional attribute (p_attribute_01 parameter set to '123 456 7890').

```
BEGIN
  APEX_UTIL.CREATE_USER(
    p_user_name           => 'NEWUSER2',
    p_first_name          => 'FRANK',
    p_last_name           => 'SMITH',
    p_description          => 'Description...',
    p_email_address        => 'frank@smith.com',
    p_web_password         => 'password',
    p_developer_privs      => 'ADMIN:CREATE:DATA_
LOADER:EDIT:HELP:MONITOR:SQL',
    p_default_schema       => 'MY_SCHEMA',
    p_allow_access_to_schemas => 'MY_SCHEMA2',
    p_change_password_on_first_use => 'N',
    p_attribute_01         => '123 456 7890');
END;
```

See Also: ["FETCH_USER Procedure Signature 3"](#) on page 18-44, ["EDIT_USER Procedure"](#) on page 18-30, and ["GET_GROUP_ID Function"](#) on page 18-64

CREATE_USER_GROUP Procedure

Assuming you are using Application Express authentication, this procedure creates a user group. To execute this procedure, the current user must have administrative privileges in the workspace.

Syntax

```
APEX_UTIL.CREATE_USER_GROUP (
    p_id                IN                NUMBER,
    p_group_name        IN                VARCHAR2,
    p_security_group_id IN                NUMBER,
    p_group_desc        IN                VARCHAR2);
```

Parameter

[Table 18–12](#) describes the parameters available in the CREATE_USER_GROUP procedure.

Table 18–12 CREATE_USER_GROUP Parameters

Parameter	Description
p_id	Primary key of group
p_group_name	Name of group
p_security_group_id	Workspace ID
p_group_desc	Descriptive text

Example

The following example demonstrates how to use the CREATE_USER_GROUP procedure to create a new group called 'Managers' with a description of 'text'. Pass null for the p_id parameter to allow the database trigger to assign the new primary key value. Pass null for the p_security_group_id parameter to default to the current workspace ID.

```
BEGIN
    APEX_UTIL.CREATE_USER_GROUP (
        p_id                => null,          -- trigger will assign PK
        p_group_name        => 'Managers',
        p_security_group_id => null,          -- defaults to current workspace ID
        p_group_desc        => 'text');
END;
```

CURRENT_USER_IN_GROUP Function

This function returns a Boolean result based on whether or not the current user is a member of the specified group. You can use the group name or group ID to identify the group.

Syntax

```
APEX_UTIL.CURRENT_USER_IN_GROUP(  
    p_group_name    IN VARCHAR2)  
RETURN BOOLEAN;
```

```
APEX_UTIL.CURRENT_USER_IN_GROUP(  
    p_group_id      IN NUMBER)  
RETURN BOOLEAN;
```

Parameters

[Table 18–13](#) describes the parameters available in the CURRENT_USER_IN_GROUP function.

Table 18–13 CURRENT_USER_IN_GROUP Parameters

Parameter	Description
p_group_name	Identifies the name of an existing group in the workspace
p_group_id	Identifies the numeric ID of an existing group in the workspace

Example

The following example demonstrates how to use the CURRENT_USER_IN_GROUP function to check if the user currently authenticated belongs to the group 'Managers'.

```
DECLARE  
    VAL BOOLEAN;  
BEGIN  
    VAL := APEX_UTIL.CURRENT_USER_IN_GROUP(p_group_name=>'Managers');  
END;
```

CUSTOM_CALENDAR Procedure

This procedure is used to change the existing calendar view to Custom Calendar.

Syntax

```
APEX_UTIL.CUSTOM_CALENDAR(  
    p_date_type_field IN VARCHAR2);
```

Parameters

[Table 18–14](#) describes the parameters available in the CUSTOM_CALENDAR procedure.

Table 18–14 CUSTOM_CALENDAR Parameters

Parameter	Description
p_date_type_field	Identifies the item name used to define the type of calendar to be displayed.

Example 1

The following example defines a custom calendar based on the hidden calendar type field. Assuming the Calendar is created in Page 9, the following example hides the column called P9_CALENDAR_TYPE.

```
APEX_UTIL.CUSTOM_CALENDAR(  
    'P9_CALENDAR_TYPE');
```

DELETE_USER_GROUP Procedure Signature 1

Assuming you are using Application Express authentication, this procedure deletes a user group by providing the primary key of the group. To execute this procedure, the current user must have administrative privileges in the workspace.

Syntax

```
APEX_UTIL.DELETE_USER_GROUP(  
    p_group_id IN NUMBER);
```

Parameter

[Table 18–12](#) describes the parameters available in the DELETE_USER_GROUP procedure signature 1.

Table 18–15 DELETE_USER_GROUP Procedure Signature 1 Parameters

Parameter	Description
p_group_id	Primary key of group

Example

The following example demonstrates how to use the DELETE_USER_GROUP procedure signature 1 to remove the user group called 'Managers', by providing the user group's primary key.

```
DECLARE  
    VAL NUMBER;  
BEGIN  
    VAL := APEX_UTIL.GET_GROUP_ID (  
        p_group_name => 'Managers');  
    APEX_UTIL.DELETE_USER_GROUP (  
        p_group_id => VAL);  
END;
```

DELETE_USER_GROUP Procedure Signature 2

Assuming you are using Application Express authentication, this procedure deletes a user group by providing the name of the group. To execute this procedure, the current user must have administrative privileges in the workspace.

Syntax

```
APEX_UTIL.DELETE_USER_GROUP(  
    p_group_name IN VARCHAR2);
```

Parameter

[Table 18–12](#) describes the parameters available in the DELETE_USER_GROUP procedure signature 2.

Table 18–16 *DELETE_USER_GROUP Procedure Signature 2 Parameters*

Parameter	Description
p_group_name	Name of group

Example

The following example demonstrates how to use the DELETE_USER_GROUP procedure signature 2 to remove the user group called 'Managers', by providing the name of the user group.

```
BEGIN  
    APEX_UTIL.DELETE_USER_GROUP (  
        p_group_name => 'Managers');  
END;
```

DOWNLOAD_PRINT_DOCUMENT Procedure Signature 1

This procedure initiates the download of a print document using XML based report data (as a BLOB) and RTF or XSL-FO based report layout.

Syntax

```

APEX_UTIL.DOWNLOAD_PRINT_DOCUMENT (
    p_file_name          IN VARCHAR,
    p_content_disposition IN VARCHAR,
    p_report_data        IN BLOB,
    p_report_layout      IN CLOB,
    p_report_layout_type IN VARCHAR2 default 'xsl-fo',
    p_document_format    IN VARCHAR2 default 'pdf',
    p_print_server       IN VARCHAR2 default null);

```

Parameters

[Table 18–17](#) describes the parameters available in the DOWNLOAD_PRINT_DOCUMENT procedure for Signature 1.

Table 18–17 *DOWNLOAD_PRINT_DOCUMENT Parameters*

Parameter	Description
p_file_name	Defines the filename of the print document
p_content_disposition	Specifies whether to download the print document or display inline ("attachment", "inline")
p_report_data	XML based report data
p_report_layout	Report layout in XSL-FO or RTF format
p_report_layout_type	Defines the report layout type, that is "xsl-fo" or "rtf"
p_document_format	Defines the document format, that is "pdf", "rtf", "xls", "htm", or "xml"
p_print_server	URL of the print server. If not specified, the print server will be derived from preferences.

See Also: "Printing Report Regions" in *Oracle Application Express Application Builder User's Guide*.

DOWNLOAD_PRINT_DOCUMENT Procedure Signature 2

This procedure initiates the download of a print document using pre-defined report query and RTF and XSL-FO based report layout.

Syntax

```
APEX_UTIL.DOWNLOAD_PRINT_DOCUMENT (
  p_file_name          IN VARCHAR,
  p_content_disposition IN VARCHAR,
  p_application_id     IN NUMBER,
  p_report_query_name  IN VARCHAR2,
  p_report_layout      IN CLOB,
  p_report_layout_type IN VARCHAR2 default 'xsl-fo',
  p_document_format    IN VARCHAR2 default 'pdf',
  p_print_server       IN VARCHAR2 default null);
```

Parameters

[Table 18–18](#) describes the parameters available in the DOWNLOAD_PRINT_DOCUMENT function.

Table 18–18 *DOWNLOAD_PRINT_DOCUMENT Parameters*

Parameter	Description
p_file_name	Defines the filename of the print document
p_content_disposition	Specifies whether to download the print document or display inline ("attachment", "inline")
p_application_id	Defines the application ID of the report query
p_report_query_name	Name of the report query (stored under application's Shared Components)
p_report_layout	Report layout in XSL-FO or RTF format
p_report_layout_type	Defines the report layout type, that is "xsl-fo" or "rtf"
p_document_format	Defines the document format, that is "pdf", "rtf", "xls", "htm", or "xml"
p_print_server	URL of the print server. If not specified, the print server will be derived from preferences.

Example for Signature 2

The following example shows how to use the DOWNLOAD_PRINT_DOCUMENT using Signature 2 (Pre-defined report query and RTF or XSL-FO based report layout.). In this example, the data for the report is taken from a Report Query called 'ReportQueryAndXSL' stored in the current application's Shared Components > Report Queries. The report layout is taken from a value stored in a page item (P1_XSL).

```
BEGIN
  APEX_UTIL.DOWNLOAD_PRINT_DOCUMENT (
    p_file_name          => 'mydocument',
    p_content_disposition => 'attachment',
    p_application_id     => :APP_ID,
    p_report_query_name  => 'ReportQueryAndXSL',
    p_report_layout      => :P1_XSL,
```

```
p_report_layout_type => 'xsl-fo',  
p_document_format    => 'pdf');  
END;
```

See Also: "Printing Report Regions" in *Oracle Application Express Application Builder User's Guide*.

DOWNLOAD_PRINT_DOCUMENT Procedure Signature 3

This procedure initiates the download of a print document using pre-defined report query and pre-defined report layout.

Syntax

```
APEX_UTIL.DOWNLOAD_PRINT_DOCUMENT (
    p_file_name          IN VARCHAR,
    p_content_disposition IN VARCHAR,
    p_application_id     IN NUMBER,
    p_report_query_name  IN VARCHAR2,
    p_report_layout_name IN VARCHAR2,
    p_report_layout_type IN VARCHAR2 default 'xsl-fo',
    p_document_format    IN VARCHAR2 default 'pdf',
    p_print_server       IN VARCHAR2 default null);
```

Parameters

[Table 18–19](#) describes the parameters available in the DOWNLOAD_PRINT_DOCUMENT procedure for Signature 3.

Table 18–19 *DOWNLOAD_PRINT_DOCUMENT Parameters*

Parameter	Description
p_file_name	Defines the filename of the print document
p_content_disposition	Specifies whether to download the print document or display inline ("attachment", "inline")
p_application_id	Defines the application ID of the report query
p_report_query_name	Name of the report query (stored under application's Shared Components)
p_report_layout_name	Name of the report layout (stored under application's Shared Components)
p_report_layout_type	Defines the report layout type, that is "xsl-fo" or "rtf"
p_document_format	Defines the document format, that is "pdf", "rtf", "xls", "htm", or "xml"
p_print_server	URL of the print server. If not specified, the print server will be derived from preferences.

Example for Signature 3

The following example shows how to use the DOWNLOAD_PRINT_DOCUMENT using Signature 3 (Pre-defined report query and pre-defined report layout). In this example, the data for the report is taken from a Report Query called 'ReportQuery' stored in the current application's Shared Components > Report Queries. The report layout is taken from a Report Layout called 'ReportLayout' stored in the current application's Shared Components > Report Layouts. Note that if you wish to provision dynamic layouts, instead of specifying 'ReportLayout' for the p_report_layout_name parameter, you could reference a page item that allowed the user to select one of multiple saved Report Layouts. This example also provides a way for the user to specify how they wish to receive the document (as an attachment or inline), through passing the value of P1_CONTENT_DISP to the p_content_disposition

parameter. P1_CONTENT_DISP is a page item of type 'Select List' with the following List of Values Definition:

STATIC2:In Browser;inline,Save / Open in separate Window;attachment

```
BEGIN
  APEX_UTIL.DOWNLOAD_PRINT_DOCUMENT (
    p_file_name      => 'myreport123',
    p_content_disposition => :P1_CONTENT_DISP,
    p_application_id  => :APP_ID,
    p_report_query_name  => 'ReportQuery',
    p_report_layout_name  => 'ReportLayout',
    p_report_layout_type  => 'rtf',
    p_document_format    => 'pdf');
END;
```

See Also: "Printing Report Regions" in *Oracle Application Express Application Builder User's Guide*.

DOWNLOAD_PRINT_DOCUMENT Procedure Signature 4

This procedure initiates the download of a print document using XML based report data (as a CLOB) and RTF or XSL-FO based report layout.

Syntax

```
APEX_UTIL.DOWNLOAD_PRINT_DOCUMENT (
    p_file_name           IN VARCHAR,
    p_content_disposition IN VARCHAR,
    p_report_data         IN CLOB,
    p_report_layout       IN CLOB,
    p_report_layout_type  IN VARCHAR2 default 'xsl-fo',
    p_document_format     IN VARCHAR2 default 'pdf',
    p_print_server        IN VARCHAR2 default null);
```

Parameters

[Table 18–19](#) describes the parameters available in the DOWNLOAD_PRINT_DOCUMENT procedure for Signature 4.

Table 18–20 *DOWNLOAD_PRINT_DOCUMENT Parameters*

Parameter	Description
p_file_name	Defines the filename of the print document
p_content_disposition	Specifies whether to download the print document or display inline ("attachment", "inline")
p_report_data	XML based report data, must be encoded in UTF-8
p_report_layout	Report layout in XSL-FO or RTF format
p_report_layout_type	Defines the report layout type, that is "xsl-fo" or "rtf"
p_document_format	Defines the document format, that is "pdf", "rtf", "xls", "htm", or "xml"
p_print_server	URL of the print server. If not specified, the print server will be derived from preferences.

Example for Signature 4

The following example shows how to use the DOWNLOAD_PRINT_DOCUMENT using Signature 4 (XML based report data (as a CLOB) and RTF or XSL-FO based report layout). In this example both the report data (XML) and report layout (XSL-FO) are taken from values stored in page items.

```
BEGIN
    APEX_UTIL.DOWNLOAD_PRINT_DOCUMENT (
        p_file_name           => 'mydocument',
        p_content_disposition => 'attachment',
        p_report_data         => :P1_XML,
        p_report_layout       => :P1_XSL,
        p_report_layout_type  => 'xsl-fo',
        p_document_format     => 'pdf');
END;
```

See Also: "Printing Report Regions" in *Oracle Application Express Application Builder User's Guide*.

EDIT_USER Procedure

This procedure enables a user account record to be altered. To execute this procedure, the current user must have administrative privileges in the workspace.

Syntax

```
APEX_UTIL.EDIT_USER (
    p_user_id                IN                NUMBER,
    p_user_name              IN                VARCHAR2,
    p_first_name             IN                VARCHAR2    DEFAULT NULL,
    p_last_name              IN                VARCHAR2    DEFAULT NULL,
    p_web_password           IN                VARCHAR2    DEFAULT NULL,
    p_new_password           IN                VARCHAR2    DEFAULT NULL,
    p_email_address          IN                VARCHAR2    DEFAULT NULL,
    p_start_date             IN                VARCHAR2    DEFAULT NULL,
    p_end_date               IN                VARCHAR2    DEFAULT NULL,
    p_employee_id            IN                VARCHAR2    DEFAULT NULL,
    p_allow_access_to_schemas IN                VARCHAR2    DEFAULT NULL,
    p_person_type            IN                VARCHAR2    DEFAULT NULL,
    p_default_schema         IN                VARCHAR2    DEFAULT NULL,
    p_group_ids              IN                VARCHAR2    DEFAULT NULL,
    p_developer_roles        IN                VARCHAR2    DEFAULT NULL,
    p_description            IN                VARCHAR2    DEFAULT NULL,
    p_account_expiry         IN                DATE        DEFAULT NULL,
    p_account_locked         IN                VARCHAR2    DEFAULT 'N',
    p_failed_access_attempts IN                NUMBER      DEFAULT 0,
    p_change_password_on_first_use IN            VARCHAR2    DEFAULT 'Y',
    p_first_password_use_occurred IN            VARCHAR2    DEFAULT 'N');
```

Parameters

[Table 18–21](#) describes the parameters available in the EDIT_USER procedure.

Table 18–21 EDIT_USER Parameters

Parameter	Description
p_user_id	Numeric primary key of the user account
p_user_name	Alphanumeric name used for login. See Also: "SET_USERNAME Procedure" on page 18-141
p_first_name	Informational. See Also: "SET_FIRST_NAME Procedure" on page 18-124
p_last_name	Informational. See Also: "SET_LAST_NAME Procedure" on page 18-125
p_web_password	Clear text password. If using this procedure to update the password for the user, values for both p_web_password and p_new_password must not be null and must be identical.
p_new_password	Clear text new password. If using this procedure to update the password for the user, values for both p_web_password and p_new_password must not be null and must be identical.

Table 18-21 (Cont.) EDIT_USER Parameters

Parameter	Description
p_email_address	Informational. See Also: "SET_EMAIL Procedure" on page 18-123
p_start_date	Unused
p_end_date	Unused
p_employee_id	Unused
p_allow_access_to_schemas	A list of schemas assigned to the user's workspace to which the user is restricted
p_person_type	Unused
p_default_schema	A database schema assigned to the user's workspace, used by default for browsing
p_group_ids	Colon-separated list of numeric group IDs
p_developer_roles	Colon-separated list of developer privileges. The following are acceptable values for this parameter: · null - To update the user to be an end user (a user who can only authenticate to developed applications) · CREATE:DATA_LOADER:EDIT:HELP:MONITOR:SQL - To update the user to have developer privilege · ADMIN:CREATE:DATA_LOADER:EDIT:HELP:MONITOR:SQL - To update the user to have full workspace administrator and developer privilege Note: Currently this parameter is named inconsistently between the CREATE_USER, EDIT_USER and FETCH_USER APIs, although they all relate to the DEVELOPER_ROLE field stored in the named user account record. CREATE_USER uses p_developer_privs, EDIT_USER uses p_developer_roles and FETCH_USER uses p_developer_role. See Also: "GET_USER_ROLES Function" on page 18-81
p_description	Informational
p_account_expiry	Date password was last updated. See Also: "EXPIRE_END_USER_ACCOUNT Procedure" on page 18-35, "EXPIRE_WORKSPACE_ACCOUNT Procedure" on page 18-36, "UNEXPIRE_END_USER_ACCOUNT Procedure" on page 18-154, "UNEXPIRE_WORKSPACE_ACCOUNT Procedure" on page 18-155
p_account_locked	'Y' or 'N' indicating if account is locked or unlocked. See Also: "LOCK_ACCOUNT Procedure" on page 18-100, "UNLOCK_ACCOUNT Procedure" on page 18-156
p_failed_access_attempts	Number of consecutive login failures that have occurred.
p_change_password_on_first_use	'Y' or 'N' to indicate whether password must be changed on first use. See Also: "CHANGE_PASSWORD_ON_FIRST_USE Function" on page 18-11

Table 18–21 (Cont.) EDIT_USER Parameters

Parameter	Description
p_first_password_use_occurred	'Y' or 'N' to indicate whether login has occurred since password change. See Also: "PASSWORD_FIRST_USE_OCCURRED Function" on page 18-101

Example

The following example shows how to use the EDIT_USER procedure to update a user account. This example shows how you can use the EDIT_USER procedure to change the user 'FRANK' from a user with just developer privilege to a user with workspace administrator and developer privilege. Firstly, the FETCH_USER procedure is called to assign account details for the user 'FRANK' to local variables. These variables are then used in the call to EDIT_USER to preserve the details of the account, with the exception of the value for the p_developer_roles parameter, which is set to 'ADMIN:CREATE:DATA_LOADER:EDIT:HELP:MONITOR:SQL'.

```

DECLARE
    l_user_id                NUMBER;
    l_workspace              VARCHAR2(255);
    l_user_name              VARCHAR2(100);
    l_first_name             VARCHAR2(255);
    l_last_name              VARCHAR2(255);
    l_web_password           VARCHAR2(255);
    l_email_address          VARCHAR2(240);
    l_start_date             DATE;
    l_end_date               DATE;
    l_employee_id            NUMBER(15,0);
    l_allow_access_to_schemas VARCHAR2(4000);
    l_person_type            VARCHAR2(1);
    l_default_schema         VARCHAR2(30);
    l_groups                 VARCHAR2(1000);
    l_developer_role         VARCHAR2(60);
    l_description            VARCHAR2(240);
    l_account_expiry         DATE;
    l_account_locked         VARCHAR2(1);
    l_failed_access_attempts NUMBER;
    l_change_password_on_first_use VARCHAR2(1);
    l_first_password_use_occurred VARCHAR2(1);
BEGIN
    l_user_id := APEX_UTIL.GET_USER_ID('FRANK');

    APEX_UTIL.FETCH_USER(
        p_user_id                => l_user_id,
        p_workspace              => l_workspace,
        p_user_name              => l_user_name,
        p_first_name             => l_first_name,
        p_last_name              => l_last_name,
        p_web_password           => l_web_password,
        p_email_address          => l_email_address,
        p_start_date             => l_start_date,
        p_end_date               => l_end_date,
        p_employee_id            => l_employee_id,
        p_allow_access_to_schemas => l_allow_access_to_schemas,
        p_person_type            => l_person_type,
        p_default_schema         => l_default_schema,
        p_groups                 => l_groups,
        p_developer_role         => l_developer_role,

```

```

        p_description          => l_description,
        p_account_expiry       => l_account_expiry,
        p_account_locked       => l_account_locked,
        p_failed_access_attempts => l_failed_access_attempts,
        p_change_password_on_first_use => l_change_password_on_first_use,
        p_first_password_use_occurred => l_first_password_use_occurred);
APEX_UTIL.EDIT_USER (
    p_user_id                  => l_user_id,
    p_user_name                => l_user_name,
    p_first_name               => l_first_name,
    p_last_name                => l_last_name,
    p_web_password             => l_web_password,
    p_new_password             => l_web_password,
    p_email_address            => l_email_address,
    p_start_date               => l_start_date,
    p_end_date                 => l_end_date,
    p_employee_id              => l_employee_id,
    p_allow_access_to_schemas => l_allow_access_to_schemas,
    p_person_type              => l_person_type,
    p_default_schema           => l_default_schema,
    p_group_ids                => l_groups,
    p_developer_roles          => 'ADMIN:CREATE:DATA_
LOADER:EDIT:HELP:MONITOR:SQL',
    p_description              => l_description,
    p_account_expiry           => l_account_expiry,
    p_account_locked           => l_account_locked,
    p_failed_access_attempts    => l_failed_access_attempts,
    p_change_password_on_first_use => l_change_password_on_first_use,
    p_first_password_use_occurred => l_first_password_use_occurred);
END;
```

See Also: ["FETCH_USER Procedure Signature 3"](#) on page 18-44

END_USER_ACCOUNT_DAYS_LEFT Function

Returns the number of days remaining before a end user account password expires. This function may be run in a page request context by any authenticated user.

Syntax

```
APEX_UTIL.END_USER_ACCOUNT_DAYS_LEFT (  
    p_user_name IN VARCHAR2)  
RETURN NUMBER;
```

Parameters

[Table 18–22](#) describes the parameters available in the END_USER_ACCOUNT_DAYS_LEFT function.

Table 18–22 *END_USER_ACCOUNT_DAYS_LEFT Parameters*

Parameter	Description
p_user_name	The user name of the user account

Example

The following example shows how to use the END_USER_ACCOUNT_DAYS_LEFT function. Use this function to determine the number of days remaining before an Application Express end user account in the current workspace will expire.

```
DECLARE  
    l_days_left NUMBER;  
BEGIN  
    FOR c1 IN (SELECT user_name from wwv_flow_users) LOOP  
        l_days_left := APEX_UTIL.END_USER_ACCOUNT_DAYS_LEFT(p_user_name =>  
c1.user_name);  
        http.p('End User Account: ' || c1.user_name || ' will expire in ' || l_days_  
left || ' days.');
```

```
        END LOOP;
```

```
END;
```

See Also: ["EXPIRE_END_USER_ACCOUNT Procedure"](#) on page 18-35 and ["UNEXPIRE_END_USER_ACCOUNT Procedure"](#) on page 18-154

EXPIRE_END_USER_ACCOUNT Procedure

Expires the login account for use as a workspace end user. Must be run by an authenticated workspace administrator in a page request context.

Syntax

```
APEX_UTIL.EXPIRE_END_USER_ACCOUNT (  
    p_user_name IN VARCHAR2  
);
```

Parameters

[Table 18–24](#) describes the parameters available in the EXPIRE_END_USER_ACCOUNT procedure.

Table 18–23 *EXPIRE_END_USER_ACCOUNT Parameters*

Parameter	Description
p_user_name	The user name of the user account

Example

The following example shows how to use the EXPIRE_END_USER_ACCOUNT procedure. Use this procedure to expire an Oracle Application Express account (workspace administrator, developer, or end user) in the current workspace. This action specifically expires the account with respect to its use by end users to authenticate to developed applications, but it may also expire the account with respect to its use by developers or administrators to log in to a workspace.

Note that this procedure must be run by a user having administration privileges in the current workspace.

```
BEGIN  
  FOR c1 IN (select user_name from wwv_flow_users) LOOP  
    APEX_UTIL.EXPIRE_END_USER_ACCOUNT(p_user_name => c1.user_name);  
    http.p('End User Account:'||c1.user_name||' is now expired.');
```

See Also: ["UNEXPIRE_END_USER_ACCOUNT Procedure"](#) on page 18-154

EXPIRE_WORKSPACE_ACCOUNT Procedure

Expires developer or workspace administrator login accounts. Must be run by an authenticated workspace administrator in a page request context.

Syntax

```
APEX_UTIL.EXPIRE_WORKSPACE_ACCOUNT (  
    p_user_name IN VARCHAR2  
);
```

Parameters

[Table 18–24](#) describes the parameters available in the EXPIRE_WORKSPACE_ACCOUNT procedure.

Table 18–24 *EXPIRE_WORKSPACE_ACCOUNT Parameters*

Parameter	Description
p_user_name	The user name of the user account

Example

The following example shows how to use the EXPIRE_WORKSPACE_ACCOUNT procedure. Use this procedure to expire an Application Express account (workspace administrator, developer, or end user) in the current workspace. This action specifically expires the account with respect to its use by developers or administrators to log in to a workspace, but it may also expire the account with respect to its use by end users to authenticate to developed applications.

```
BEGIN  
    FOR c1 IN (SELECT user_name FROM wwv_flow_users) LOOP  
        APEX_UTIL.EXPIRE_WORKSPACE_ACCOUNT(p_user_name => c1.user_name);  
        http.p('Workspace Account: '||c1.user_name||' is now expired.');
```

See Also: ["UNEXPIRE_WORKSPACE_ACCOUNT Procedure"](#) on page 18-155

EXPORT_USERS Procedure

When called from a page, this procedure produces an export file of the current workspace definition, workspace users, and workspace groups. To execute this procedure, the current user must have administrative privilege in the workspace.

Syntax

```
APEX_UTIL.EXPORT_USERS(  
    p_export_format IN VARCHAR2 DEFAULT 'UNIX');
```

Parameters

[Table 18–25](#) describes the parameters available in the EXPORT_USERS procedure.

Table 18–25 EXPORT_USERS Parameters

Parameter	Description
p_export_format	Indicates how rows in the export file will be formatted. Specify 'UNIX' to have the resulting file contain rows delimited by line feeds. Specify 'DOS' to have the resulting file contain rows delimited by carriage returns and line feeds

Example

The following example shows how to use the EXPORT_USERS procedure. Call this procedure from a page to produce an export file containing the current workspace definition, list of workspace users and list of workspace groups. The file will be formatted with rows delimited by line feeds.

```
BEGIN  
    APEX_UTIL.EXPORT_USERS;  
END;
```


This function fetches session state for the current or specified application in the current or specified session.

Syntax

```
APEX_UTIL.FETCH_APP_ITEM(
    p_item    IN VARCHAR2,
    p_app     IN NUMBER DEFAULT NULL,
    p_session IN NUMBER DEFAULT NULL)
RETURN VARCHAR2;
```

Parameters

[Table 18–26](#) describes the parameters available in the `FETCH_APP_ITEM` function.

Table 18–26 *FETCH_APP_ITEM Parameters*

Parameter	Description
<code>p_item</code>	The name of an application-level item (not a page item) whose current value is to be fetched
<code>p_app</code>	The ID of the application that owns the item (leave null for the current application)
<code>p_session</code>	The session ID from which to obtain the value (leave null for the current session)

Example

The following example shows how to use the `FETCH_APP_ITEM` function to obtain the value of the application item 'F300_NAME' in application 300. As no value is passed for `p_session`, this defaults to the current session state value.

```
DECLARE
    VAL VARCHAR2(30);
BEGIN
    VAL := APEX_UTIL.FETCH_APP_ITEM(
        p_item => 'F300_NAME',
        p_app  => 300);
END;
```

FETCH_USER Procedure Signature 1

This procedure fetches a user account record. To execute this procedure, the current user must have administrative privileges in the workspace. Three overloaded versions of this procedure exist, each with a distinct set of allowed parameters or signatures.

Syntax for Signature 1

```
APEX_UTIL.FETCH_USER (
    p_user_id           IN          NUMBER,
    p_workspace         OUT         VARCHAR2,
    p_user_name         OUT         VARCHAR2,
    p_first_name        OUT         VARCHAR2,
    p_last_name         OUT         VARCHAR2,
    p_web_password      OUT         VARCHAR2,
    p_email_address     OUT         VARCHAR2,
    p_start_date        OUT         VARCHAR2,
    p_end_date          OUT         VARCHAR2,
    p_employee_id       OUT         VARCHAR2,
    p_allow_access_to_schemas OUT    VARCHAR2,
    p_person_type       OUT         VARCHAR2,
    p_default_schema    OUT         VARCHAR2,
    p_groups            OUT         VARCHAR2,
    p_developer_role    OUT         VARCHAR2,
    p_description        OUT         VARCHAR2 );
```

Parameters for Signature 1

[Table 18-27](#) describes the parameters available in the `FETCH_USER` procedure for signature 1.

Table 18-27 Fetch_User Parameters Signature 1

Parameter	Description
<code>p_user_id</code>	Numeric primary key of the user account
<code>p_workspace</code>	The name of the workspace
<code>p_user_name</code>	Alphanumeric name used for login. See Also: "GET_USERNAME Function" on page 18-82
<code>p_first_name</code>	Informational. See Also: "GET_FIRST_NAME Function" on page 18-62
<code>p_last_name</code>	Informational. See Also: "GET_LAST_NAME Function" on page 18-67
<code>p_web_password</code>	Obfuscated account password
<code>p_email_address</code>	Email address. See Also: "GET_EMAIL Function" on page 18-57
<code>p_start_date</code>	Unused
<code>p_end_date</code>	Unused
<code>p_employee_id</code>	Unused
<code>p_allow_access_to_schemas</code>	A list of schemas assigned to the user's workspace to which user is restricted
<code>p_person_type</code>	Unused

Table 18–27 (Cont.) Fetch_User Parameters Signature 1

Parameter	Description
p_default_schema	<p>A database schema assigned to the user's workspace, used by default for browsing.</p> <p>See Also: "GET_DEFAULT_SCHEMA Function" on page 18-55</p>
p_groups	<p>List of groups of which user is a member.</p> <p>See Also: "GET_GROUPS_USER BELONGS_TO Function" on page 18-63 and "CURRENT_USER_IN_GROUP Function" on page 18-20</p>
p_developer_role	<p>Colon-separated list of developer roles. The following are acceptable values for this parameter:</p> <p>null - Indicates an end user (a user who can only authenticate to developed applications).</p> <p>CREATE:DATA_LOADER:EDIT:HELP:MONITOR:SQL - Indicates a user with developer privilege.</p> <p>ADMIN:CREATE:DATA_LOADER:EDIT:HELP:MONITOR:SQL - Indicates a user with full workspace administrator and developer privilege.</p> <p>Note: Currently this parameter is named inconsistently between the CREATE_USER, EDIT_USER and FETCH_USER APIs, although they all relate to the DEVELOPER_ROLE field stored in the named user account record. CREATE_USER uses p_developer_privs, EDIT_USER uses p_developer_roles and FETCH_USER uses p_developer_role.</p> <p>See Also: "GET_USER_ROLES Function" on page 18-81</p>
p_description	Informational

Example for Signature 1

The following example shows how to use the FETCH_USER procedure with Signature 1. This procedure is passed the ID of the currently authenticated user for the only IN parameter p_user_id. The code then stores all the other OUT parameter values in local variables.

```

DECLARE
    l_workspace          VARCHAR2(255);
    l_user_name          VARCHAR2(100);
    l_first_name         VARCHAR2(255);
    l_last_name          VARCHAR2(255);
    l_web_password       VARCHAR2(255);
    l_email_address      VARCHAR2(240);
    l_start_date         DATE;
    l_end_date           DATE;
    l_employee_id        NUMBER(15,0);
    l_allow_access_to_schemas VARCHAR2(4000);
    l_person_type        VARCHAR2(1);
    l_default_schema     VARCHAR2(30);
    l_groups             VARCHAR2(1000);
    l_developer_role     VARCHAR2(60);
    l_description        VARCHAR2(240);
BEGIN
    APEX_UTIL.FETCH_USER(
        p_user_id          => APEX_UTIL.GET_CURRENT_USER_ID,
        p_workspace        => l_workspace,
        p_user_name        => l_user_name,
        p_first_name       => l_first_name,
```

```

p_last_name          => l_last_name,
p_web_password       => l_web_password,
p_email_address      => l_email_address,
p_start_date         => l_start_date,
p_end_date           => l_end_date,
p_employee_id        => l_employee_id,
p_allow_access_to_schemas => l_allow_access_to_schemas,
p_person_type        => l_person_type,
p_default_schema     => l_default_schema,
p_groups             => l_groups,
p_developer_role     => l_developer_role,
p_description        => l_description);
END;
```

See Also: ["EDIT_USER Procedure"](#) on page 18-30 and ["GET_CURRENT_USER_ID Function"](#) on page 18-54

FETCH_USER Procedure Signature 2

This procedure fetches a user account record. To execute this procedure, the current user must have administrative privileges in the workspace. Three overloaded versions of this procedure exist, each with a distinct set of allowed parameters or signatures.

Syntax for Signature 2

```
APEX_UTIL.FETCH_USER (
    p_user_id           IN          NUMBER,
    p_user_name         OUT         VARCHAR2,
    p_first_name        OUT         VARCHAR2,
    p_last_name         OUT         VARCHAR2,
    p_email_address     OUT         VARCHAR2,
    p_groups            OUT         VARCHAR2,
    p_developer_role    OUT         VARCHAR2,
    p_description       OUT         VARCHAR2 );
```

Parameters for Signature 2

[Table 18–28](#) describes the parameters available in the `FETCH_USER` procedure for signature 2.

Table 18–28 Fetch_User Parameters Signature 2

Parameter	Description
p_user_id	Numeric primary key of the user account
p_user_name	Alphanumeric name used for login. See Also: "GET_USERNAME Function" on page 18-82
p_first_name	Informational. See Also: "GET_FIRST_NAME Function" on page 18-62
p_last_name	Informational. See Also: "GET_LAST_NAME Function" on page 18-67
p_email_address	Email address. See Also: "GET_EMAIL Function" on page 18-57
p_groups	List of groups of which user is a member. See Also: "GET_GROUPS_USER_BELONGS_TO Function" on page 18-63 and "CURRENT_USER_IN_GROUP Function" on page 18-20

Table 18-28 (Cont.) Fetch_User Parameters Signature 2

Parameter	Description
p_developer_role	<p>Colon-separated list of developer roles. The following are acceptable values for this parameter:</p> <p>null - Indicates an end user (a user who can only authenticate to developed applications).</p> <p>CREATE:DATA_LOADER:EDIT:HELP:MONITOR:SQL - Indicates a user with developer privilege.</p> <p>ADMIN:CREATE:DATA_LOADER:EDIT:HELP:MONITOR:SQL - Indicates a user with full workspace administrator and developer privilege.</p> <p>Note: Currently this parameter is named inconsistently between the CREATE_USER, EDIT_USER and FETCH_USER APIs, although they all relate to the DEVELOPER_ROLE field stored in the named user account record. CREATE_USER uses p_developer_privs, EDIT_USER uses p_developer_roles and FETCH_USER uses p_developer_role.</p> <p>See Also: "GET_USER_ROLES Function" on page 18-81</p>
p_description	Informational

Example for Signature 2

The following example shows how to use the FETCH_USER procedure with Signature 2. This procedure is passed the ID of the currently authenticated user for the only IN parameter p_user_id. The code then stores all the other OUT parameter values in local variables.

```

DECLARE
    l_user_name          VARCHAR2(100);
    l_first_name         VARCHAR2(255);
    l_last_name          VARCHAR2(255);
    l_email_address      VARCHAR2(240);
    l_groups             VARCHAR2(1000);
    l_developer_role     VARCHAR2(60);
    l_description        VARCHAR2(240);
BEGIN
    APEX_UTIL.FETCH_USER(
        p_user_id        => APEX_UTIL.GET_CURRENT_USER_ID,
        p_user_name       => l_user_name,
        p_first_name      => l_first_name,
        p_last_name       => l_last_name,
        p_email_address   => l_email_address,
        p_groups          => l_groups,
        p_developer_role  => l_developer_role,
        p_description     => l_description);
END;
```

See Also: ["EDIT_USER Procedure"](#) on page 18-30 and ["GET_CURRENT_USER_ID Function"](#) on page 18-54

FETCH_USER Procedure Signature 3

This procedure fetches a user account record. To execute this procedure, the current user must have administrative privileges in the workspace. Three overloaded versions of this procedure exist, each with a distinct set of allowed parameters or signatures.

Syntax for Signature 3

```
APEX_UTIL.FETCH_USER (
    p_user_id                IN          NUMBER,
    p_workspace              OUT         VARCHAR2,
    p_user_name              OUT         VARCHAR2,
    p_first_name             OUT         VARCHAR2,
    p_last_name              OUT         VARCHAR2,
    p_web_password           OUT         VARCHAR2,
    p_email_address          OUT         VARCHAR2,
    p_start_date             OUT         VARCHAR2,
    p_end_date               OUT         VARCHAR2,
    p_employee_id            OUT         VARCHAR2,
    p_allow_access_to_schemas OUT         VARCHAR2,
    p_person_type            OUT         VARCHAR2,
    p_default_schema         OUT         VARCHAR2,
    p_groups                 OUT         VARCHAR2,
    p_developer_role         OUT         VARCHAR2,
    p_description            OUT         VARCHAR2,
    p_account_expiry         OUT         DATE,
    p_account_locked         OUT         VARCHAR2,
    p_failed_access_attempts OUT         NUMBER,
    p_change_password_on_first_use OUT     VARCHAR2,
    p_first_password_use_occurred OUT     VARCHAR2 );
```

Parameters for Signature 3

[Table 18–29](#) describes the parameters available in the `FETCH_USER` procedure.

Table 18–29 Fetch_User Parameters Signature 3

Parameter	Description
<code>p_user_id</code>	Numeric primary key of the user account
<code>p_workspace</code>	The name of the workspace
<code>p_user_name</code>	Alphanumeric name used for login. See Also: "GET_USERNAME Function" on page 18-82
<code>p_first_name</code>	Informational. See Also: "GET_FIRST_NAME Function" on page 18-62
<code>p_last_name</code>	Informational. See Also: "GET_LAST_NAME Function" on page 18-67
<code>p_web_password</code>	Obfuscated account password
<code>p_email_address</code>	Email address. See Also: "GET_EMAIL Function" on page 18-57
<code>p_start_date</code>	Unused

Table 18-29 (Cont.) Fetch_User Parameters Signature 3

Parameter	Description
p_end_date	Unused
p_employee_id	Unused
p_allow_access_to_schemas	A list of schemas assigned to the user's workspace to which user is restricted
p_person_type	Unused
p_default_schema	A database schema assigned to the user's workspace, used by default for browsing. See Also: "GET_DEFAULT_SCHEMA Function" on page 18-55
p_groups	List of groups of which user is a member. See Also: "GET_GROUPS_USER_BELONGS_TO Function" on page 18-63 and "CURRENT_USER_IN_GROUP Function" on page 18-20
p_developer_role	Colon-separated list of developer roles. The following are acceptable values for this parameter: null - Indicates an end user (a user who can only authenticate to developed applications). CREATE:DATA_ LOADER:EDIT:HELP:MONITOR:SQL - Indicates a user with developer privilege. ADMIN:CREATE:DATA_ LOADER:EDIT:HELP:MONITOR:SQL - Indicates a user with full workspace administrator and developer privilege. Note: Currently this parameter is named inconsistently between the CREATE_USER, EDIT_USER and FETCH_USER APIs, although they all relate to the DEVELOPER_ROLE field stored in the named user account record. CREATE_USER uses p_developer_privs, EDIT_USER uses p_developer_roles and FETCH_USER uses p_developer_role. See Also: "GET_USER_ROLES Function" on page 18-81
p_description	Informational
p_account_expiry	Date account password was last reset. See Also: "END_USER_ACCOUNT_DAYS_LEFT Function" on page 18-34 and "WORKSPACE_ACCOUNT_DAYS_LEFT Function" on page 18-159
p_account_locked	Locked/Unlocked indicator Y or N. See Also: "GET_ACCOUNT_LOCKED_STATUS Function" on page 18-49
p_failed_access_attempts	Counter for consecutive login failures
p_change_password_on_first_use	Setting to force password change on first use Y or N
p_first_password_use_occurred	Indicates whether login with password occurred Y or N

Example for Signature 3

The following example shows how to use the `FETCH_USER` procedure with Signature 3. This procedure is passed the ID of the currently authenticated user for the only `IN` parameter `p_user_id`. The code then stores all the other `OUT` parameter values in local variables.

```

DECLARE
    l_workspace          VARCHAR2(255);
    l_user_name          VARCHAR2(100);
    l_first_name         VARCHAR2(255);
    l_last_name          VARCHAR2(255);
    l_web_password       VARCHAR2(255);
    l_email_address      VARCHAR2(240);
    l_start_date         DATE;
    l_end_date           DATE;
    l_employee_id        NUMBER(15,0);
    l_allow_access_to_schemas VARCHAR2(4000);
    l_person_type        VARCHAR2(1);
    l_default_schema     VARCHAR2(30);
    l_groups              VARCHAR2(1000);
    l_developer_role     VARCHAR2(60);
    l_description         VARCHAR2(240);
    l_account_expiry     DATE;
    l_account_locked     VARCHAR2(1);
    l_failed_access_attempts NUMBER;
    l_change_password_on_first_use VARCHAR2(1);
    l_first_password_use_occurred VARCHAR2(1);
BEGIN
    APEX_UTIL.FETCH_USER(
        p_user_id          => APEX_UTIL.GET_CURRENT_USER_ID,
        p_workspace        => l_workspace,
        p_user_name        => l_user_name,
        p_first_name       => l_first_name,
        p_last_name        => l_last_name,
        p_web_password     => l_web_password,
        p_email_address    => l_email_address,
        p_start_date       => l_start_date,
        p_end_date         => l_end_date,
        p_employee_id      => l_employee_id,
        p_allow_access_to_schemas => l_allow_access_to_schemas,
        p_person_type      => l_person_type,
        p_default_schema   => l_default_schema,
        p_groups           => l_groups,
        p_developer_role   => l_developer_role,
        p_description      => l_description,
        p_account_expiry   => l_account_expiry,
        p_account_locked   => l_account_locked,
        p_failed_access_attempts => l_failed_access_attempts,
        p_change_password_on_first_use => l_change_password_on_first_use,
        p_first_password_use_occurred => l_first_password_use_occurred);
END;
```

See Also: ["EDIT_USER Procedure"](#) on page 18-30 and ["GET_CURRENT_USER_ID Function"](#) on page 18-54

FIND_SECURITY_GROUP_ID Function

This function returns the numeric security group ID of the named workspace.

Syntax

```
APEX_UTIL.FIND_SECURITY_GROUP_ID(  
    p_workspace    IN VARCHAR2)  
RETURN NUMBER;
```

Parameters

[Table 18–30](#) describes the parameters available in the `FIND_SECURITY_GROUP_ID` function.

Table 18–30 *FIND_SECURITY_GROUP_ID Parameters*

Parameter	Description
<code>p_workspace</code>	The name of the workspace

Example

The following example demonstrates how to use the `FIND_SECURITY_GROUP_ID` function to return the security group ID for the workspace called 'DEMOS'.

```
DECLARE  
    VAL NUMBER;  
BEGIN  
    VAL := APEX_UTIL.FIND_SECURITY_GROUP_ID (p_workspace=>'DEMOS');  
END;
```

FIND_WORKSPACE Function

This function returns the workspace name associated with a security group ID.

Syntax

```
APEX_UTIL.FIND_WORKSPACE(  
    p_security_group_id    IN VARCHAR2)  
RETURN VARCHAR2;
```

Parameters

[Table 18–31](#) describes the parameters available in the FIND_WORKSPACE function.

Table 18–31 FIND_WORKSPACE Parameters

Parameter	Description
p_security_group_id	The security group ID of a workspace

Example

The following example demonstrates how to use the FIND_WORKSPACE function to return the workspace name for the workspace with a security group ID of 20.

```
DECLARE  
    VAL VARCHAR2(255);  
BEGIN  
    VAL := APEX_UTIL.FIND_WORKSPACE (p_security_group_id =>'20');  
END;
```

GET_ACCOUNT_LOCKED_STATUS Function

Returns TRUE if the account is locked and FALSE if the account is unlocked. Must be run by an authenticated workspace administrator in a page request context.

Syntax

```
APEX_UTIL.GET_ACCOUNT_LOCKED_STATUS (  
    p_user_name IN VARCHAR2  
) RETURN BOOLEAN;
```

Parameters

[Table 18–32](#) describes the parameters available in the GET_ACCOUNT_LOCKED_STATUS function.

Table 18–32 GET_ACCOUNT_LOCKED_STATUS Parameters

Parameter	Description
p_user_name	The user name of the user account

Example

The following example shows how to use the GET_ACCOUNT_LOCKED_STATUS function. Use this function to check if an Application Express user account (workspace administrator, developer, or end user) in the current workspace is locked.

```
BEGIN  
    FOR c1 IN (SELECT user_name FROM wwv_flow_users) loop  
        IF APEX_UTIL.GET_ACCOUNT_LOCKED_STATUS(p_user_name => c1.user_name) THEN  
            HTP.P('User Account: ' || c1.user_name || ' is locked.');        END IF;  
    END LOOP;  
END;
```

See Also: [LOCK_ACCOUNT Procedure](#) on page 18-100 and [UNLOCK_ACCOUNT Procedure](#) on page 18-156.

GET_ATTRIBUTE Function

This function returns the value of one of the attribute values (1 through 10) of a named user in the Application Express accounts table. Please note these are only accessible via the APIs.

Syntax

```
APEX_UTIL.GET_ATTRIBUTE (  
    p_username             IN VARCHAR2,  
    p_attribute_number     IN NUMBER)  
RETURN VARCHAR2;
```

Parameters

[Table 18-33](#) describes the parameters available in the GET_ATTRIBUTE function.

Table 18-33 GET_ATTRIBUTE Parameters

Parameter	Description
p_username	User name in the account.
p_attribute_number	Number of attributes in the user record (1 through 10)

Example

The following example shows how to use the GET_ATTRIBUTE function to return the value for the 1st attribute for the user 'FRANK'.

```
DECLARE  
    VAL VARCHAR2(4000);  
BEGIN  
    VAL := APEX_UTIL.GET_ATTRIBUTE (  
        p_username => 'FRANK',  
        p_attribute_number => 1);  
END;
```

See Also: ["SET_ATTRIBUTE Procedure"](#) on page 18-116

GET_AUTHENTICATION_RESULT Function

Use this function to retrieve the authentication result of the current session. Any authenticated user can call this function in a page request context.

Syntax

```
APEX_UTIL.GET_AUTHENTICATION_RESULT  
RETURN NUMBER;
```

Parameters

None.

Example

The following example demonstrates how to use the post-authentication process of an application's authentication scheme to retrieve the authentication result code set during authentication.

```
APEX_UTIL.SET_SESSION_STATE('MY_AUTH_STATUS',  
    'Authentication result:'||APEX_UTIL.GET_AUTHENTICATION_RESULT);
```

See Also: ["SET_AUTHENTICATION_RESULT Procedure"](#) on page 18-117 and ["SET_CUSTOM_AUTH_STATUS Procedure"](#) on page 18-121

GET_BLOB_FILE_SRC Function

As an alternative to using the built-in methods of providing a download link, you can use the `APEX_UTIL.GET_BLOB_FILE_SRC` function. One advantage of this approach, is the ability to more specifically format the display of the image (with height and width tags). Please note that this approach is only valid if called from a valid Oracle Application Express session. Also, this method requires that the parameters that describe the BLOB to be listed as the format of a valid item within the application. That item is then referenced by the function.

See Also: "About BLOB Support in Forms and Reports" in *Oracle Application Express Application Builder User's Guide*

Syntax

```
APEX_UTIL.GET_BLOB_FILE_SRC (
    p_item_name          IN VARCHAR2 DEFAULT NULL,
    p_v1                 IN VARCHAR2 DEFAULT NULL,
    p_v2                 IN VARCHAR2 DEFAULT NULL,
    p_content_disposition IN VARCHAR2 DEFAULT NULL)
RETURN VARCHAR2;
```

Parameters

[Table 18–34](#) describes the parameters available in `GET_BLOB_FILE_SRC` function.

Table 18–34 *GET_BLOB_FILE_SRC Parameters*

Parameter	Description
<code>p_item_name</code>	Name of valid application page ITEM that with type FILE that contains the source type of DB column.
<code>p_v1</code>	Value of primary key column 1.
<code>p_v2</code>	Value of primary key column 2.
<code>p_content_disposition</code>	Specify inline or attachment, all other values ignored

Example

As a PLSQL Function Body:

```
RETURN '';
```

As a Region Source of type SQL:

```
SELECT ID, NAME, CASE WHEN NVL(dbms_lob.getlength(document), 0) = 0
    THEN NULL
    ELSE CASE WHEN attach_mimetype like 'image%'
    THEN ''
    ELSE
    '<a href="' || apex_util.get_blob_file_src('P4_DOCUMENT', id) || '">Download</a>'
    end
    END new_img
FROM TEST_WITH_BLOB
```

The previous example illustrates how to display the BLOB within the report, if it can be displayed, and provide a download link, if it cannot be displayed.

See Also: "Running a Demonstration Application" in *Oracle Application Express Application Builder User's Guide*.

GET_CURRENT_USER_ID Function

This function returns the numeric user ID of the current user.

Syntax

```
APEX_UTIL.GET_CURRENT_USER_ID  
RETURN NUMBER;
```

Parameters

None.

Example

This following example shows how to use the GET_CURRENT_USER_ID function. It returns the numeric user ID of the current user into a local variable.

```
DECLARE  
    VAL NUMBER;  
BEGIN  
    VAL := APEX_UTIL.GET_CURRENT_USER_ID;  
END;
```

GET_DEFAULT_SCHEMA Function

This function returns the default schema name associated with the current user.

Syntax

```
APEX_UTIL.GET_DEFAULT_SCHEMA  
RETURN VARCHAR2;
```

Parameters

None.

Example

The following example shows how to use the GET_DEFAULT_SCHEMA function. It returns the default schema name associated with the current user into a local variable.

```
DECLARE  
    VAL VARCHAR2(30);  
BEGIN  
    VAL := APEX_UTIL.GET_DEFAULT_SCHEMA;  
END;
```

GET_EDITION Function

This function returns the edition for the current page view.

Syntax

```
APEX_UTIL.GET_EDITION  
RETURN VARCHAR2;
```

Parameters

None.

Example

The following example shows how to use the GET_EDITION function. It returns the edition name for the current page view into a local variable.

```
DECLARE  
    VAL VARCHAR2(30);  
BEGIN  
    VAL := APEX_UTIL.GET_EDITION;  
END;
```

GET_EMAIL Function

This function returns the email address associated with the named user.

Syntax

```
APEX_UTIL.GET_EMAIL(  
    p_username IN VARCHAR2);  
RETURN VARCHAR2;
```

Parameters

[Table 18–35](#) describes the parameters available in GET_EMAIL function.

Table 18–35 *GET_EMAIL Parameters*

Parameter	Description
p_username	The user name in the account

Example

The following example shows how to use the GET_EMAIL function to return the email address of the user 'FRANK'.

```
DECLARE  
    VAL VARCHAR2(240);  
BEGIN  
    VAL := APEX_UTIL.GET_EMAIL(p_username => 'FRANK');  
END;
```

See Also: ["SET_EMAIL Procedure"](#) on page 18-123

GET_FEEDBACK_FOLLOW_UP Function

This function is used to retrieve any remaining follow up associated with a specific feedback.

Syntax

```
APEX_UTIL.GET_FEEDBACK_FOLLOW_UP (  
    p_feedback_id    IN NUMBER,  
    p_row            IN NUMBER DEFAULT 1,  
    p_template       IN VARCHAR2 DEFAULT '<br />#CREATED_ON# (#CREATED_BY#)  
#FOLLOW_UP#')  
RETURN VARCHAR2;
```

Parameters

[Table 18–36](#) describes the parameters available in GET_FEEDBACK_FOLLOW_UP function.

Table 18–36 GET_FEEDBACK_FOLLOW_UP Parameters

Parameter	Description
p_feedback_id	The unique identifier of the feedback item.
p_row	Identifies which follow-up to retrieve and is ordered by created_on_desc.
p_template	The template to use to return the follow up. Given the in the default template, the function can be used in a loop to return all the follow up to a feedback.

Example

The following example displays all the remaining follow-up for feedback with the ID of 123.

```
declare  
    l_feedback_count number;  
begin  
    select count(*)  
        into l_feedback_count  
        from apex_team_feedback_followup  
        where feedback_id = 123;  
  
    for i in 1..l_feedback_count loop  
        http.p(apex_util.get_feedback_follow_up (  
            p_feedback_id => 123,  
            p_row          => i,  
            p_template     => '<br />#FOLLOW_UP# was created on #CREATED_ON# by  
#CREATED_BY#') );  
    end loop;  
end;  
/
```


GET_FILE Procedure

This procedure downloads files from the Oracle Application Express file repository. Please note if you are invoking this procedure during page processing, you must ensure that no page branch will be invoked under the same condition, as it will interfere with the file retrieval. This means that branches with any of the following conditions should not be set to fire:

- Branches with a 'When Button Pressed' attribute equal to the button that invokes the procedure.
- Branches with conditional logic defined that would succeed during page processing when the procedure is being invoked.
- As unconditional.

Syntax

```
APEX_UTIL.GET_FILE (
    p_file_id    IN    VARCHAR2,
    p_inline     IN    VARCHAR2 DEFAULT 'NO');
```

Parameters

[Table 18–37](#) describes the parameters available in GET_FILE procedure.

Table 18–37 GET_FILE Parameters

Parameter	Description
p_file_id	<p>ID in APEX_APPLICATION_FILES of the file to be downloaded. APEX_APPLICATION_FILES is a view on all files uploaded to your workspace. The following example demonstrates how to use APEX_APPLICATION_FILES:</p> <pre> DECLARE l_file_id NUMBER; BEGIN SELECT id INTO l_file_id FROM APEX_APPLICATION_FILES WHERE filename = 'myxml'; -- APEX_UTIL.GET_FILE(p_file_id => l_file_id, p_inline => 'YES'); END;</pre>
p_inline	Valid values include YES and NO. YES to display inline in a browser. NO to download as attachment

Example

The following example shows how to use the GET_FILE function to return the file identified by the ID 8675309. This will be displayed inline in the browser.

```

BEGIN
    APEX_UTIL.GET_FILE(
        p_file_id    => '8675309',
        p_inline     => 'YES');
```

END;

See Also: ["GET_FILE_ID Function"](#) on page 18-61

GET_FILE_ID Function

This function obtains the primary key of a file in the Oracle Application Express file repository.

Syntax

```
APEX_UTIL.GET_FILE_ID (  
    p_name      IN   VARCHAR2)  
RETURN NUMBER;
```

Parameters

[Table 18–38](#) describes the parameters available in GET_FILE_ID function.

Table 18–38 *GET_FILE_ID Parameters*

Parameter	Description
p_name	The NAME in APEX_APPLICATION_FILES of the file to be downloaded. APEX_APPLICATION_FILES is a view on all files uploaded to your workspace.

Example

The following example shows how to use the GET_FILE_ID function to retrieve the database ID of the file with a filename of 'F125.sql'.

```
DECLARE  
    l_name VARCHAR2(255);  
    l_file_id NUMBER;  
BEGIN  
    SELECT name  
        INTO l_name  
    FROM APEX_APPLICATION_FILES  
    WHERE filename = 'F125.sql';  
    --  
    l_file_id := APEX_UTIL.GET_FILE_ID(p_name => l_name);  
END;
```

GET_FIRST_NAME Function

This function returns the `FIRST_NAME` field stored in the named user account record.

Syntax

```
APEX_UTIL.GET_FIRST_NAME  
    p_username IN VARCHAR2)  
RETURN VARCHAR2;
```

Parameters

[Table 18–39](#) describes the parameters available in `GET_FIRST_NAME` function.

Table 18–39 *GET_FIRST_NAME Parameters*

Parameter	Description
<code>p_username</code>	Identifies the user name in the account

Example

The following example shows how to use the `GET_FIRST_NAME` function to return the `FIRST_NAME` of the user 'FRANK'.

```
DECLARE  
    val VARCHAR2(255);  
BEGIN  
    val := APEX_UTIL.GET_FIRST_NAME(p_username => 'FRANK');  
END;
```

See Also: ["SET_FIRST_NAME Procedure"](#) on page 18-124

GET_GROUPS_USER_BELONGS_TO Function

This function returns a comma then a space separated list of group names to which the named user is a member.

Syntax

```
APEX_UTIL.GET_GROUPS_USER_BELONGS_TO(  
    p_username IN VARCHAR2)  
RETURN VARCHAR2;
```

Parameters

[Table 18–40](#) describes the parameters available in GET_GROUPS_USER_BELONGS_TO function.

Table 18–40 GET_GROUPS_USER_BELONGS_TO Parameters

Parameter	Description
p_username	Identifies the user name in the account

Example

The following example shows how to use the GET_GROUPS_USER_BELONGS_TO to return the list of groups to which the user 'FRANK' is a member.

```
DECLARE  
    VAL VARCHAR2(32765);  
BEGIN  
    VAL := APEX_UTIL.GET_GROUPS_USER_BELONGS_TO(p_username => 'FRANK');  
END;
```

See Also: ["EDIT_USER Procedure"](#) on page 18-30

GET_GROUP_ID Function

This function returns the numeric ID of a named group in the workspace.

Syntax

```
APEX_UTIL.GET_GROUP_ID(  
    p_group_name IN VARCHAR2)  
RETURN VARCHAR2;
```

Parameters

[Table 18–41](#) describes the parameters available in GET_GROUP_ID function.

Table 18–41 GET_GROUP_ID Parameters

Parameter	Description
p_group_name	Identifies the user name in the account

Example

The following example shows how to use the GET_GROUP_ID function to return the ID for the group named 'Managers'.

```
DECLARE  
    VAL NUMBER;  
BEGIN  
    VAL := APEX_UTIL.GET_GROUP_ID(p_group_name => 'Managers');  
END;
```

GET_GROUP_NAME Function

This function returns the name of a group identified by a numeric ID.

Syntax

```
APEX_UTIL.GET_GROUP_NAME(  
    p_group_id IN NUMBER)  
RETURN VARCHAR2;
```

Parameters

[Table 18–42](#) describes the parameters available in GET_GROUP_NAME function.

Table 18–42 GET_GROUP_NAME Parameters

Parameter	Description
p_group_id	Identifies a numeric ID of a group in the workspace

Example

The following example shows how to use the GET_GROUP_NAME function to return the name of the group with the ID 8922003.

```
DECLARE  
    VAL VARCHAR2(255);  
BEGIN  
    VAL := APEX_UTIL.GET_GROUP_NAME(p_group_id => 8922003);  
END;
```

GET_HIGH_CONTRAST_MODE_TOGGLE Function

This function returns a link to the current page that allows you to turn on or off, toggle, the mode. For example, if you are in standard mode, this function displays a link that when clicked switches high contrast mode on.

Syntax

```
APEX_UTIL.GET_HIGH_CONTRAST_MODE_TOGGLE (  
    p_on_message IN VARCHAR2 DEFAULT NULL,  
    p_off_message IN VARCHAR2 DEFAULT NULL)  
RETURN VARCHAR2;
```

Parameters

[Table 18–43](#) describes the parameters available in GET_HIGH_CONTRAST_MODE_TOGGLE function.

Table 18–43 GET_HIGH_CONTRAST_MODE_TOGGLE Parameters

Parameter	Description
p_on_message	Optional text used for the link to switch to high contrast mode, when you are in standard mode. If this parameter is not passed, the default 'Set High Contrast Mode On' text will be returned in the link.
p_off_message	Optional text used for the link to switch to standard mode, when you are in high contrast mode. If this parameter is not passed, the default 'Set High Contrast Mode Off' text will be returned in the link.

Example

When running in standard mode, this function returns a link with the text 'Set High Contrast Mode On'. When the link is clicked the current page is refreshed and high contrast mode is switched on. When running in high contrast mode, a link 'Set High Contrast Mode Off' is returned. When the link is clicked the current page is refreshed and switched back to standard mode.

```
BEGIN  
    http.p(apex_util.get_high_contrast_mode_toggle);  
END;
```

See Also: ["SHOW_HIGH_CONTRAST_MODE_TOGGLE Procedure"](#) on page 18-142

Note: There are also 2 translatable system messages that can be overridden at application level to change the default link text that is returned for this toggle. They include:

- APEX.SET_HIGH_CONTRAST_MODE_OFF - Default text = Set High Contrast Mode Off
 - APEX.SET_HIGH_CONTRAST_MODE_ON - Default text = Set High Contrast Mode On
-

GET_LAST_NAME Function

This function returns the LAST_NAME field stored in the named user account record.

Syntax

```
APEX_UTIL.GET_LAST_NAME(  
    p_username IN VARCHAR2)  
RETURN VARCHAR2;
```

Parameters

[Table 18–44](#) describes the parameters available in GET_LAST_NAME function.

Table 18–44 GET_LAST_NAME Parameters

Parameter	Description
p_username	The user name in the user account record

Example

The following example shows how to use the function to return the LAST_NAME for the user 'FRANK'.

```
DECLARE  
    VAL VARCHAR2(255);  
BEGIN  
    VAL := APEX_UTIL.GET_LAST_NAME(p_username => 'FRANK');  
END;
```

See Also: ["SET_LAST_NAME Procedure"](#) on page 18-125

GET_NUMERIC_SESSION_STATE Function

This function returns a numeric value for a numeric item. You can use this function in Oracle Application Express applications wherever you can use PL/SQL or SQL. You can also use the shorthand, function NV, in place of APEX_UTIL.GET_NUMERIC_SESSION_STATE.

Syntax

```
APEX_UTIL.GET_NUMERIC_SESSION_STATE (  
    p_item      IN VARCHAR2)  
RETURN NUMBER;
```

Parameters

[Table 18–45](#) describes the parameters available in GET_NUMERIC_SESSION_STATE function.

Table 18–45 GET_NUMERIC_SESSION_STATE Parameters

Parameter	Description
p_item	The case insensitive name of the item for which you want to have the session state fetched

Example

The following example shows how to use the function to return the numeric value stored in session state for the item 'my_item'.

```
DECLARE  
    l_item_value    NUMBER;  
BEGIN  
    l_item_value := APEX_UTIL.GET_NUMERIC_SESSION_STATE('my_item');  
END;
```

See Also: ["GET_SESSION_STATE Function"](#) on page 18-77 and ["SET_SESSION_STATE Procedure"](#) on page 18-138

GET_PREFERENCE Function

This function retrieves the value of a previously saved preference for a given user.

Syntax

```
APEX_UTIL.GET_PREFERENCE (  
    p_preference IN    VARCHAR2 DEFAULT NULL,  
    p_user      IN    VARCHAR2 DEFAULT V('USER'))  
RETURN VARCHAR2;
```

Parameters

[Table 18–46](#) describes the parameters available in the GET_PREFERENCE function.

Table 18–46 GET_PREFERENCE Parameters

Parameter	Description
p_preference	Name of the preference to retrieve the value
p_value	Value of the preference
p_user	User for whom the preference is being retrieved

Example

The following example shows how to use the GET_PREFERENCE function to return the value for the currently authenticated user's preference named default_view.

```
DECLARE  
    l_default_view    VARCHAR2(255);  
BEGIN  
    l_default_view := APEX_UTIL.GET_PREFERENCE(  
        p_preference => 'default_view',  
        p_user      => :APP_USER);  
END;
```

See Also: ["SET_PREFERENCE Procedure"](#) on page 18-126,
["REMOVE_PREFERENCE Procedure"](#) on page 18-109 and "Managing
User Preferences" in *Oracle Application Express Administration Guide*.

GET_PRINT_DOCUMENT Function Signature 1

This function returns a document as BLOB using XML based report data and RTF or XSL-FO based report layout.

Syntax

```
APEX_UTIL.GET_PRINT_DOCUMENT (  
    p_report_data          IN BLOB,  
    p_report_layout        IN CLOB,  
    p_report_layout_type   IN VARCHAR2 default 'xsl-fo',  
    p_document_format       IN VARCHAR2 default 'pdf',  
    p_print_server          IN VARCHAR2 default NULL)  
RETURN BLOB;
```

Parameters

[Table 18–47](#) describes the parameters available in the GET_PRINT_DOCUMENT function.

Table 18–47 GET_PRINT_DOCUMENT Signature 1 Parameters

Parameter	Description
p_report_data	XML based report data
p_report_layout	Report layout in XSL-FO or RTF format
p_report_layout_type	Defines the report layout type, that is "xsl-fo" or "rtf"
p_document_format	Defines the document format, that is "pdf", "rtf", "xls", "htm", or "xml"
p_print_server	URL of the print server. If not specified, the print server will be derived from preferences.

For a GET_PRINT_DOCUMENT example see ["GET_PRINT_DOCUMENT Function Signature 4"](#).

GET_PRINT_DOCUMENT Function Signature 2

This function returns a document as BLOB using pre-defined report query and pre-defined report layout.

Syntax

```
APEX_UTIL.GET_PRINT_DOCUMENT (  
    p_application_id      IN NUMBER,  
    p_report_query_name   IN VARCHAR2,  
    p_report_layout_name  IN VARCHAR2 default null,  
    p_report_layout_type  IN VARCHAR2 default 'xsl-fo',  
    p_document_format     IN VARCHAR2 default 'pdf',  
    p_print_server        IN VARCHAR2 default null)  
RETURN BLOB;
```

Parameters

[Table 18–48](#) describes the parameters available in the GET_PRINT_DOCUMENT function.

Table 18–48 *GET_PRINT_DOCUMENT Signature 2 Parameters*

Parameter	Description
p_application_id	Defines the application ID of the report query
p_report_query_name	Name of the report query (stored under application’s shared components)
p_report_layout_name	Name of the report layout (stored under application’s Shared Components)
p_report_layout_type	Defines the report layout type, that is "xsl-fo" or "rtf"
p_document_format	Defines the document format, that is "pdf", "rtf", "xls", "htm", or "xml"
p_print_server	URL of the print server. If not specified, the print server will be derived from preferences.

For a GET_PRINT_DOCUMENT example see ["GET_PRINT_DOCUMENT Function Signature 4"](#).

GET_PRINT_DOCUMENT Function Signature 3

This function returns a document as BLOB using a pre-defined report query and RTF or XSL-FO based report layout.

Syntax

```
APEX_UTIL.GET_PRINT_DOCUMENT (  
    p_application_id      IN NUMBER,  
    p_report_query_name   IN VARCHAR2,  
    p_report_layout       IN CLOB,  
    p_report_layout_type  IN VARCHAR2 default 'xsl-fo',  
    p_document_format     IN VARCHAR2 default 'pdf',  
    p_print_server        IN VARCHAR2 default null)  
RETURN BLOB;
```

Parameters

[Table 18–49](#) describes the parameters available in the GET_PRINT_DOCUMENT function.

Table 18–49 *GET_PRINT_DOCUMENT Signature 3 Parameters*

Parameter	Description
p_application_id	Defines the application ID of the report query
p_report_query_name	Name of the report query (stored under application's shared components)
p_report_layout	Defines the report layout in XSL-FO or RTF format
p_report_layout_type	Defines the report layout type, that is "xsl-fo" or "rtf"
p_document_format	Defines the document format, that is "pdf", "rtf", "xls", "htm", or "xml"
p_print_server	URL of the print server. If not specified, the print server will be derived from preferences.

For a GET_PRINT_DOCUMENT example see ["GET_PRINT_DOCUMENT Function Signature 4"](#).

GET_PRINT_DOCUMENT Function Signature 4

This function returns a document as BLOB using XML based report data and RTF or XSL-FO based report layout.

Syntax

```
APEX_UTIL.GET_PRINT_DOCUMENT (  
    p_report_data          IN CLOB,  
    p_report_layout        IN CLOB,  
    p_report_layout_type   IN VARCHAR2 default 'xsl-fo',  
    p_document_format      IN VARCHAR2 default 'pdf',  
    p_print_server         IN VARCHAR2 default NULL)  
RETURN BLOB;
```

Parameters

Table 18–50 describes the parameters available in the GET_PRINT_DOCUMENT function. for Signature 4

Table 18–50 GET_PRINT_DOCUMENT Signature 4 Parameters

Parameter	Description
p_report_data	XML based report data, must be encoded in UTF-8
p_report_layout	Report layout in XSL-FO or RTF format
p_report_layout_type	Defines the report layout type, that is "xsl-fo" or "rtf"
p_document_format	Defines the document format, that is "pdf", "rtf", "xls", "htm", or "xml"
p_print_server	URL of the print server. If not specified, the print server will be derived from preferences

Example for Signature 4

The following example shows how to use the GET_PRINT_DOCUMENT using Signature 4 (Document returns as a BLOB using XML based report data and RTF or XSL-FO based report layout). In this example, GET_PRINT_DOCUMENT is used in conjunction with APEX_MAIL.SEND and APEX_MAIL.ADD_ATTACHMENT to send an email with an attachment of the file returned by GET_PRINT_DOCUMENT. Both the report data and layout are taken from values stored in page items (P1_XML and P1_XSL).

```
DECLARE  
    l_id number;  
    l_document BLOB;  
BEGIN  
    l_document := APEX_UTIL.GET_PRINT_DOCUMENT (  
        p_report_data          => :P1_XML,  
        p_report_layout        => :P1_XSL,  
        p_report_layout_type   => 'xsl-fo',  
        p_document_format      => 'pdf');  
  
    l_id := APEX_MAIL.SEND(  
        p_to          => :P35_MAIL_TO,  
        p_from        => 'noreplies@oracle.com',  
        p_subj        => 'sending PDF via print API',  
        p_body        => 'Please review the attachment.',  
        p_body_html   => 'Please review the attachment');
```

```
APEX_MAIL.ADD_ATTACHMENT (  
    p_mail_id    => l_id,  
    p_attachment => l_document,  
    p_filename   => 'mydocument.pdf',  
    p_mime_type  => 'application/pdf');  
END;
```

GET_SCREEN_READER_MODE_TOGGLE Function

This function returns a link to the current page to turn on or off, toggle, the mode. For example, if you are in standard mode, this function displays a link that when clicked switches screen reader mode on.

Syntax

```
APEX_UTIL.GET_SCREEN_READER_MODE_TOGGLE (  
    p_on_message IN VARCHAR2 DEFAULT NULL,  
    p_off_message IN VARCHAR2 DEFAULT NULL)  
RETURN VARCHAR2;
```

Parameters

[Table 18–51](#) describes the parameters available in GET_SCREEN_READER_MODE_TOGGLE function.

Table 18–51 GET_SCREEN_READER_MODE_TOGGLE Parameters

Parameter	Description
p_on_message	Optional text used for the link to switch to screen reader mode, when you are in standard mode. If this parameter is not passed, the default 'Set Screen Reader Mode On' text will be returned in the link.
p_off_message	Optional text used for the link to switch to standard mode, when you are in screen reader mode. If this parameter is not passed, the default 'Set Screen Reader Mode Off' text will be returned in the link.

Example

When running in standard mode, this function will return a link with the text 'Set Screen Reader Mode On'. When the link is clicked the current page is refreshed and screen reader mode is switched on. When running in screen reader mode, a link 'Set Screen Reader Mode Off' is returned. When the link is clicked the current page is refreshed and switched back to standard mode.

```
BEGIN  
    http.p(apex_util.get_screen_reader_mode_toggle);  
END;
```

See Also: ["SHOW_SCREEN_READER_MODE_TOGGLE Procedure"](#) on page 18-143

GET_SESSION_LANG Function

This function returns the language setting for the current user in the current Application Express session.

Syntax

```
APEX_UTIL.GET_SESSION_LANG  
RETURN VARCHAR2;
```

Parameters

None.

Example

The following example shows how to use the GET_SESSION_LANG function. It returns the session language for the current user in the current Application Express session into a local variable.

```
DECLARE  
    VAL VARCHAR2 (5) ;  
BEGIN  
    VAL := APEX_UTIL.GET_SESSION_LANG;  
END;
```

GET_SESSION_STATE Function

This function returns the value for an item. You can use this function in your Oracle Application Express applications wherever you can use PL/SQL or SQL. You can also use the shorthand, function `V`, in place of `APEX_UTIL.GET_SESSION_STATE`.

Syntax

```
APEX_UTIL.GET_SESSION_STATE (  
    p_item      IN   VARCHAR2)  
RETURN VARCHAR2;
```

Parameters

[Table 18–52](#) describes the parameters available in `GET_SESSION_STATE` function.

Table 18–52 *GET_SESSION_STATE Parameters*

Parameter	Description
<code>p_item</code>	The case insensitive name of the item for which you want to have the session state fetched

Example

The following example shows how to use the `GET_SESSION_STATE` function to return the value stored in session state for the item 'my_item'.

```
DECLARE  
    l_item_value VARCHAR2(255);  
BEGIN  
    l_item_value := APEX_UTIL.GET_SESSION_STATE('my_item');  
END;
```

See Also: ["GET_NUMERIC_SESSION_STATE Function"](#) on page 18-68 and ["SET_SESSION_STATE Procedure"](#) on page 18-138

GET_SESSION_TERRITORY Function

This function returns the territory setting for the current user in the current Application Express session.

Syntax

```
APEX_UTIL.GET_SESSION_TERRITORY  
RETURN VARCHAR2;
```

Parameters

None.

Example

The following example shows how to use the GET_SESSION_TERRITORY function. It returns the session territory setting for the current user in the current Application Express session into a local variable.

```
DECLARE  
    VAL VARCHAR2(30);  
BEGIN  
    VAL := APEX_UTIL.GET_SESSION_TERRITORY;  
END;
```

GET_SESSION_TIME_ZONE Function

This function returns the time zone for the current user in the current Application Express session. This value is null if the time zone is not explicitly set via `APEX_UTIL.SET_SESSION_TIME_ZONE` or if an application's automatic time zone attribute is enabled.

Syntax

```
APEX_UTIL.GET_SESSION_TIME_ZONE  
RETURN VARCHAR2;
```

Parameters

None.

Example

The following example shows how to use the `GET_SESSION_TIME_ZONE` function. It returns the session time zone for the current user in the current Application Express session into a local variable.

```
BEGIN  
    VAL := APEX_UTIL.GET_SESSION_TIME_ZONE;  
END;
```

GET_USER_ID Function

This function returns the numeric ID of a named user in the workspace.

Syntax

```
APEX_UTIL.GET_USER_ID(  
    p_username    IN VARCHAR2)  
RETURN NUMBER;
```

Parameters

[Table 18–53](#) describes the parameters available in GET_USER_ID function.

Table 18–53 GET_USER_ID Parameters

Parameter	Description
p_username	Identifies the name of a user in the workspace

Example

The following example shows how to use the GET_USER_ID function to return the ID for the user named 'FRANK'.

```
DECLARE  
    VAL NUMBER;  
BEGIN  
    VAL := APEX_UTIL.GET_USER_ID(p_username => 'FRANK');  
END;
```

GET_USER_ROLES Function

This function returns the DEVELOPER_ROLE field stored in the named user account record. Please note that currently this parameter is named inconsistently between the CREATE_USER, EDIT_USER and FETCH_USER APIs, although they all relate to the DEVELOPER_ROLE field. CREATE_USER uses p_developer_privs, EDIT_USER uses p_developer_roles and FETCH_USER uses p_developer_role.

Syntax

```
APEX_UTIL.GET_USER_ROLES(  
    p_username IN VARCHAR2)  
RETURN VARCHAR2;
```

Parameters

[Table 18–54](#) describes the parameters available in GET_USER_ROLES function.

Table 18–54 GET_USER_ROLES Parameters

Parameter	Description
p_username	Identifies a user name in the account

Example

The following example shows how to use the GET_USER_ROLES function to return colon separated list of roles stored in the DEVELOPER_ROLE field for the user 'FRANK'.

```
DECLARE  
    VAL VARCHAR2(4000);  
BEGIN  
    VAL := APEX_UTIL.GET_USER_ROLES(p_username=>'FRANK');  
END;
```

GET_USERNAME Function

This function returns the user name of a user account identified by a numeric ID.

Syntax

```
APEX_UTIL.GET_USERNAME(  
    p_userid IN NUMBER)  
RETURN VARCHAR2;
```

Parameters

[Table 18–55](#) describes the parameters available in GET_USERNAME function.

Table 18–55 GET_USERNAME Parameters

Parameter	Description
p_userid	Identifies the numeric ID of a user account in the workspace

Example

The following example shows how to use the GET_USERNAME function to return the user name for the user with an ID of 228922003.

```
DECLARE  
    VAL VARCHAR2(100);  
BEGIN  
    VAL := APEX_UTIL.GET_USERNAME(p_userid => 228922003);  
END;
```

See Also: ["SET_USERNAME Procedure"](#) on page 18-141

HOST_URL Function

This function returns the URL to the Application Express instance, depending on the option passed.

Syntax

```
APEX_UTIL.HOST_URL (
    p_option IN VARCHAR2 DEFAULT NULL)
RETURN VARCHAR2;
```

Parameters

[Table 18–56](#) describes the parameters available in the HOST_URL function.

Table 18–56 HOST_URL Parameters

Parameter	Description
p_option	Specifies the parts of the URL to include.
	Possible values for p_option include:
	<ul style="list-style-type: none"> ■ NULL - Return URL up to port number. For example: http://myserver.com:7778 ■ SCRIPT - Return URL to include script name. For example: https://myserver.com:7778/pls/apex/ ■ IMPRE - Return URL to include image prefix. For example: https://myserver.com:7778/i/

Example

The following example demonstrates how to use the HOST_URL function to return the URL, including the script name, to the current Application Express instance.

```
declare
    l_host_url    varchar2(4000);
    l_url         varchar2(4000);
    l_application varchar2(30) := 'f?p=100:1';
    l_email_body  varchar2(32000);
begin
    l_host_url := apex_util.host_url('SCRIPT');
    l_url := l_host_url||l_application;
    l_email_body := 'The URL to the application is: '||l_url;
end;
```

HTML_PCT_GRAPH_MASK Function

This function is used to scale a graph. This function can also be used by classic and interactive reports with format mask of GRAPH. This generates a <div> tag with inline styles.

Syntax

```
APEX_UTIL.HTML_PCT_GRAPH_MASK (
    p_number          IN NUMBER      DEFAULT NULL,
    p_size             IN NUMBER      DEFAULT 100,
    p_background       IN VARCHAR2    DEFAULT NULL,
    p_bar_background   IN VARCHAR2    DEFAULT NULL,
    p_format           IN VARCHAR2    DEFAULT NULL)
RETURN VARCHAR2;
```

Parameters

Table 18–57 describes the parameters available in HTML_PCT_GRAPH_MASK function.

Table 18–57 HTML_PCT_GRAPH_MASK Parameters

Parameter	Description
p_number	Number between 0 and 100.
p_size	Width of graph in pixels.
p_background	Six character hex background color of chart bar (not bar color)
p_bar_background	Six character hex background color of chart bar (bar color)
p_format	If this parameter is supplied, p_size, p_background and p_bar_background are ignored. This parameter uses the following format: PCT_GRAPH:<BACKGROUND>:<FOREGROUND>:<CHART_WIDTH> position 1: PCT_GRAPH format mask indicator position 2: Background color in hex, 6 characters (optional) position 3: Foreground "bar" color in hex, 6 characters (optional) position 4: Chart width in pixels. Numeric and defaults to 100. p_number is automatically scaled so that 50 is half of chart_width (optional)

Example

The following is an SQL example.

```
select apex_util.html_pct_graph_mask(33) from dual
```

The following is a report numeric column format mask example.

```
PCT_GRAPH:777777:111111:200
```

INCREMENT_CALEDAR Procedure

This procedure is used to navigate to the next set of days in the calendar. Depending on what the calendar view is, this procedure will navigate to the next month, week or day. If it is a Custom Calendar the total number of days between the start date and end date are navigated.

Syntax

```
APEX_UTIL.INCREMENT_CALEDAR;
```

Parameter

None.

Example

In this example, if you create a button called NEXT in the Calendar page and create a process that fires when the create button is clicked the following code will navigate the calendar.

```
APEX_UTIL.INCREMENT_CALEDAR
```

IR_CLEAR Procedure

This procedure clears report settings.

Syntax

```
APEX_UTIL.IR_CLEAR(  
    p_page_id IN NUMBER,  
    p_report_alias IN VARCHAR2 DEFAULT NULL);
```

Parameters

[Table 18–58](#) describes the parameters available in IR_CLEAR procedure.

Table 18–58 IR_CLEAR Parameters

Parameter	Description
p_page_id	Page of the current APEX application that contains an interactive report.
p_report_alias	Identifies the saved report alias within the current application page. To clear a Primary report, p_report_alias must be 'PRIMARY' or leave as NULL. To clear a saved report, p_report_alias must be the name of the saved report. For example, to clear report '1234', p_report_alias must be '1234'.

Example

The following example shows how to use the IR_CLEAR procedure to clear Interactive report settings with alias of '8101021' in page 1 of the current application.

```
BEGIN  
    APEX_UTIL.IR_CLEAR(  
        p_page_id      => 1,  
        p_report_alias => '8101021'  
    );  
END;
```

IR_DELETE_REPORT Procedure

This procedure deletes saved Interactive reports. It deletes all saved reports except the Primary Default report.

Syntax

```
APEX_UTIL.IR_DELETE_REPORT(  
    p_report_id IN NUMBER);
```

Parameters

[Table 18–59](#) describes the parameters available in IR_DELETE_REPORT procedure.

Table 18–59 *IR_DELETE_REPORT Parameters*

Parameter	Description
p_report_id	Report ID to delete within the current APEX application.

Example

The following example shows how to use the IR_DELETE_REPORT procedure to delete the saved Interactive report with ID of '880629800374638220' in the current application.

```
BEGIN  
    APEX_UTIL.IR_DELETE_REPORT(  
        p_report_id => '880629800374638220');  
END;
```

IR_DELETE_SUBSCRIPTION Procedure

This procedure deletes Interactive subscriptions.

Syntax

```
APEX_UTIL.IR_DELETE_SUBSCRIPTION(  
    p_subscription_id IN NUMBER);
```

Parameters

[Table 18–59](#) describes the parameters available in IR_DELETE_SUBSCRIPTION procedure.

Table 18–60 *IR_DELETE_SUBSCRIPTION Parameters*

Parameter	Description
p_subscription_id	Subscription ID to delete within the current workspace.

Example

The following example shows how to use the IR_DELETE_SUBSCRIPTION procedure to delete the subscription with ID of '880629800374638220' in the current workspace.

```
BEGIN  
    APEX_UTIL.IR_DELETE_SUBSCRIPTION(  
        p_subscription_id => '880629800374638220');  
END;
```

IR_FILTER Procedure

This procedure creates a filter on an interactive report.

Syntax

```
APEX_UTIL.IR_FILTER(
    p_page_id      IN NUMBER,
    p_report_column IN VARCHAR2,
    p_operator_abbr IN VARCHAR2 DEFAULT NULL,
    p_filter_value  IN VARCHAR2,
    p_report_alias  IN VARCHAR2 DEFAULT NULL);
```

Parameters

[Table 18–61](#) describes the parameters available in IR_FILTER procedure.

Table 18–61 IR_FILTER Parameters

Parameter	Description
p_page_id	Page of the current APEX application that contains an interactive report.
p_report_column	Name of the report SQL column, or column alias, to be filtered.
p_operator_abbr	Filter type. Valid values are as follows: <ul style="list-style-type: none"> ■ EQ = Equals ■ NEQ = Not Equals ■ LT = Less than ■ LTE = Less then or equal to ■ GT = Greater Than ■ GTE = Greater than or equal to ■ LIKE = SQL Like operator ■ N = Null ■ NN = Not Null ■ C = Contains ■ NC = Not Contains ■ IN = SQL In Operator ■ NIN = SQL Not In Operator
p_filter_value	Filter value. This value is not used for 'N' and 'NN'.
p_report_alias	Identifies the saved report alias within the current application page. To create a filter on a Primary report, p_report_alias must be 'PRIMARY' or leave as NULL. To create a filter on a saved report, p_report_alias must be the name of the saved report. For example, to create a filter on report '1234', p_report_alias must be '1234'.

Example

The following example shows how to use the IR_FILTER procedure to filter Interactive report with alias of '8101021' in page 1 of the current application with DEPTNO equals 30.

```
BEGIN
```

```
APEX_UTIL.IR_FILTER (  
    p_page_id      => 1,  
    p_report_column => 'DEPTNO',  
    p_operator_abbr => 'EQ',  
    p_filter_value  => '30'  
    p_report_alias  => '8101021'  
);  
END;
```

IR_RESET Procedure

This procedure resets report settings back to the default report settings. Resetting a report removes any customizations you have made.

Syntax

```
APEX_UTIL.IR_RESET(  
    p_page_id IN NUMBER,  
    p_report_alias IN VARCHAR2 DEFAULT NULL);
```

Parameters

[Table 18–62](#) describes the parameters available in IR_RESET procedure.

Table 18–62 IR_RESET Parameters

Parameter	Description
p_page_id	Page of the current APEX application that contains an interactive report.
p_report_alias	Identifies the saved report alias within the current application page. To reset a Primary report, p_report_alias must be 'PRIMARY' or leave as NULL. To reset a saved report, p_report_alias must be the name of the saved report. For example, to reset report '1234', p_report_alias must be '1234'.

Example

The following example shows how to use the IR_RESET procedure to reset Interactive report settings with alias of '8101021' in page 1 of the current application.

```
BEGIN  
    APEX_UTIL.IR_RESET(  
        p_page_id      => 1,  
        p_report_alias => '8101021'  
    );  
END;
```

IS_HIGH_CONTRAST_SESSION Function

This function returns a boolean true if the session is in high contrast mode and returns a boolean false if not in high contrast mode.

Syntax

```
APEX_UTIL.IS_HIGH_CONTRAST_SESSION  
RETURN BOOLEAN;
```

Parameters

None.

Example

In this example, if the current session is running in high contrast mode, a high contrast specific CSS file 'my_app_hc.css' is added to the HTML output of the page.

```
BEGIN  
  IF apex_util.is_high_contrast_session THEN  
    apex_css.add_file (  
      p_name => 'my_app_hc');  
  END IF;  
END;
```

IS_HIGH_CONTRAST_SESSION_YN Function

This function returns Y if the session is in high contrast mode and N if not in high contrast mode.

Syntax

```
APEX_UTIL.IS_HIGH_CONTRAST_SESSION_YN  
RETURN VARCHAR2;
```

Parameters

None.

Example

In this example, if the current session is running in high contrast mode, a high contrast specific CSS file, `my_app_hc.css`, is added to the HTML output of the page.

```
BEGIN  
  IF apex_util.is_high_contrast_session_yn = 'Y' THEN  
    apex_css.add_file (  
      p_name => 'my_app_hc');  
  END IF;  
END;
```

IS_LOGIN_PASSWORD_VALID Function

This function returns a Boolean result based on the validity of the password for a named user account in the current workspace. This function returns true if the password matches and it returns false if the password does not match.

Syntax

```
APEX_UTIL.IS_LOGIN_PASSWORD_VALID(  
    p_username IN VARCHAR2,  
    p_password IN VARCHAR2)  
RETURN BOOLEAN;
```

Parameters

[Table 18–63](#) describes the parameters available in the IS_LOGIN_PASSWORD_VALID function.

Table 18–63 IS_LOGIN_PASSWORD_VALID Parameters

Parameter	Description
p_username	User name in account
p_password	Password to be compared with password stored in the account

Example

The following example shows how to use the IS_LOGIN_PASSWORD_VALID function to check if the user 'FRANK' has the password 'tiger'. TRUE will be returned if this is a valid password for 'FRANK', FALSE if not.

```
DECLARE  
    VAL BOOLEAN;  
BEGIN  
    VAL := APEX_UTIL.IS_LOGIN_PASSWORD_VALID (  
        p_username=>'FRANK',  
        p_password=>'tiger');  
END;
```

IS_SCREEN_READER_SESSION Function

This function returns a boolean true if the session is in screen reader mode and returns a boolean false if not in screen reader mode.

Syntax

```
APEX_UTIL.IS_SCREEN_READER_SESSION  
RETURN BOOLEAN;
```

Parameters

None

Example

```
BEGIN  
    IF apex_util.is_screen_reader_session then  
        http.p('Screen Reader Mode');  
    END IF;  
END;
```

IS_SCREEN_READER_SESSION_YN Function

This function returns 'Y' if the session is in screen reader mode and 'N' if not in screen reader mode.

Syntax

```
APEX_UTIL.IS_SCREEN_READER_SESSION_YN  
RETURN VARCHAR2;
```

Parameters

None

Example

```
BEGIN  
    IF apex_util.is_screen_reader_session_yn = 'Y' then  
        http.p('Screen Reader Mode');  
    END IF;  
END;
```

IS_USERNAME_UNIQUE Function

This function returns a Boolean result based on whether the named user account is unique in the workspace.

Syntax

```
APEX_UTIL.IS_USERNAME_UNIQUE(  
    p_username IN VARCHAR2)  
RETURN BOOLEAN;
```

Parameters

[Table 18–64](#) describes the parameters available in IS_USERNAME_UNIQUE function.

Table 18–64 IS_USERNAME_UNIQUE Parameters

Parameter	Description
p_username	Identifies the user name to be tested

Example

The following example shows how to use the IS_USERNAME_UNIQUE function. If the user 'FRANK' already exists in the current workspace, FALSE will be returned, otherwise TRUE is returned.

```
DECLARE  
    VAL BOOLEAN;  
BEGIN  
    VAL := APEX_UTIL.IS_USERNAME_UNIQUE(  
        p_username=>'FRANK');  
END;
```

KEYVAL_NUM Function

This function gets the value of the package variable (`wwv_flow_utilities.g_val_num`) set by `APEX_UTIL.SAVEKEY_NUM`.

Syntax

```
APEX_UTIL.KEYVAL_NUM  
RETURN NUMBER;
```

Parameters

None

Example

The following example shows how to use the `KEYVAL_NUM` function to return the current value of the package variable `wwv_flow_utilities.g_val_num`.

```
DECLARE  
    VAL NUMBER;  
BEGIN  
    VAL := APEX_UTIL.KEYVAL_NUM;  
END;
```

See Also: ["SAVEKEY_NUM Function"](#) on page 18-114

KEYVAL_VC2 Function

This function gets the value of the package variable (`wwv_flow_utilities.g_val_vc2`) set by `APEX_UTIL.SAVEKEY_VC2`.

Syntax

```
APEX_UTIL.KEYVAL_VC2;
```

Parameters

None.

Example

The following example shows how to use the `KEYVAL_VC2` function to return the current value of the package variable `wwv_flow_utilities.g_val_vc2`.

```
DECLARE
    VAL VARCHAR2(4000);
BEGIN
    VAL := APEX_UTIL.KEYVAL_VC2;
END;
```

See Also: ["SAVEKEY_VC2 Function"](#) on page 18-115

LOCK_ACCOUNT Procedure

Sets a user account status to locked. Must be run by an authenticated workspace administrator in the context of a page request.

Syntax

```
APEX_UTIL.LOCK_ACCOUNT (  
    p_user_name IN VARCHAR2);
```

Parameters

[Table 18–65](#) describes the parameters available in the LOCK_ACCOUNT procedure.

Table 18–65 LOCK_ACCOUNT Parameters

Parameter	Description
p_user_name	The user name of the user account

Example

The following example shows how to use the LOCK_ACCOUNT procedure. Use this procedure to lock an Application Express account (workspace administrator, developer, or end user) in the current workspace. This action locks the account for use by administrators, developers, and end users.

```
BEGIN  
    FOR c1 IN (SELECT user_name from wwv_flow_users) LOOP  
        APEX_UTIL.LOCK_ACCOUNT(p_user_name => c1.user_name);  
        http.p('End User Account: ' || c1.user_name || ' is now locked.');
```

```
    END LOOP;  
END;
```

See Also: ["UNLOCK_ACCOUNT Procedure"](#) on page 18-156 and ["GET_ACCOUNT_LOCKED_STATUS Function"](#) on page 18-49

PASSWORD_FIRST_USE_OCCURRED Function

Returns true if the account's password has changed since the account was created, an Oracle Application Express administrator performs a password reset operation that results in a new password being emailed to the account holder, or a user has initiated password reset operation. This function returns false if the account's password has not been changed since either of the events just described.

This function may be run in a page request context by any authenticated user.

Syntax

```
APEX_UTIL.PASSWORD_FIRST_USE_OCCURRED (
    p_user_name IN VARCHAR2)
RETURN BOOLEAN;
```

Parameters

[Table 18–66](#) describes the parameters available in the PASSWORD_FIRST_USE_OCCURRED procedure.

Table 18–66 *PASSWORD_FIRST_USE_OCCURRED Parameters*

Parameter	Description
p_user_name	The user name of the user account

Example

The following example shows how to use the PASSWORD_FIRST_USE_OCCURRED function. Use this function to check if the password for an Application Express user account (workspace administrator, developer, or end user) in the current workspace has been changed by the user the first time the user logged in after the password was initially set during account creation, or was changed by one of the password reset operations described above.

This is meaningful only with accounts for which the CHANGE_PASSWORD_ON_FIRST_USE attribute is set to **Yes**.

```
BEGIN
    FOR c1 IN (SELECT user_name from wwv_flow_users) LOOP
        IF APEX_UTIL.PASSWORD_FIRST_USE_OCCURRED(p_user_name => c1.user_name) THEN
            http.p('User:' || c1.user_name || ' has logged in and updated the
password.');
```

See Also: ["CHANGE_PASSWORD_ON_FIRST_USE Function"](#) on page 18-11

PREPARE_URL Function

The PREPARE_URL function serves two purposes:

1. To return an f?p URL with the Session State Protection checksum argument (&cs=) if one is required.
2. To return an f?p URL with the session ID component replaced with zero (0) if the zero session ID feature is in use and other criteria are met.

Note: The PREPARE_URL functions returns the f?p URL with &cs=<large hex value> appended. If you use this returned value, for example in JavaScript, it may be necessary to escape the ampersand in the URL in order to conform with syntax rules of the particular context. One place you may encounter this is in SVG chart SQL queries which might include PREPARE_URL calls.

Syntax

```
APEX_UTIL.PREPARE_URL (
    p_url          IN VARCHAR2,
    p_url_charset  IN VARCHAR2 default null,
    p_checksum_type IN VARCHAR2 default null)
RETURN VARCHAR2;
```

Parameters

[Table 18–67](#) describes the parameters available in the PREPARE_URL function.

Table 18–67 PREPARE_URL Parameters

Parameter	Description
p_url	An f?p relative URL with all substitutions resolved
p_url_charset	The character set name (for example, UTF-8) to use when escaping special characters contained within argument values
p_checksum_type	Null or any of the following six values, SESSION or 3, PRIVATE_BOOKMARK or 2, or PUBLIC_BOOKMARK or 1

Example 1

The following example shows how to use the PREPARE_URL function to return a URL with a valid 'SESSION' level checksum argument. This URL sets the value of P1_ITEM page item to xyz.

```
DECLARE
    l_url varchar2(2000);
    l_app number := v('APP_ID');
    l_session number := v('APP_SESSION');
BEGIN
    l_url := APEX_UTIL.PREPARE_URL(
        p_url => 'f?p=' || l_app || ':1:'||l_session|'::NO::P1_ITEM:xyz',
        p_checksum_type => 'SESSION');
END;
```

Example 2

The following example shows how to use the `PREPARE_URL` function to return a URL with a zero session ID. In a PL/SQL Dynamic Content region that generates f?p URLs (anchors), call `PREPARE_URL` to ensure that the session ID will set to zero when the zero session ID feature is in use, when the user is a public user (not authenticated), and when the target page is a public page in the current application:

```
http.p(APEX_UTIL.PREPARE_URL(p_url => 'f?p=' || :APP_ID || ':10:' || :APP_SESSION  
|| '::NO::P10_ITEM:ABC');
```

When using `PREPARE_URL` for this purpose, the `p_url_charset` and `p_checksum_type` arguments can be omitted. However, it is permissible to use them when both the Session State Protection and Zero Session ID features are applicable.

See Also: "Facilitating Bookmarks by Using Zero as the Session ID"

PUBLIC_CHECK_AUTHORIZATION Function

Given the name of a security scheme, this function determines if the current user passes the security check.

Syntax

```
APEX_UTIL.PUBLIC_CHECK_AUTHORIZATION (  
    p_security_scheme    IN    VARCHAR2)  
RETURN BOOLEAN;
```

Parameters

[Table 18–68](#) describes the parameters available in PUBLIC_CHECK_AUTHORIZATION function.

Table 18–68 PUBLIC_CHECK_AUTHORIZATION Parameters

Parameter	Description
p_security_name	The name of the security scheme that determines if the user passes the security check

Example

The following example shows how to use the PUBLIC_CHECK_AUTHORIZATION function to check if the current user passes the check defined in the my_auth_scheme authorization scheme.

```
DECLARE  
    l_check_security  BOOLEAN;  
BEGIN  
    l_check_security := APEX_UTIL.PUBLIC_CHECK_AUTHORIZATION('my_auth_scheme');  
END;
```

PURGE_REGIONS_BY_APP Procedure

Deletes all cached regions for an application.

Syntax

```
APEX_UTIL.PURGE_REGIONS_BY_APP (  
    p_application IN NUMBER);
```

Parameters

[Table 18–69](#) describes the parameters available in PURGE_REGIONS_BY_APP.

Table 18–69 PURGE_REGIONS_BY_APP Parameters

Parameter	Description
p_application	The identification number (ID) of the application.

Example

The following example show how to use APEX_UTIL.PURGE_REGIONS_BY_APP to delete all cached regions for application #123.

```
BEGIN  
    APEX_UTILITIES.PURGE_REGIONS_BY_APP(p_application=>123);  
END;
```

PURGE_REGIONS_BY_NAME Procedure

Deletes all cached values for a region identified by the application ID, page number and region name.

Syntax

```
APEX_UTIL.PURGE_REGIONS_BY_NAME (  
    p_application IN NUMBER,  
    p_page        IN NUMBER,  
    p_region_name IN VARCHAR2);
```

Parameters

[Table 18–70](#) describes the parameters available in PURGE_REGIONS_BY_NAME.

Table 18–70 PURGE_REGIONS_BY_NAME Parameters

Parameter	Description
p_application	The identification number (ID) of the application.
p_page	The number of the page containing the region to be deleted.
p_region_name	The region name to be deleted.

Example

The following example shows how to use the PURGE_REGIONS_BY_NAME procedure to delete all the cached values for the region 'my_cached_region' on page 1 of the current application.

```
BEGIN  
    APEX_UTIL.PURGE_REGIONS_BY_NAME(  
        p_application => :APP_ID,  
        p_page => 1,  
        p_region_name => 'my_cached_region');  
END;
```


PURGE_REGIONS_BY_PAGE Procedure

Deletes all cached regions by application and page.

Syntax

```
APEX_UTIL.PURGE_REGIONS_BY_PAGE (  
    p_application IN NUMBER,  
    p_page       IN NUMBER);
```

Parameters

[Table 18–71](#) describes the parameters available in PURGE_REGIONS_BY_PAGE.

Table 18–71 PURGE_REGIONS_BY_PAGE Parameters

Parameter	Description
p_application	The identification number (ID) of the application.
p_page	The identification number of page containing the region.

Example

The following example shows how to use the PURGE_REGIONS_BY_PAGE procedure to delete all the cached values for regions on page 1 of the current application.

```
BEGIN  
    APEX_UTIL.PURGE_REGIONS_BY_PAGE(  
        p_application => :APP_ID,  
        p_page => 1);  
END;
```

REDIRECT_URL Procedure

This procedure calls `owa_util.redirect_url` to tell the browser to redirect to a new URL. Afterwards, it automatically calls `apex_application.stop_apex_engine` to abort further processing of the APEX application.

Syntax

```
APEX_UTIL.REDIRECT_URL (  
    p_url          in varchar2,  
    p_reset_http_buffer in boolean default true );
```

Parameters

[Table 18–72](#) describes the parameters available in the REDIRECT_URL procedure.

Table 18–72 REDIRECT_URL Parameters

Parameter	Description
p_url	The URL the browser will request.
p_reset_http_buffer	Set to TRUE to reset the HTP buffer to make sure the browser understands the redirect to the new URL and is not confused by data that is already written to the HTP buffer. Set to FALSE if the application has it's own cookie to use in the response.

Example

The following example tells the browser to redirect to `http://www.oracle.com` and immediately stops further processing.

```
apex_util.redirect_url (  
    p_url => 'http://www.oracle.com/' );
```

REMOVE_PREFERENCE Procedure

This procedure removes the preference for the supplied user.

Syntax

```
APEX_UTIL.REMOVE_PREFERENCE(  
    p_preference    IN    VARCHAR2 DEFAULT NULL,  
    p_user          IN    VARCHAR2 DEFAULT V('USER'));
```

Parameters

[Table 18–73](#) describes the parameters available in the REMOVE_PREFERENCE procedure.

Table 18–73 REMOVE_PREFERENCE Parameters

Parameter	Description
p_preference	Name of the preference to remove
p_user	User for whom the preference is defined

Example

The following example shows how to use the REMOVE_PREFERENCE procedure to remove the preference default_view for the currently authenticated user.

```
BEGIN  
    APEX_UTIL.REMOVE_PREFERENCE(  
        p_preference => 'default_view',  
        p_user       => :APP_USER);  
END;
```

See Also: ["GET_PREFERENCE Function"](#) on page 18-69, ["SET_PREFERENCE Procedure"](#) on page 18-126 and "Managing Session State and User Preferences" in *Oracle Application Express Administration Guide*.

REMOVE_SORT_PREFERENCES Procedure

This procedure removes the user's column heading sorting preference value.

Syntax

```
APEX_UTIL.REMOVE_SORT_PREFERENCES (  
    p_user IN VARCHAR2 DEFAULT V('USER'));
```

Parameters

[Table 18-74](#) describes the parameters available in REMOVE_SORT_PREFERENCES function.

Table 18-74 REMOVE_SORT_PREFERENCES Parameters

Parameter	Description
p_user	Identifies the user for whom sorting preferences will be removed

Example

The following example shows how to use the REMOVE_SORT_PREFERENCES procedure to remove the currently authenticated user's column heading sorting preferences.

```
BEGIN  
    APEX_UTIL.REMOVE_SORT_PREFERENCES (:APP_USER) ;  
END;
```

REMOVE_USER Procedure

This procedure removes the user account identified by the primary key or a user name. To execute this procedure, the current user must have administrative privilege in the workspace.

Syntax

```
APEX_UTIL.REMOVE_USER(  
    p_user_id    IN NUMBER,  
    p_user_name  IN VARCHAR2);
```

Parameters

[Table 18–75](#) describes the parameters available in the REMOVE_USER procedure.

Table 18–75 REMOVE_USER Parameters

Parameter	Description
p_user_id	The numeric primary key of the user account record
p_user_name	The user name of the user account

Example

The following examples show how to use the REMOVE_USER procedure to remove a user account. Firstly, by the primary key (using the p_user_id parameter) and secondly by user name (using the p_user_name parameter).

```
BEGIN  
    APEX_UTIL.REMOVE_USER(p_user_id=> 99997);  
END;  
  
BEGIN  
    APEX_UTIL.REMOVE_USER(p_user_name => 'FRANK');  
END;
```

RESET_AUTHORIZATIONS Procedure

To increase performance, Oracle Application Express caches the results of authorization schemes after they have been evaluated. You can use this procedure to undo caching, requiring each authorization scheme be revalidated when it is next encountered during page show or accept processing. You can use this procedure if you want users to have the ability to change their responsibilities (their authorization profile) within your application.

Syntax

```
APEX_UTIL.RESET_AUTHORIZATIONS;
```

Parameters

None.

Example

The following example shows how to use the RESET_AUTHORIZATIONS procedure to clear the authorization scheme cache.

```
BEGIN
    APEX_UTIL.RESET_AUTHORIZATIONS;
END;
```

RESET_PW Procedure

This procedure resets the password for a named user and emails it in a message to the email address located for the named account in the current workspace. To execute this procedure, the current user must have administrative privilege in the workspace.

Syntax

```
APEX_UTIL.RESET_PW(  
    p_user IN VARCHAR2,  
    p_msg  IN VARCHAR2);
```

Parameters

[Table 18–76](#) describes the parameters available in the RESET_PW procedure.

Table 18–76 RESET_PW Parameters

Parameter	Description
p_user	The user name of the user account
p_msg	Message text to be mailed to a user

Example

The following example shows how to use the RESET_PW procedure to reset the password for the user 'FRANK'.

```
BEGIN  
    APEX_UTIL.RESET_PW(  
        p_user => 'FRANK',  
        p_msg => 'Contact help desk at 555-1212 with questions');  
END;
```

See Also: ["CHANGE_CURRENT_USER_PW Procedure"](#) on page 18-10

SAVEKEY_NUM Function

This function sets a package variable (`wwv_flow_utilities.g_val_num`) so that it can be retrieved using the function `KEYVAL_NUM`.

Syntax

```
APEX_UTIL.SAVEKEY_NUM(  
    p_val IN NUMBER)  
RETURN NUMBER;
```

Parameters

[Table 18–77](#) describes the parameters available in the `SAVEKEY_NUM` procedure.

Table 18–77 *SAVEKEY_NUM Parameters*

Parameter	Description
<code>p_val</code>	The numeric value to be saved

Example

The following example shows how to use the `SAVEKEY_NUM` function to set the `wwv_flow_utilities.g_val_num` package variable to the value of 10.

```
DECLARE  
    VAL NUMBER;  
BEGIN  
    VAL := APEX_UTIL.SAVEKEY_NUM(p_val => 10);  
END;
```

See Also: ["KEYVAL_NUM Function"](#) on page 18-98

SAVEKEY_VC2 Function

This function sets a package variable (`wwv_flow_utilities.g_val_vc2`) so that it can be retrieved using the function `KEYVAL_VC2`.

Syntax

```
APEX_UTIL.SAVEKEY_VC2(  
    p_val IN VARCHAR2)  
RETURN VARCHAR2;
```

Parameters

[Table 18–78](#) describes the parameters available in the `SAVEKEY_VC2` function.

Table 18–78 *SAVEKEY_VC2 Parameters*

Parameter	Description
p_val	The is the VARCHAR2 value to be saved

Example

The following example shows how to use the `SAVEKEY_VC2` function to set the `wwv_flow_utilities.g_val_vc2` package variable to the value of 'XXX'.

```
DECLARE  
    VAL VARCHAR2(4000);  
BEGIN  
    VAL := APEX_UTIL.SAVEKEY_VC2(p_val => 'XXX');  
END;
```

See Also: ["KEYVAL_VC2 Function"](#) on page 18-99

SET_ATTRIBUTE Procedure

This procedure sets the value of one of the attribute values (1 through 10) of a user in the Application Express accounts table.

Syntax

```
APEX_UTIL.SET_ATTRIBUTE(  
    p_userid           IN NUMBER,  
    p_attribute_number IN NUMBER,  
    p_attribute_value  IN VARCHAR2);
```

Parameters

[Table 18–79](#) describes the parameters available in the SET_ATTRIBUTE procedure.

Table 18–79 SET_ATTRIBUTE Parameters

Parameter	Description
p_userid	The numeric ID of the user account
p_attribute_number	Attribute number in the user record (1 through 10)
p_attribute_value	Value of the attribute located by p_attribute_number to be set in the user record

Example

The following example shows how to use the SET_ATTRIBUTE procedure to set the number 1 attribute for user 'FRANK' with the value 'foo'.

```
DECLARE  
    val VARCHAR2(4000);  
BEGIN  
    APEX_UTIL.SET_ATTRIBUTE (  
        p_userid => apex_util.get_user_id(p_username => 'FRANK'),  
        p_attribute_number => 1,  
        p_attribute_value => 'foo');  
END;
```

See Also: ["GET_ATTRIBUTE Function"](#) on page 18-50

SET_AUTHENTICATION_RESULT Procedure

This procedure can be called from an application's custom authentication function (that is, credentials verification function). The status passed to this procedure is logged in the Login Access Log.

See Also: "Monitoring Activity within a Workspace" in *Oracle Application Express Administration Guide*

Syntax

```
APEX_UTIL.SET_AUTHENTICATION_RESULT(
    p_code IN NUMBER);
```

Parameters

[Table 18–24](#) describes the parameters available in the SET_AUTHENTICATION_RESULT procedure.

Table 18–80 SET_AUTHENTICATION_RESULT Parameters

Parameter	Description
p_code	Any numeric value the developer chooses. After this value is set in the session using this procedure, it can be retrieved using the APEX_UTIL.GET_AUTHENTICATION_RESULT function.

Example

One way to use this procedure is to include it in the application authentication scheme. This example demonstrates how text and numeric status values can be registered for logging. In this example, no credentials verification is performed, it just demonstrates how text and numeric status values can be registered for logging.

Note that the status set using this procedure is visible in the apex_user_access_log view and in the reports on this view available to workspace and site administrators.

```
CREATE OR REPLACE FUNCTION MY_AUTH(
    p_username IN VARCHAR2,
    p_password IN VARCHAR2)
RETURN BOOLEAN
IS
BEGIN
    APEX_UTIL.SET_CUSTOM_AUTH_STATUS(p_status=>'User:' || p_username || ' is back. ');
    IF UPPER(p_username) = 'GOOD' THEN
        APEX_UTIL.SET_AUTHENTICATION_RESULT(24567);
        RETURN TRUE;
    ELSE
        APEX_UTIL.SET_AUTHENTICATION_RESULT(-666);
        RETURN FALSE;
    END IF;
END;
```

See Also: "GET_AUTHENTICATION_RESULT Function" on page 18-51 and "SET_CUSTOM_AUTH_STATUS Procedure" on page 18-121

SET_BUILD_OPTION_STATUS Procedure

This procedure is used to change the build option status of a specified application.

Syntax

```
apex_util.set_build_option_status(p_application_id IN NUMBER,  
                                p_id IN NUMBER,  
                                p_build_status IN VARCHAR2);
```

Parameters

[Table 18–81](#) describes the parameters available in the SET_BUILD_OPTION_STATUS procedure.

Table 18–81 SET_BUILD_OPTION_STATUS Parameters

Parameter	Description
p_application_id	The ID of the application that owns the build option under shared components.
p_id	The ID of the build option in the application.
p_build_status	The new status of the build option. Possible values are INCLUDE, EXCLUDE both upper case.

Example

The following example demonstrates how to use the SET_BUILD_OPTION_STATUS procedure to change the current status of build option.

```
BEGIN  
APEX_UTIL.SET_BUILD_OPTION_STATUS(  
    P_APPLICATION_ID => 101,  
    P_ID => 245935500311121039, P_BUILD_STATUS=>'INCLUDE');  
  
END;
```

SET_COMPATIBILITY_MODE Procedure

This procedure controls the compatibility mode of the Application Express runtime engine. Certain runtime behaviors are changed from release to release and if you desire a certain behavior in your application, you can control this via the compatibility mode attribute of an application.

In Application Express 4.1, Automatic DML forms raise an error when rendering the page if the column name of the source of an item is invalid. Prior to Application Express 4.1, an invalid column name of the source of an item would not raise an error when rendering the page but it would also not set session state of the item. To realize the new behavior in an application, set the compatibility mode of the application to '4.1'. If you desire the behavior as it was in Application Express 4.0 or earlier releases, set the compatibility mode of the application to '4.0'.

Also, in Application Express 4.1, there are two new application attributes to control Browser Security: `Cache` and `Embed in Frames`. Enabling the cache allows the browser to save the contents of your application's pages in its cache, both in memory and on disk. The `Embed in Frames` attribute controls if the browser is allowed to display your application's pages within a frame. Applications running in compatibility mode '4.0' function as if the `Cache` is enabled and as if `Embed in Frames` is set to allowed. Applications running in compatibility mode '4.1' will respect the specific Browser Security attributes.

For applications upgraded from an earlier release as well as applications imported from earlier releases of Application Express the compatibility mode is set to '4.0'. For new applications created in an Application Express 4.1 instance the compatibility mode is set to '4.1'.

In a later release of Application Express, there will be a user interface to modify the compatibility mode of an application. But in Application Express 4.1, the only way to control the compatibility mode of an application is by executing this procedure.

Note: The `APEX_UTIL.SET_COMPATIBILITY_MODE` procedure must be executed from SQL Commands in the SQL Workshop. See "Using SQL Commands" in the *Oracle Application Express SQL Workshop Guide*.

Syntax

```
apex_util.set_compatibility_mode(
    p_application_id in number
    p_compatibility_mode in varchar2 );
```

Parameter Descriptions

[Table 18–82](#) describes the parameters available in the `SET_COMPATIBILITY_MODE` procedure.

Table 18–82 *SET_COMPATIBILITY_MODE Parameters*

Parameter	Description
<code>p_application_id</code>	The ID of the application in your workspace.

Table 18–82 (Cont.) SET_COMPATIBILITY_MODE Parameters

Parameter	Description
p_compatibility_mode	The version number identifying the compatibility mode desired for the application. Currently, the only possible values are '4.0' and '4.1'.

Example

The following example sets the compatibility mode of the application 101 in your workspace to mode '4.0'. The following example is executed from SQL Commands in the SQL Workshop.

```
begin
  apex_util.set_compatibility_mode(
    p_application_id => 101,
    p_compatibility_mode => '4.0' );
  commit;
end;
/
```

SET_CUSTOM_AUTH_STATUS Procedure

This procedure can be called from an application's custom authentication function (that is, credentials verification function). The status passed to this procedure is logged in the Login Access Log.

See Also: "Monitoring Activity within a Workspace" in *Oracle Application Express Administration Guide*

Syntax

```
APEX_UTIL.SET_CUSTOM_AUTH_STATUS (
    p_status IN VARCHAR2);
```

Parameters

[Table 18–83](#) describes the parameters available in the SET_CUSTOM_AUTH_STATUS procedure.

Table 18–83 SET_CUSTOM_AUTH_STATUS Parameters

Parameter	Description
p_status	Any text the developer chooses to denote the result of the authentication attempt (up to 4000 characters).

Example

One way to use the SET_CUSTOM_AUTH_STATUS procedure is to include it in the application authentication scheme. This example demonstrates how text and numeric status values can be registered for logging. Note that no credentials verification is performed.

The status set using this procedure is visible in the apex_user_access_log view and in the reports on this view available to workspace and site administrators.

```
CREATE OR REPLACE FUNCTION MY_AUTH(
    p_username IN VARCHAR2,
    p_password IN VARCHAR2)
RETURN BOOLEAN
IS
BEGIN
    APEX_UTIL.SET_CUSTOM_AUTH_STATUS(p_status=>'User:' || p_username || ' is back. ');
    IF UPPER(p_username) = 'GOOD' THEN
        APEX_UTIL.SET_AUTHENTICATION_RESULT(24567);
        RETURN TRUE;
    ELSE
        APEX_UTIL.SET_AUTHENTICATION_RESULT(-666);
        RETURN FALSE;
    END IF;
END;
```

See Also: "SET_AUTHENTICATION_RESULT Procedure" on page 18-117 and "GET_AUTHENTICATION_RESULT Function" on page 18-51

SET_EDITION Procedure

This procedure sets the name of the edition to be used in all application SQL parsed in the current page view or page submission.

Syntax

```
APEX_UTIL.SET_EDITION(  
    p_edition IN VARCHAR2);
```

Parameters

[Table 18–83](#) describes the parameters available in the SET_EDITION procedure.

Table 18–84 SET_EDITION Parameters

Parameter	Description
p_edition	Edition name.

Example

The following example shows how to use the SET_EDITION procedure. It sets the edition name for the database session of the current page view.

```
BEGIN  
    APEX_UTIL.SET_EDITION( P_EDITION => 'Edition1' );  
END;
```

Note: Support for Edition-Based Redefinition is only available in database version 11.2.0.1 or higher.

SET_EMAIL Procedure

This procedure updates a user account with a new email address. To execute this procedure, the current user must have administrative privileges in the workspace.

Syntax

```
APEX_UTIL.SET_EMAIL(  
    p_userid IN NUMBER,  
    p_email  IN VARCHAR2);
```

Parameters

[Table 18–85](#) describes the parameters available in the SET_EMAIL procedure.

Table 18–85 SET_EMAIL Parameters

Parameter	Description
p_userid	The numeric ID of the user account
p_email	The email address to be saved in user account

Example

The following example shows how to use the SET_EMAIL procedure to set the value of EMAIL to 'frank.scott@somewhere.com' for the user 'FRANK'.

```
BEGIN  
    APEX_UTIL.SET_EMAIL(  
        p_userid => APEX_UTIL.GET_USER_ID('FRANK'),  
        p_email  => 'frank.scott@somewhere.com');  
END;
```

See Also: ["GET_EMAIL Function"](#) on page 18-57 and ["GET_USER_ID Function"](#) on page 18-80

SET_FIRST_NAME Procedure

This procedure updates a user account with a new `FIRST_NAME` value. To execute this procedure, the current user must have administrative privileges in the workspace.

Syntax

```
APEX_UTIL.SET_FIRST_NAME(  
    p_userid      IN NUMBER,  
    p_first_name  IN VARCHAR2);
```

Parameters

[Table 18–86](#) describes the parameters available in the `SET_FIRST_NAME` procedure.

Table 18–86 *SET_FIRST_NAME Parameters*

Parameter	Description
<code>p_userid</code>	The numeric ID of the user account
<code>p_first_name</code>	<code>FIRST_NAME</code> value to be saved in user account

Example

The following example shows how to use the `SET_FIRST_NAME` procedure to set the value of `FIRST_NAME` to 'FRANK' for the user 'FRANK'.

```
BEGIN  
    APEX_UTIL.SET_FIRST_NAME(  
        p_userid      => APEX_UTIL.GET_USER_ID('FRANK'),  
        p_first_name  => 'FRANK');  
END;
```

See Also: ["GET_FIRST_NAME Function"](#) on page 18-62 and ["GET_USER_ID Function"](#) on page 18-80

SET_LAST_NAME Procedure

This procedure updates a user account with a new `LAST_NAME` value. To execute this procedure, the current user must have administrative privileges in the workspace.

Syntax

```
APEX_UTIL.SET_LAST_NAME(  
    p_userid      IN NUMBER,  
    p_last_name   IN VARCHAR2);
```

Parameters

[Table 18–87](#) describes the parameters available in the `SET_LAST_NAME` procedure.

Table 18–87 *SET_LAST_NAME Parameters*

Parameter	Description
<code>p_userid</code>	The numeric ID of the user account
<code>p_last_name</code>	<code>LAST_NAME</code> value to be saved in the user account

Example

The following example shows how to use the `SET_LAST_NAME` procedure to set the value of `LAST_NAME` to 'SMITH' for the user 'FRANK'.

```
BEGIN  
    APEX_UTIL.SET_LAST_NAME(  
        p_userid      => APEX_UTIL.GET_USER_ID('FRANK'),  
        p_last_name   => 'SMITH');  
END;
```

See Also: ["GET_LAST_NAME Function"](#) on page 18-67 and ["GET_USER_ID Function"](#) on page 18-80

SET_PREFERENCE Procedure

This procedure sets a preference that will persist beyond the user's current session.

Syntax

```
APEX_UTIL.SET_PREFERENCE (  
    p_preference    IN    VARCHAR2 DEFAULT NULL,  
    p_value         IN    VARCHAR2 DEFAULT NULL,  
    p_user          IN    VARCHAR2 DEFAULT NULL);
```

Parameters

[Table 18–88](#) describes the parameters available in the SET_PREFERENCE procedure.

Table 18–88 SET_PREFERENCE Parameters

Parameter	Description
p_preference	Name of the preference (case-sensitive)
p_value	Value of the preference
p_user	User for whom the preference is being set

Example

The following example shows how to use the SET_PREFERENCE procedure to set a preference called 'default_view' to the value 'WEEKLY' that will persist beyond session for the currently authenticated user.

```
BEGIN  
    APEX_UTIL.SET_PREFERENCE(  
        p_preference => 'default_view',  
        p_value      => 'WEEKLY',  
        p_user       => :APP_USER);  
END;
```

See Also: ["GET_PREFERENCE Function"](#) on page 18-69 and ["REMOVE_PREFERENCE Procedure"](#) on page 18-109

SET_SECURITY_GROUP_ID Procedure

This procedure can be used with `apex_util.find_security_group_id` and is used to ease the use of the mail package in batch mode. This procedure is especially useful when a schema is associated with more than one workspace. For example, you might want to create a procedure that is run by a nightly job to email all outstanding tasks.

Syntax

```
APEX_UTIL.SET_SECURITY_GROUP_ID (
    p_security_group_id IN NUMBER);
```

Parameters

[Table 18–89](#) describes the parameters available in the `SET_SECURITY_GROUP_ID` procedure.

Table 18–89 SET_SECURITY_GROUP_ID Parameters

Parameter	Description
<code>p_security_group_id</code>	This is the security group id of the workspace you are working in.

Example

The following example sends an alert to each user that has had a task assigned within the last day.

```
create or replace procedure new_tasks
is
    l_workspace_id    number;
    l_subject         varchar2(2000);
    l_body            clob;
    l_body_html       clob;
begin
    l_workspace_id := apex_util.find_security_group_id (p_workspace =>
'PROJECTS');
    apex_util.set_security_group_id (p_security_group_id => l_workspace_id);

    l_body := ' ';
    l_subject := 'You have new tasks';
    for c1 in (select distinct(p.email_address) email_address, p.user_id
                from teamsp_user_profile p, teamsp_tasks t
                where p.user_id = t.assigned_to_user_id
                  and t.created_on > sysdate - 1
                  and p.email_address is not null ) loop
        l_body_html := '<p />The following tasks have been added.';
        for c2 in (select task_name, due_date
                    from teamsp_tasks
                    where assigned_to_user_id = c1.user_id
                      and created_on > sysdate - 1 ) loop
            l_body_html := l_body_html || '<p />Task: ' || c2.task_name || ', due
' || c2.due_date;
        end loop;
    apex_mail.send (
        p_to         => c1.email_address,
        p_from        => c1.email_address,
        p_body        => l_body,
```

```
        p_body_html => l_body_html,  
        p_subj      => l_subject );  
    end loop;  
end;
```

SET_SESSION_HIGH_CONTRAST_OFF Procedure

This procedure switches off high contrast mode for the current session.

Syntax

```
APEX_UTIL.SET_SESSION_HIGH_CONTRAST_OFF;
```

Parameters

None.

Example

In this example, high contrast mode is switched off for the current session.

```
BEGIN
    apex_util.set_session_high_contrast_off;
END;
```

SET_SESSION_HIGH_CONTRAST_ON Procedure

This procedure switches on high contrast mode for the current session.

Syntax

```
APEX_UTIL.SET_SESSION_HIGH_CONTRAST_ON;
```

Parameters

None.

Example

In this example, the current session is put into high contrast mode.

```
BEGIN
    apex_util.set_session_high_contrast_on;
END;
```

SET_SESSION_LANG Procedure

This procedure sets the language to be used for the current user in the current Application Express session. The language must be a valid IANA language name.

Syntax

```
APEX_UTIL.SET_SESSION_LANG(  
    p_lang IN VARCHAR2);
```

Parameters

[Table 18–90](#) describes the parameters available in the SET_SESSION_LANG procedure.

Table 18–90 SET_SESSION_LANG Parameters

Parameter	Description
p_lang	This is an IANA language code. Some examples include: en, de, de-at, zh-cn, and pt-br.

Example

The following example shows how to use the SET_SESSION_LANG procedure. It sets the language for the current user for the duration of the Application Express session.

```
BEGIN  
    APEX_UTIL.SET_SESSION_LANG( P_LANG => 'en' );  
END;
```

SET_SESSION_LIFETIME_SECONDS Procedure

This procedure sets the current application's Maximum Session Length in Seconds value for the current session, overriding the corresponding application attribute. This allows developers to dynamically shorten or lengthen the session life based on criteria determined after the user authenticates.

Note: In order for this procedure to have any effect, the application's Maximum Session Length in Seconds attribute must have been set to a non-zero value in the application definition. This procedure will have no effect if that attribute was not set by the developer.

Syntax

```
APEX_UTIL.SET_SESSION_LIFETIME_SECONDS (
    p_seconds IN    NUMBER,
    p_scope   IN    VARCHAR2 DEFAULT 'SESSION');
```

Parameters

[Table 18–91](#) describes the parameters available in the SET_SESSION_LIFETIME_SECONDS procedure.

Table 18–91 SET_SESSION_LIFETIME_SECONDS Parameters

Parameter	Description
p_seconds	A positive integer indicating the number of seconds the session used by this application is allowed to exist.
p_scope	Defaults to 'SESSION' and may also be set to 'APPLICATION'. If 'SESSION', all applications using this session are affected. If 'APPLICATION', only the current application using the current session is affected.

Example 1

The following example shows how to use the SET_SESSION_LIFETIME_SECONDS procedure to set the current application's Maximum Session Length in Seconds attribute to 7200 seconds (two hours). This API call will have no effect if the application's Maximum Session Length in Seconds attribute was not set by the developer to a non-zero value in the application definition.

By allowing the p_scope input parameter to use the default value of 'SESSION', the following example would actually apply to all applications using the current session. This would be the most common use case when multiple Application Express applications use a common authentication scheme and are designed to operate as a suite in a common session.

```
BEGIN
    APEX_UTIL.SET_SESSION_LIFETIME_SECONDS(p_seconds => 7200);
END;
```

Example 2

The following example shows how to use the SET_SESSION_LIFETIME_SECONDS procedure to set the current application's Maximum Session Length in Seconds attribute to 3600 seconds (one hour). This API call will have no effect if the application's Maximum Session Length in Seconds attribute was not set by the developer to a non-zero value in the application definition.

By overriding the p_scope input parameter's default value and setting it to 'APPLICATION', the following example would actually apply to only to the current application using the current session even if other applications are using the same session.

```
BEGIN
  APEX_UTIL.SET_SESSION_LIFETIME_SECONDS(p_seconds => 3600,
    p_scope => 'APPLICATION');
END;
```

SET_SESSION_MAX_IDLE_SECONDS Procedure

Sets the current application's Maximum Session Idle Time in Seconds value for the current session, overriding the corresponding application attribute. This allows developers to dynamically shorten or lengthen the maximum idle time allowed between page requests based on criteria determined after the user authenticates.

Note: In order for this procedure to have any effect, the application's Maximum Session Idle Time in Seconds attribute must have been set to a non-zero value in the application definition. This procedure will have no effect if that attribute was not set by the developer.

Syntax

```
APEX_UTIL.SET_SESSION_MAX_IDLE_SECONDS (
    p_seconds IN     NUMBER,
    p_scope   IN     VARCHAR2 DEFAULT 'SESSION');
```

Parameters

[Table 18–92](#) describes the parameters available in the SET_SESSION_MAX_IDLE_SECONDS procedure.

Table 18–92 SET_SESSION_MAX_IDLE_SECONDS Parameters

Parameter	Description
p_seconds	A positive integer indicating the number of seconds allowed between page requests.
p_scope	Defaults to 'SESSION' and may also be set to 'APPLICATION'. If 'SESSION', this idle time applies to all applications using this session. If 'APPLICATION', this idle time only applies to the current application using the current session.

Example 1

The following example shows how to use the SET_SESSION_MAX_IDLE_SECONDS procedure to set the current application's Maximum Session Idle Time in Seconds attribute to 1200 seconds (twenty minutes). This API call will have no effect if the application's Maximum Session Idle Time in Seconds attribute was not set by the developer to a non-zero value in the application definition.

By allowing the p_scope input parameter to use the default value of 'SESSION', the following example would actually apply to all applications using the current session. This would be the most common use case when multiple Application Express applications use a common authentication scheme and are designed to operate as a suite in a common session.

```
BEGIN
    APEX_UTIL.SET_SESSION_MAX_IDLE_SECONDS(p_seconds => 1200);
END;
```

Example 2

The following example shows how to use the SET_SESSION_MAX_IDLE_SECONDS procedure to set the current application's Maximum Session Idle Time in Seconds

attribute to 600 seconds (ten minutes). This API call will have no effect if the application's Maximum Session Idle Time in Seconds attribute was not set by the developer to a non-zero value in the application definition.

By overriding the `p_scope` input parameter's default value and setting it to 'APPLICATION', the following example would actually apply to only to the current application using the current session even if other applications are using the same session.

```
BEGIN
  APEX_UTIL.SET_SESSION_MAX_IDLE_SECONDS(p_seconds => 600,
    p_scope => 'APPLICATION');
END;
```

SET_SESSION_SCREEN_READER_OFF Procedure

This procedure switches off screen reader mode for the current session.

Syntax

```
APEX_UTIL.SET_SESSION_SCREEN_READER_OFF;
```

Parameters

None

Example

In this example, the current session is put into standard mode.

```
BEGIN
    IF apex_util.set_session_screen_reader_off;
END;
```

SET_SESSION_SCREEN_READER_ON Procedure

This procedure puts the current session into screen reader mode.

Syntax

```
APEX_UTIL.SET_SESSION_SCREEN_READER_ON;
```

Parameters

None

Example

In this example, the current session is put into screen reader mode.

```
BEGIN
    IF apex_util.set_session_screen_reader_on;
END;
```

SET_SESSION_STATE Procedure

This procedure sets session state for a current Oracle Application Express session.

Syntax

```
APEX_UTIL.SET_SESSION_STATE (  
    p_name      IN      VARCHAR2 DEFAULT NULL,  
    p_value     IN      VARCHAR2 DEFAULT NULL);
```

Parameters

[Table 18–93](#) describes the parameters available in the SET_SESSION_STATE procedure.

Table 18–93 SET_SESSION_STATE Parameters

Parameter	Description
p_name	Name of the application-level or page-level item for which you are setting sessions state
p_value	Value of session state to set

Example

The following example shows how to use the SET_SESSION_STATE procedure to set the value of the item 'my_item' to 'myvalue' in the current session.

```
BEGIN  
    APEX_UTIL.SET_SESSION_STATE('my_item', 'myvalue');  
END;
```

See Also: ["GET_SESSION_STATE Function"](#) on page 18-77, ["GET_NUMERIC_SESSION_STATE Function"](#) on page 18-68, and "Understanding Session State Management" in *Oracle Application Express Application Builder User's Guide*

SET_SESSION_TERRITORY Procedure

This procedure sets the territory to be used for the current user in the current Application Express session. The territory name must be a valid Oracle territory.

Syntax

```
APEX_UTIL.SET_SESSION_TERRITORY(  
    p_territory IN VARCHAR2);
```

Parameters

[Table 18–94](#) describes the parameters available in the SET_SESSION_TERRITORY procedure.

Table 18–94 SET_SESSION_TERRITORY Parameters

Parameter	Description
p_territory	A valid Oracle territory name. Examples include: AMERICA, UNITED KINGDOM, ISRAEL, AUSTRIA, and UNITED ARAB EMIRATES.

Example

The following example shows how to use the SET_SESSION_TERRITORY procedure. It sets the territory for the current user for the duration of the Application Express session.

```
BEGIN  
    APEX_UTIL.SET_SESSION_TERRITORY( P_TERRITORY => 'UNITED KINGDOM');  
END;
```

SET_SESSION_TIME_ZONE Procedure

This procedure sets the time zone to be used for the current user in the current Application Express session.

Syntax

```
APEX_UTIL.SET_SESSION_TIME_ZONE(  
    p_time_zone IN VARCHAR2);
```

Parameters

[Table 18–95](#) describes the parameters available in the SET_SESSION_TIME_ZONE procedure.

Table 18–95 SET_SESSION_TIME_ZONE Parameters

Parameter	Description
p_timezone	A time zone value in the form of hours and minutes. Examples include: +09:00, 04:00, -05:00.

Example

The following example shows how to use the SET_SESSION_TIME_ZONE procedure. It sets the time zone for the current user for the duration of the Application Express session.

```
BEGIN  
    APEX_UTIL.SET_SESSION_TIME_ZONE( P_TIME_ZONE => '-05:00');  
END;
```

SET_USERNAME Procedure

This procedure updates a user account with a new `USER_NAME` value. To execute this procedure, the current user must have administrative privileges in the workspace.

Syntax

```
APEX_UTIL.SET_USERNAME(  
    p_userid    IN NUMBER,  
    p_username  IN VARCHAR2);
```

Parameters

[Table 18–96](#) describes the parameters available in the `SET_USERNAME` procedure.

Table 18–96 *SET_USERNAME Parameters*

Parameter	Description
<code>p_userid</code>	The numeric ID of the user account
<code>p_username</code>	<code>USER_NAME</code> value to be saved in the user account

Example

The following example shows how to use the `SET_USERNAME` procedure to set the value of `USERNAME` to 'USER-XRAY' for the user 'FRANK'.

```
BEGIN  
    APEX_UTIL.SET_USERNAME(  
        p_userid    => APEX_UTIL.GET_USER_ID('FRANK'),  
        p_username  => 'USER-XRAY');  
END;
```

See Also: ["GET_USERNAME Function"](#) on page 18-82 and ["GET_USER_ID Function"](#) on page 18-80

SHOW_HIGH_CONTRAST_MODE_TOGGLE Procedure

This procedure displays a link to the current page to turn on or off, toggle, the mode. For example, if you are in standard mode, this function displays a link that when clicked switches the high contrast mode on.

Syntax

```
APEX_UTIL.SHOW_HIGH_CONTRAST_MODE_TOGGLE (  
    p_on_message in varchar2 default null,  
    p_off_message in varchar2 default null);
```

Parameters

[Table 18-97](#) describes the parameters available in the SHOW_HIGH_CONTRAST_MODE_TOGGLE procedure.

Table 18-97 SHOW_HIGH_CONTRAST_MODE_TOGGLE Parameters

Parameters	Description
p_on_message	Optional text used for the link to switch to high contrast mode, when you are in standard mode. If this parameter is not passed, the default 'Set High Contrast Mode On' text will be displayed.
p_off_message	Optional text used for the link to switch to standard mode, when you are in high contrast mode. If this parameter is not passed, the default 'Set High Contrast Mode Off' text will be displayed.

Example

When running in standard mode, this procedure will display a link, Set High Contrast Mode On, that when clicked refreshes the current page and switches on high contrast mode. When running in high contrast mode, a link, Set High Contrast Mode Off, is displayed, that refreshes the current page and switches back to standard mode when clicked.

```
BEGIN  
    http.p(apex_util.show_high_contrast_mode_toggle);  
END;
```

See Also: ["GET_HIGH_CONTRAST_MODE_TOGGLE Function"](#) on page 18-66

Note: There are also 2 translatable system messages that can be overridden at application level to change the default link text that is returned for this toggle. They include:

- APEX.SET_HIGH_CONTRAST_MODE_OFF - Default text = Set High Contrast Mode Off
 - APEX.SET_HIGH_CONTRAST_MODE_ON - Default text = Set High Contrast Mode On
-

SHOW_SCREEN_READER_MODE_TOGGLE Procedure

This procedure displays a link to the current page to turn on or off, toggle, the mode. For example, if you are in standard mode, this function displays a link that when clicked switches the screen reader mode on.

Syntax

```
APEX_UTIL.SHOW_SCREEN_READER_MODE_TOGGLE (  
    p_on_message IN VARCHAR2 DEFAULT NULL,  
    p_off_message IN VARCHAR2 DEFAULT NULL)
```

Parameters

[Table 18–98](#) describes the parameters available in SHOW_SCREEN_READER_MODE_TOGGLE function.

Table 18–98 *SHOW_SCREEN_READER_MODE_TOGGLE Parameters*

Parameter	Description
p_on_message	Optional text used for the link to switch to screen reader mode, when you are in standard mode. If this parameter is not passed, the default 'Set Screen Reader Mode On' text will be displayed.
p_off_message	Optional text used for the link to switch to standard mode, when you are in screen reader mode. If this parameter is not passed, the default 'Set Screen Reader Mode Off' text will be displayed.

Example

When running in standard mode, this procedure will display a link 'Set Screen Reader Mode On', that when clicked refreshes the current page and switches on screen reader mode. When running in screen reader mode, a link 'Set Screen Reader Mode Off' is displayed, that when clicked refreshes the current page and switches back to standard mode.

```
BEGIN  
    http.p(apex_util.show_screen_reader_mode_toggle);  
END;
```

STRING_TO_TABLE Function

Given a string, this function returns a PL/SQL array of type APEX_APPLICATION_GLOBAL.VC_ARR2. This array is a VARCHAR2 (32767) table.

Syntax

```
APEX_UTIL.STRING_TO_TABLE (  
    p_string          IN VARCHAR2,  
    p_separator       IN VARCHAR2 DEFAULT ':')  
RETURN APEX_APPLICATION_GLOBAL.VC_ARR2;
```

Parameters

[Table 18–99](#) describes the parameters available in the STRING_TO_TABLE function.

Table 18–99 *STRING_TO_TABLE Parameters*

Parameter	Description
p_string	String to be converted into a PL/SQL table of type APEX_APPLICATION_GLOBAL.VC_ARR2
p_separator	String separator. The default is a colon

Example

The following example shows how to use the STRING_TO_TABLE function. The function is passed the string 'One:Two:Three' in the p_string parameter and it returns a PL/SQL array of type APEX_APPLICATION_GLOBAL.VC_ARR2 containing 3 elements, the element at position 1 contains the value 'One', position 2 contains the value 'Two' and position 3 contains the value 'Three'. This is then output using the HTP.P function call.

```
DECLARE  
    l_vc_arr2    APEX_APPLICATION_GLOBAL.VC_ARR2;  
BEGIN  
    l_vc_arr2 := APEX_UTIL.STRING_TO_TABLE('One:Two:Three');  
    FOR z IN 1..l_vc_arr2.count LOOP  
        htp.p(l_vc_arr2(z));  
    END LOOP;  
END;
```

See Also: ["TABLE_TO_STRING Function"](#) on page 18-153

STRONG_PASSWORD_CHECK Procedure

This procedure returns `Boolean` OUT values based on whether or not a proposed password meets the password strength requirements as defined by the Oracle Application Express site administrator.

Syntax

```
APEX_UTIL.STRONG_PASSWORD_CHECK (
    p_username          IN  VARCHAR2,
    p_password          IN  VARCHAR2,
    p_old_password      IN  VARCHAR2,
    p_workspace_name    IN  VARCHAR2,
    p_use_strong_rules   IN  BOOLEAN,
    p_min_length_err    OUT BOOLEAN,
    p_new_differs_by_err OUT BOOLEAN,
    p_one_alpha_err     OUT BOOLEAN,
    p_one_numeric_err   OUT BOOLEAN,
    p_one_punctuation_err OUT BOOLEAN,
    p_one_upper_err     OUT BOOLEAN,
    p_one_lower_err     OUT BOOLEAN,
    p_not_like_username_err OUT BOOLEAN,
    p_not_like_workspace_name_err OUT BOOLEAN,
    p_not_like_words_err OUT BOOLEAN,
    p_not_reusable_err  OUT BOOLEAN);
```

Parameters

[Table 18–100](#) describes the parameters available in the `STRONG_PASSWORD_CHECK` procedure.

Table 18–100 *STRONG_PASSWORD_CHECK Parameters*

Parameter	Description
<code>p_username</code>	Username that identifies the account in the current workspace
<code>p_password</code>	Password to be checked against password strength rules
<code>p_old_password</code>	Current password for the account. Used only to enforce "new password must differ from old" rule
<code>p_workspace_name</code>	Current workspace name, used only to enforce "password must not contain workspace name" rule
<code>p_use_strong_rules</code>	Pass <code>FALSE</code> when calling this API
<code>p_min_length_err</code>	Result returns <code>True</code> or <code>False</code> depending upon whether the password meets minimum length requirement
<code>p_new_differs_by_err</code>	Result returns <code>True</code> or <code>False</code> depending upon whether the password meets "new password must differ from old" requirements
<code>p_one_alpha_err</code>	Result returns <code>True</code> or <code>False</code> depending upon whether the password meets requirement to contain at least one alphabetic character
<code>p_one_numeric_err</code>	Result returns <code>True</code> or <code>False</code> depending upon whether the password meets requirements to contain at least one numeric character

Table 18–100 (Cont.) STRONG_PASSWORD_CHECK Parameters

Parameter	Description
<code>p_one_punctuation_err</code>	Result returns True or False depending upon whether the password meets requirements to contain at least one punctuation character
<code>p_one_upper_err</code>	Result returns True or False depending upon whether the password meets requirements to contain at least one upper-case character
<code>p_one_lower_err</code>	Result returns True or False depending upon whether the password meets requirements to contain at least one lower-case character
<code>p_not_like_username_err</code>	Result returns True or False depending upon whether the password meets requirements that it not contain the username
<code>p_not_like_workspace_name_err</code>	Result returns True or False whether upon whether the password meets requirements that it not contain the workspace name
<code>p_not_like_words_err</code>	Result returns True or False whether the password meets requirements that it not contain specified simple words
<code>p_not_reusable_err</code>	Result returns True or False whether the password can be reused based on password history rules

Example

The following example shows how to use the `STRONG_PASSWORD_CHECK` procedure. It checks the new password 'foo' for the user 'SOMEBODY' meets all the password strength requirements defined by the Oracle Application Express site administrator. If any of the checks fail (the associated OUT parameter returns TRUE), then the example outputs a relevant message. For example, if the Oracle Application Express site administrator has defined that passwords must have at least one numeric character and the password 'foo' was checked, then the `p_one_numeric_err` OUT parameter would return TRUE and the message 'Password must contain at least one numeric character' would be output.

```

DECLARE
    l_username          varchar2(30);
    l_password          varchar2(30);
    l_old_password      varchar2(30);
    l_workspace_name    varchar2(30);
    l_min_length_err    boolean;
    l_new_differs_by_err boolean;
    l_one_alpha_err      boolean;
    l_one_numeric_err    boolean;
    l_one_punctuation_err boolean;
    l_one_upper_err      boolean;
    l_one_lower_err      boolean;
    l_not_like_username_err boolean;
    l_not_like_workspace_name_err boolean;
    l_not_like_words_err boolean;
    l_not_reusable_err   boolean;
    l_password_history_days pls_integer;
BEGIN
    l_username := 'SOMEBODY';
    l_password := 'foo';
    l_old_password := 'foo';
    l_workspace_name := 'XYX_WS';
    l_password_history_days :=
        apex_instance_admin.get_parameter ('PASSWORD_HISTORY_DAYS');

```



```

APEX_UTIL.STRONG_PASSWORD_CHECK(
    p_username          => l_username,
    p_password          => l_password,
    p_old_password      => l_old_password,
    p_workspace_name    => l_workspace_name,
    p_use_strong_rules  => false,
    p_min_length_err    => l_min_length_err,
    p_new_differs_by_err => l_new_differs_by_err,
    p_one_alpha_err     => l_one_alpha_err,
    p_one_numeric_err   => l_one_numeric_err,
    p_one_punctuation_err => l_one_punctuation_err,
    p_one_upper_err     => l_one_upper_err,
    p_one_lower_err     => l_one_lower_err,
    p_not_like_username_err => l_not_like_username_err,
    p_not_like_workspace_name_err => l_not_like_workspace_name_err,
    p_not_like_words_err => l_not_like_words_err,
    p_not_reusable_err  => l_not_reusable_err);

IF l_min_length_err THEN
    http.p('Password is too short');
END IF;

IF l_new_differs_by_err THEN
    http.p('Password is too similar to the old password');
END IF;

IF l_one_alpha_err THEN
    http.p('Password must contain at least one alphabetic character');
END IF;

IF l_one_numeric_err THEN
    http.p('Password must contain at least one numeric character');
END IF;

IF l_one_punctuation_err THEN
    http.p('Password must contain at least one punctuation character');
END IF;

IF l_one_upper_err THEN
    http.p('Password must contain at least one upper-case character');
END IF;

IF l_one_lower_err THEN
    http.p('Password must contain at least one lower-case character');
END IF;

IF l_not_like_username_err THEN
    http.p('Password may not contain the username');
END IF;

IF l_not_like_workspace_name_err THEN
    http.p('Password may not contain the workspace name');
END IF;

IF l_not_like_words_err THEN
    http.p('Password contains one or more prohibited common words');
END IF;

IF l_not_reusable_err THEN

```

```
        http.p('Password cannot be used because it has been used for the account  
within the last '||l_password_history_days||' days.');
```

```
    END IF;
```

```
END;
```

See Also: "About Password Policies" in *Oracle Application Express Administration Guide*

STRONG_PASSWORD_VALIDATION Function

This function returns formatted HTML in a VARCHAR2 result based on whether or not a proposed password meets the password strength requirements as defined by the Oracle Application Express site administrator.

Syntax

```
FUNCTION STRONG_PASSWORD_VALIDATION(
    p_username          IN  VARCHAR2,
    p_password          IN  VARCHAR2,
    p_old_password      IN  VARCHAR2 DEFAULT NULL,
    p_workspace_name    IN  VARCHAR2)
RETURN VARCHAR2;
```

Parameters

[Table 18–101](#) describes the parameters available in the STRONG_PASSWORD_VALIDATION function.

Table 18–101 STRONG_PASSWORD_VALIDATION Parameters

Parameter	Description
p_username	Username that identifies the account in the current workspace
p_password	Password to be checked against password strength rules
p_old_password	Current password for the account. Used only to enforce "new password must differ from old" rule
p_workspace_name	Current workspace name, used only to enforce "password must not contain workspace name" rule

Example

The following example shows how to use the STRONG_PASSWORD_VALIDATION procedure. It checks the new password 'foo' for the user 'SOMEBODY' meets all the password strength requirements defined by the Oracle Application Express site administrator. If any of the checks fail, then the example outputs formatted HTML showing details of where the new password fails to meet requirements.

```
DECLARE
    l_username          varchar2(30);
    l_password          varchar2(30);
    l_old_password      varchar2(30);
    l_workspace_name    varchar2(30);
BEGIN
    l_username := 'SOMEBODY';
    l_password := 'foo';
    l_old_password := 'foo';
    l_workspace_name := 'XYX_WS';

    HTP.P(APEX_UTIL.STRONG_PASSWORD_VALIDATION(
        p_username          => l_username,
        p_password          => l_password,
        p_old_password      => l_old_password,
        p_workspace_name    => l_workspace_name));
END;
```

SUBMIT_FEEDBACK Procedure

This procedure allows you to write a procedure to submit feedback, rather than using the page that can be generated by create page of type feedback.

Syntax

```
APEX_UTIL.SUBMIT_FEEDBACK (
    p_comment          IN VARCHAR2 DEFAULT NULL,
    p_type             IN NUMBER   DEFAULT '1',
    p_application_id    IN VARCHAR2 DEFAULT NULL,
    p_page_id          IN VARCHAR2 DEFAULT NULL,
    p_email            IN VARCHAR2 DEFAULT NULL,
    p_screen_width      IN VARCHAR2 DEFAULT NULL,
    p_screen_height     IN VARCHAR2 DEFAULT NULL,
    p_attribute_01      IN VARCHAR2 DEFAULT NULL,
    p_attribute_02      IN VARCHAR2 DEFAULT NULL,
    p_attribute_03      IN VARCHAR2 DEFAULT NULL,
    p_attribute_04      IN VARCHAR2 DEFAULT NULL,
    p_attribute_05      IN VARCHAR2 DEFAULT NULL,
    p_attribute_06      IN VARCHAR2 DEFAULT NULL,
    p_attribute_07      IN VARCHAR2 DEFAULT NULL,
    p_attribute_08      IN VARCHAR2 DEFAULT NULL,
    p_label_01          IN VARCHAR2 DEFAULT NULL,
    p_label_02          IN VARCHAR2 DEFAULT NULL,
    p_label_03          IN VARCHAR2 DEFAULT NULL,
    p_label_04          IN VARCHAR2 DEFAULT NULL,
    p_label_05          IN VARCHAR2 DEFAULT NULL,
    p_label_06          IN VARCHAR2 DEFAULT NULL,
    p_label_07          IN VARCHAR2 DEFAULT NULL,
    p_label_08          IN VARCHAR2 DEFAULT NULL);
```

Parameters

[Table 18–102](#) describes the parameters available in the SUBMIT_FEEDBACK procedure.

Table 18–102 SUBMIT_FEEDBACK Parameters

Parameter	Description
p_comment	Comment to be submitted
p_type	Type of feedback (1 is General Comment, 2 is Enhancement Request, 3 is Bug)
p_application_id	ID of application related to the feedback
p_page_id	ID of page related to the feedback
p_email	Email of the user providing the feedback
p_screen_width	Width of screen at time feedback was provided
p_screen_height	Height of screen at time feedback was provided
p_attribute_01	Custom attribute for collecting feedback
p_attribute_02	Custom attribute for collecting feedback
p_attribute_03	Custom attribute for collecting feedback
p_attribute_04	Custom attribute for collecting feedback
p_attribute_05	Custom attribute for collecting feedback

Table 18–102 (Cont.) SUBMIT_FEEDBACK Parameters

Parameter	Description
p_attribute_06	Custom attribute for collecting feedback
p_attribute_07	Custom attribute for collecting feedback
p_attribute_08	Custom attribute for collecting feedback
p_label_01	Label for corresponding custom attribute
p_label_02	Label for corresponding custom attribute
p_label_03	Label for corresponding custom attribute
p_label_04	Label for corresponding custom attribute
p_label_05	Label for corresponding custom attribute
p_label_06	Label for corresponding custom attribute
p_label_07	Label for corresponding custom attribute
p_label_08	Label for corresponding custom attribute

Example

The following example submits a bug about page 22 within application 283.

```

begin
    apex_util.submit_feedback (
        p_comment      => 'This page does not render properly for me',
        p_type         => 3,
        p_application_id => 283,
        p_page_id      => 22,
        p_email        => 'user@xyz.corp',
        p_attribute_01  => 'Charting',
        p_label_01     => 'Component' );
end;
/

```

SUBMIT_FEEDBACK_FOLLOWUP Procedure

This procedure allows you to submit follow up to a feedback.

Syntax

```
APEX_UTIL.SUBMIT_FEEDBACK_FOLLOWUP (
    p_feedback_id      IN NUMBER,
    p_follow_up        IN VARCHAR2 DEFAULT NULL,
    p_email             IN VARCHAR2 DEFAULT NULL);
```

Parameters

[Table 18–103](#) describes the parameters available in the SUBMIT_FEEDBACK_FOLLOWUP procedure.

Table 18–103 SUBMIT_FEEDBACK_FOLLOWUP Parameters

Parameter	Description
p_feedback_followup	ID of feedback that this is a follow up to
p_follow_up	Text of follow up
p_email	Email of user providing the follow up

Example

The following example submits follow up to a previously filed feedback.

```
begin
    apex_util.submit_feedback_followup (
        p_feedback_id      => 12345,
        p_follow_up        => 'I tried this on another instance and it does not work
there either',
        p_email             => 'user@xyz.corp' );
end;
```

TABLE_TO_STRING Function

Given a PL/SQL table of type `APEX_APPLICATION_GLOBAL.VC_ARR2`, this function returns a delimited string separated by the supplied separator, or by the default separator, a colon (:).

Syntax

```
APEX_UTIL.TABLE_TO_STRING (
    p_table      IN      APEX_APPLICATION_GLOBAL.VC_ARR2,
    p_string     IN      VARCHAR2 DEFAULT ':' )
RETURN VARCHAR2;
```

Parameters

[Table 18–104](#) describes the parameters available in the `TABLE_TO_STRING` function.

Table 18–104 *TABLE_TO_STRING Parameters*

Parameter	Description
<code>p_string</code>	String separator. Default separator is a colon (:)
<code>p_table</code>	PL/SQL table that is to be converted into a delimited string

Example

The following function returns a comma delimited string of contact names that are associated with the provided `cust_id`.

```
create or replace function get_contacts (
    p_cust_id in number )
return varchar2
is
    l_vc_arr2 apex_application_global.vc_arr2;
    l_contacts varchar2(32000);
begin
    select contact_name
       bulk collect
       into l_vc_arr2
       from contacts
      where cust_id = p_cust_id
      order by contact_name;

    l_contacts := apex_util.table_to_string (
        p_table => l_vc_arr2,
        p_string => ', ');

    return l_contacts;
end get_contacts;
```

See Also: ["STRING_TO_TABLE Function"](#) on page 18-144

UNEXPIRE_END_USER_ACCOUNT Procedure

Makes expired end users accounts and the associated passwords usable, enabling a end user to log in to developed applications.

Syntax

```
APEX_UTIL.UNEXPIRE_END_USER_ACCOUNT (
    p_user_name IN VARCHAR2);
```

Parameters

[Table 18–105](#) describes the parameters available in the UNEXPIRE_END_USER_ACCOUNT procedure.

Table 18–105 UNEXPIRE_END_USER_ACCOUNT Parameters

Parameter	Description
p_user_name	The user name of the user account

Example

The following example shows how to use the UNEXPIRE_END_USER_ACCOUNT procedure. Use this procedure to renew (unexpire) an Application Express end user account in the current workspace. This action specifically renews the account for use by end users to authenticate to developed applications and may also renew the account for use by developers or administrators to log in to a workspace.

This procedure must be run by a user having administration privileges in the current workspace.

```
BEGIN
    FOR c1 IN (SELECT user_name from wwv_flow_users) LOOP
        APEX_UTIL.UNEXPIRE_END_USER_ACCOUNT(p_user_name => c1.user_name);
        http.p('End User Account: ' || c1.user_name || ' is now valid.');
```

See Also: ["EXPIRE_END_USER_ACCOUNT Parameters"](#) on page 18-35 and ["END_USER_ACCOUNT_DAYS_LEFT Function"](#) on page 18-34

UNEXPIRE_WORKSPACE_ACCOUNT Procedure

Unexpires developer and workspace administrator accounts and the associated passwords, enabling the developer or administrator to log in to a workspace.

Syntax

```
APEX_UTIL.UNEXPIRE_WORKSPACE_ACCOUNT (  
    p_user_name IN VARCHAR2);
```

Parameters

[Table 18–106](#) describes the parameters available in the UNEXPIRE_WORKSPACE_ACCOUNT procedure.

Table 18–106 UNEXPIRE_WORKSPACE_ACCOUNT Parameters

Parameter	Description
p_user_name	The user name of the user account

Example

The following example shows how to use the UNEXPIRE_WORKSPACE_ACCOUNT procedure. Use this procedure to renew (unexpire) an Application Express workspace administrator account in the current workspace. This action specifically renews the account for use by developers or administrators to login to a workspace and may also renew the account with respect to its use by end users to authenticate to developed applications.

This procedure must be run by a user having administration privileges in the current workspace.

```
BEGIN  
    FOR c1 IN (select user_name from wwv_flow_users) loop  
        APEX_UTIL.UNEXPIRE_WORKSPACE_ACCOUNT(p_user_name => c1.user_name);  
        http.p('Workspace Account: '||c1.user_name||' is now valid.');
```

```
    END LOOP;  
END;
```

See Also: ["EXPIRE_WORKSPACE_ACCOUNT Procedure"](#) on page 18-36 and ["WORKSPACE_ACCOUNT_DAYS_LEFT Function"](#) on page 18-159

UNLOCK_ACCOUNT Procedure

Sets a user account status to unlocked. Must be run by an authenticated workspace administrator in a page request context.

Syntax

```
APEX_UTIL.UNLOCK_ACCOUNT (  
    p_user_name IN VARCHAR2);
```

Parameters

[Table 18–107](#) describes the parameters available in the UNLOCK_ACCOUNT procedure.

Table 18–107 UNLOCK_ACCOUNT Parameters

Parameter	Description
p_user_name	The user name of the user account

Example

The following example shows how to use the UNLOCK_ACCOUNT procedure. Use this procedure to unlock an Application Express account in the current workspace. This action unlocks the account for use by administrators, developers, and end users.

This procedure must be run by a user who has administration privileges in the current workspace

```
BEGIN  
  FOR c1 IN (SELECT user_name from wwv_flow_users) LOOP  
    APEX_UTIL.UNLOCK_ACCOUNT(p_user_name => c1.user_name);  
    http.p('End User Account: ' || c1.user_name || ' is now unlocked.');
```

```
  END LOOP;  
END;
```

See Also: ["LOCK_ACCOUNT Procedure"](#) on page 18-100 and ["GET_ACCOUNT_LOCKED_STATUS Function"](#) on page 18-49

URL_ENCODE Function

The following special characters are encoded as follows:

Special Characters	After Encoding
%	%25
+	%2B
space	+
.	%2E
*	%2A
?	%3F
\	%5C
/	%2F
>	%3E
<	%3C
}	%7B
{	%7D
~	%7E
[%5B
]	%5D
'	%60
;	%3B
?	%3F
@	%40
&	%26
#	%23
	%7C
^	%5E
:	%3A
=	%3D
\$	%24

Syntax

```
APEX_UTIL.URL_ENCODE (
    p_url IN VARCHAR2)
RETURN VARCHAR2;
```

Parameters

[Table 18–108](#) describes the parameters available in the URL_ENCODE function.

Table 18–108 URL_ENCODE Parameters

Parameter	Description
p_url	The string to be encoded

Example

The following example shows how to use the URL_ENCODE function.

```
DECLARE
    l_url VARCHAR2(255);
BEGIN
    l_url := APEX_UTIL.URL_ENCODE('http://www.myurl.com?id=1&cat=foo');
END;
```

In this example, the following URL:

`http://www.myurl.com?id=1&cat=foo`

Would be returned as:

`http%3A%2F%2Fwww%2Emyurl%2Ecom%3Fid%3D1%26cat%3Dfoo`

WORKSPACE_ACCOUNT_DAYS_LEFT Function

Returns the number of days remaining before the developer or workspace administrator account password expires. This function may be run in a page request context by any authenticated user.

Syntax

```
APEX_UTIL.WORKSPACE_ACCOUNT_DAYS_LEFT (  
    p_user_name IN VARCHAR2)  
    RETURN NUMBER;
```

Parameters

[Table 18–109](#) describes the parameters available in the WORKSPACE_ACCOUNT_DAYS_LEFT procedure.

Table 18–109 WORKSPACE_ACCOUNT_DAYS_LEFT Parameters

Parameter	Description
p_user_name	The user name of the user account

Example

The following example shows how to use the WORKSPACE_ACCOUNT_DAYS_LEFT function. It can be used in to find the number of days remaining before an Application Express administrator or developer account in the current workspace expires.

```
DECLARE  
    l_days_left NUMBER;  
BEGIN  
    FOR c1 IN (SELECT user_name from wwv_flow_users) LOOP  
        l_days_left := APEX_UTIL.WORKSPACE_ACCOUNT_DAYS_LEFT(p_user_name =>  
c1.user_name)  
        http.p('Workspace Account: '||c1.user_name||' will expire in '||l_days_  
left||' days.');
```

```
        END LOOP;  
    END;
```

See Also: ["EXPIRE_WORKSPACE_ACCOUNT Procedure"](#) on page 18-36 and ["UNEXPIRE_WORKSPACE_ACCOUNT Procedure"](#) on page 18-155

APEX_WEB_SERVICE

The APEX_WEB_SERVICE API allows you to integrate other systems with Application Express by allowing you to interact with Web services anywhere you can utilize PL/SQL in your application. The API contains procedures and functions to call both SOAP and RESTful style Web services. It contains functions to parse the responses from Web services and to encode/decode into SOAP friendly base64 encoding.

This API also contains package globals for managing cookies and HTTP headers when calling Web services whether from the API or by using standard processes of type Web service. Cookies and HTTP headers can be set prior to invoking a call to a Web service by populating the globals and the cookies and HTTP headers returned from the Web service response can be read from other globals.

Topics:

- [About the APEX_WEB_SERVICE API](#)
- [BLOB2CLOBBASE64 Function](#)
- [CLOBBASE642BLOB Function](#)
- [MAKE_REQUEST Procedure](#)
- [MAKE_REQUEST Function](#)
- [MAKE_REST_REQUEST Function](#)
- [PARSE_RESPONSE Function](#)
- [PARSE_RESPONSE_CLOB Function](#)
- [PARSE_XML Function](#)
- [PARSE_XML_CLOB Function](#)

About the APEX_WEB_SERVICE API

Use the APEX_WEB_SERVICE API to invoke a Web service and examine the response anywhere you can utilize PL/SQL in Application Express.

The following are examples of when you might use the APEX_WEB_SERVICE API:

- When you want to invoke a Web service via an On Demand Process using AJAX.
- When you want to invoke a Web service as part of an Authentication Scheme.
- When you need to pass a large binary parameter to a Web service that is base64 encoded.
- When you want to invoke a Web service as part of a validation.

Topics:

- [Invoking a SOAP Style Web Service](#)
- [Invoking a RESTful Style Web Service](#)
- [Retrieving Cookies and HTTP Headers](#)
- [Setting Cookies and HTTP Headers](#)

Invoking a SOAP Style Web Service

There is a procedure and a function to invoke a SOAP style Web service. The procedure will store the response in the collection specified by the parameter `p_collection_name`. The function will return the results as an XMLTYPE. To retrieve a specific value from the response, you use either the `PARSE_RESPONSE` function if the result is stored in a collection or the `PARSE_XML` function if the response is returned as an XMLTYPE.

If you need to pass a binary parameter to the Web service as base64 encoded character data, use the function `BLOB2CLOBBASE64`. Conversely, if you need to transform a response that contains a binary parameter that is base64 encoded use the function `CLOBBASE642BLOB`.

The following is an example of using the `BLOB2CLOBBASE64` function to encode a parameter, `MAKE_REQUEST` procedure to call a Web service, and the `PARSE_RESPONSE` function to extract a specific value from the response.

```
declare
  l_filename varchar2(255);
  l_BLOB BLOB;
  l_CLOB CLOB;
  l_envelope CLOB;
  l_response_msg varchar2(32767);
BEGIN
  IF :P1_FILE IS NOT NULL THEN
    SELECT filename, BLOB_CONTENT
    INTO l_filename, l_BLOB
    FROM APEX_APPLICATION_FILES
    WHERE name = :P1_FILE;

    l_CLOB := apex_web_service.blob2clobbase64(l_BLOB);

    l_envelope := q'!<?xml version='1.0' encoding='UTF-8'?>!'
    l_envelope := l_envelope '<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:chec="http://www.stellent.com/CheckIn/">
<soapenv:Header/>
<soapenv:Body>
<chec:CheckInUniversal>
  <chec:dDocName>'||l_filename||'</chec:dDocName>
  <chec:dDocTitle>'||l_filename||'</chec:dDocTitle>
  <chec:dDocType>Document</chec:dDocType>
  <chec:dDocAuthor>GM</chec:dDocAuthor>
  <chec:dSecurityGroup>Public</chec:dSecurityGroup>
  <chec:dDocAccount></chec:dDocAccount>
  <chec:CustomDocMetaData>
    <chec:property>
      <chec:name></chec:name>
      <chec:value></chec:value>
    </chec:property>
  </chec:CustomDocMetaData>
  <chec:primaryFile>
    <chec:fileName>'||l_filename||'</chec:fileName>
    <chec:fileContent>'||l_CLOB||'</chec:fileContent>
  </chec:primaryFile>
  <chec:alternateFile>
    <chec:fileName></chec:fileName>
    <chec:fileContent></chec:fileContent>
```

```

        </chec:alternateFile>
        <chec:extraProps>
            <chec:property>
                <chec:name></chec:name>
                <chec:value></chec:value>
            </chec:property>
        </chec:extraProps>
    </chec:CheckInUniversal>
</soapenv:Body>
</soapenv:Envelope>';

apex_web_service.make_request(
    p_url          => 'http://127.0.0.1/idc/idcplg',
    p_action       => 'http://www.stellent.com/CheckIn/',
    p_collection_name => 'STELLENT_CHECKIN',
    p_envelope     => l_envelope,
    p_username     => 'sysadmin',
    p_password     => 'welcome1' );

l_response_msg := apex_web_service.parse_response(
    p_collection_name=>'STELLENT_CHECKIN',
    p_
xpath=>'//idc:CheckInUniversalResponse/idc:CheckInUniversalResult/idc:StatusInfo/i
dc:statusMessage/text()',
    p_ns=>'xmlns:idc="http://www.stellent.com/CheckIn/"');

:p1_RES_MSG := l_response_msg;

END IF;
END;
```

Invoking a RESTful Style Web Service

RESTful style Web services use a simpler architecture than SOAP. Typically the input to a RESTful style Web service is a collection of name/value pairs. The response can be an XML document or simply text such as a comma separated response or JSON.

The following is an example of MAKE_REST_REQUEST being used in an application process that is callable by AJAX.

```
declare
  l_clob clob;
  l_buffer      varchar2(32767);
  l_amount      number;
  l_offset      number;
begin
  l_clob := apex_web_service.make_rest_request(
    p_url => 'http://us.music.yahooapis.com/
video/v1/list/published/popular',
    p_http_method => 'GET',
    p_parm_name => apex_util.string_to_table('appid:format'),
    p_parm_value => apex_util.string_to_table(apex_application.g_
x01||':'||apex_application.g_x02));

  l_amount := 32000;
  l_offset := 1;
  begin
    loop
      dbms_lob.read( l_clob, l_amount, l_offset, l_buffer );
      http.p(l_buffer);
      l_offset := l_offset + l_amount;
      l_amount := 32000;
    end loop;
  exception
    when no_data_found then
      null;
  end;

end;
```

Retrieving Cookies and HTTP Headers

When you invoke a Web service using any of the supported methods in Application Express, the `g_response_cookies` and `g_headers` globals are populated if the Web service response included any cookies or HTTP headers. You can interrogate these globals and store the information in collections.

The following are examples of interrogating the `APEX_WEB_SERVICE` globals to store cookie and HTTP header responses in collections.

```
declare
  i number;
  secure varchar2(1);
begin
  apex_collection.create_or_truncate_collection('P31_RESP_COOKIES');
  for i in 1.. apex_web_service.g_response_cookies.count loop
    IF (apex_web_service.g_response_cookies(i).secure) THEN
      secure := 'Y';
    ELSE
      secure := 'N';
    END IF;
    apex_collection.add_member(p_collection_name => 'P31_RESP_COOKIES',
      p_c001 => apex_web_service.g_response_cookies(i).name,
      p_c002 => apex_web_service.g_response_cookies(i).value,
      p_c003 => apex_web_service.g_response_cookies(i).domain,
      p_c004 => apex_web_service.g_response_cookies(i).expire,
      p_c005 => apex_web_service.g_response_cookies(i).path,
      p_c006 => secure,
      p_c007 => apex_web_service.g_response_cookies(i).version );
  end loop;
end;

declare
  i number;
begin
  apex_collection.create_or_truncate_collection('P31_RESP_HEADERS');

  for i in 1.. apex_web_service.g_headers.count loop
    apex_collection.add_member(p_collection_name => 'P31_RESP_HEADERS',
      p_c001 => apex_web_service.g_headers(i).name,
      p_c002 => apex_web_service.g_headers(i).value,
      p_c003 => apex_web_service.g_status_code);
  end loop;
end;
```

Setting Cookies and HTTP Headers

You set cookies and HTTP headers that should be sent along with a Web service request by populating the globals `g_request_cookies` and `g_request_headers` prior to the process that invokes the Web service.

The following examples show populating the globals to send cookies and HTTP headers with a request.

```
for c1 in (select seq_id, c001, c002, c003, c004, c005, c006, c007
           from apex_collections
           where collection_name = 'P31_RESP_COOKIES' ) loop
    apex_web_service.g_request_cookies(c1.seq_id).name := c1.c001;
    apex_web_service.g_request_cookies(c1.seq_id).value := c1.c002;
    apex_web_service.g_request_cookies(c1.seq_id).domain := c1.c003;
    apex_web_service.g_request_cookies(c1.seq_id).expire := c1.c004;
    apex_web_service.g_request_cookies(c1.seq_id).path := c1.c005;
    if c1.c006 = 'Y' then
        apex_web_service.g_request_cookies(c1.seq_id).secure := true;
    else
        apex_web_service.g_request_cookies(c1.seq_id).secure := false;
    end if;
    apex_web_service.g_request_cookies(c1.seq_id).version := c1.c007;
end loop;

for c1 in (select seq_id, c001, c002
           from apex_collections
           where collection_name = 'P31_RESP_HEADERS' ) loop
    apex_web_service.g_request_headers(c1.seq_id).name := c1.c001;
    apex_web_service.g_request_headers(c1.seq_id).value := c1.c002;
end loop;
```

BLOB2CLOBBASE64 Function

Use this function to convert a BLOB datatype into a CLOB that is base64 encoded. This is often used when sending a binary as an input to a Web service.

Syntax

```
APEX_WEB_SERVICE.BLOB2CLOBBASE64 (  
    p_blob IN BLOB)  
RETURN CLOB;
```

Parameters

[Table 19–1](#) describes the parameters available in the BLOB2CLOBBASE64 function.

Table 19–1 BLOB2CLOBBASE64 Parameters

Parameter	Description
p_blob	The BLOB to convert into base64 encoded CLOB.

Example

The following example gets a file that was uploaded from the apex_application_files view and converts the BLOB into a CLOB that is base64 encoded.

```
declare  
    l_clobCLOB;  
    l_blobBLOB;  
begin  
    SELECT BLOB_CONTENT  
        INTO l_BLOB  
        FROM APEX_APPLICATION_FILES  
        WHERE name = :P1_FILE;  
  
    l_CLOB := apex_web_service.blob2clobbase64(l_BLOB);  
end;
```

CLOBBASE642BLOB Function

Use this function to convert a CLOB datatype that is base64 encoded into a BLOB. This is often used when receiving output from a Web service that contains a binary parameter.

Syntax

```
APEX_WEB_SERVICE.CLOBBASE642BLOB (  
    p_clob IN CLOB)  
RETURN BLOB;
```

Parameters

[Table 19–2](#) describes the parameters available in the CLOBBASE642BLOB function.

Table 19–2 CLOBBASE642BLOB Parameters

Parameter	Description
p_clob	The base64 encoded CLOB to convert into a BLOB.

Example

The following example retrieves a base64 encoded node from an XML document as a CLOB and converts it into a BLOB.

```
declare  
    l_base64CLOB;  
    l_blobBLOB;  
    l_xml XMLTYPE;  
begin  
    l_base64 := apex_web_service.parse_xml_clob(l_xml, '  
//runReportReturn/reportBytes/text()');  
    l_blob := apex_web_service.clobbase642blob(l_base64);  
end;
```

MAKE_REQUEST Procedure

Use this procedure to invoke a SOAP style Web service with the supplied SOAP envelope and store the results in a collection.

Syntax

```
APEX_WEB_SERVICE.MAKE_REQUEST (
    p_url          IN VARCHAR2,
    p_action       IN VARCHAR2 default null,
    p_version      IN VARCHAR2 default '1.1',
    p_collection_name IN VARCHAR2 default null,
    p_envelope     IN CLOB,
    p_username     IN VARCHAR2 default null,
    p_password     IN VARCHAR2 default null,
    p_proxy_override IN VARCHAR2 default null,
    p_transfer_timeout IN NUMBER default 180,
    p_wallet_path  IN VARCHAR2 default null,
    p_wallet_pwd   IN VARCHAR2 default null );
```

Parameters

[Table 19–3](#) describes the parameters available in the MAKE_REQUEST procedure.

Table 19–3 MAKE_REQUEST Procedure Parameters

Parameter	Description
p_url	The URL endpoint of the Web service.
p_action	The SOAP Action corresponding to the operation to be invoked.
p_version	The SOAP version, 1.1 or 1.2. The default is 1.1.
p_collection_name	The name of the collection to store the response.
p_envelope	The SOAP envelope to post to the service.
p_username	The username if basic authentication is required for this service.
p_password	The password if basic authentication is required for this service.
p_proxy_override	The proxy to use for the request. The proxy supplied overrides the proxy defined in the application attributes.
p_transfer_timeout	The amount of time in seconds to wait for a response.
p_wallet_path	The file system path to a wallet if the URL endpoint is https. For example, file:/usr/home/oracle/WALLETS. The wallet path provided overrides the wallet defined in the instance settings.
p_wallet_pwd	The password to access the wallet.

Example

The following example uses the make_request procedure to retrieve a list of movies from a SOAP style Web service. The response is stored in an Application Express collection named MOVIE_LISTINGS.

```
declare
    l_envelope CLOB;
BEGIN
    l_envelope := '<?xml version="1.0" encoding="UTF-8"?>
    <soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
```



```
xmlns:tns="http://www.ignyte.com/whatsshowing"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <soap:Body>
    <tns:GetTheatersAndMovies>
      <tns:zipCode>43221</tns:zipCode>
      <tns:radius>5</tns:radius>
    </tns:GetTheatersAndMovies>
  </soap:Body>
</soap:Envelope>';

apex_web_service.make_request(
  p_url          => '
http://www.ignyte.com/webservices/ignyte.whatsshowing.webservice/moviefunctions.as
mx',
  p_action       => '
http://www.ignyte.com/whatsshowing/GetTheatersAndMovies',
  p_collection_name => 'MOVIE_LISTINGS',
  p_envelope     => l_envelope
);
END;
```

MAKE_REQUEST Function

Use this function to invoke a SOAP style Web service with the supplied SOAP envelope returning the results in an XMLTYPE.

Syntax

```
APEX_WEB_SERVICE.MAKE_REQUEST (
    p_url          IN VARCHAR2,
    p_action       IN VARCHAR2 default null,
    p_version      IN VARCHAR2 default '1.1',
    p_envelope     IN CLOB,
    p_username     IN VARCHAR2 default null,
    p_password     IN VARCHAR2 default null,
    p_proxy_override IN VARCHAR2 default null,
    p_transfer_timeout IN NUMBER default 180,
    p_wallet_path  IN VARCHAR2 default null,
    p_wallet_pwd   IN VARCHAR2 default null )
RETURN XMLTYPE;
```

Parameters

[Table 19–4](#) describes the parameters available in the MAKE_REQUEST function.

Table 19–4 MAKE_REQUEST Function Parameters

Parameter	Description
p_url	The URL endpoint of the Web service.
p_action	The SOAP Action corresponding to the operation to be invoked.
p_version	The SOAP version, 1.1 or 1.2. The default is 1.1.
p_envelope	The SOAP envelope to post to the service.
p_username	The username if basic authentication is required for this service.
p_password	The password if basic authentication is required for this service.
p_proxy_override	The proxy to use for the request. The proxy supplied overrides the proxy defined in the application attributes.
p_transfer_timeout	The amount of time in seconds to wait for a response.
p_wallet_path	The file system path to a wallet if the URL endpoint is https. For example, file:/usr/home/oracle/WALLETS. The wallet path provided overrides the wallet defined in the instance settings.
p_wallet_pwd	The password to access the wallet.

Example

The following example uses the make_request function to invoke a SOAP style Web service that returns movie listings. The result is stored in an XMLTYPE.

```
declare
    l_envelope CLOB;
    l_xml XMLTYPE;
BEGIN
    l_envelope := ' <?xml version="1.0" encoding="UTF-8"?>
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:tns="http://www.ignite.com/whatsshowing"
```

```
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <soap:Body>
    <tns:GetTheatersAndMovies>
      <tns:zipCode>43221</tns:zipCode>
      <tns:radius>5</tns:radius>
    </tns:GetTheatersAndMovies>
  </soap:Body>
</soap:Envelope>;
```

```
l_xml := apex_web_service.make_request(
  p_url => '
http://www.ignyte.com/webservices/ignyte.whatsshowing.webservice/moviefunctions.as
mx',
  p_action => ' http://www.ignyte.com/whatsshowing/GetTheatersAndMovies',
  p_envelope => l_envelope
);
END
```

MAKE_REST_REQUEST Function

Use this function to invoke a RESTful style Web service supplying either name value pairs, a character based payload or a binary payload and returning the response in a CLOB.

Syntax

```
APEX_WEB_SERVICE.MAKE_REST_REQUEST(
    p_url                IN VARCHAR2,
    p_http_method        IN VARCHAR2,
    p_username           IN VARCHAR2 default null,
    p_password           IN VARCHAR2 default null,
    p_proxy_override     IN VARCHAR2 default null,
    p_transfer_timeout   IN NUMBER   default 180,
    p_body               IN CLOB     default empty_clob(),
    p_body_blob          IN BLOB     default empty_blob(),
    p_parm_name          IN WWV_FLOW_GLOBAL.VC_ARR2 default empty_vc_arr,
    p_parm_value         IN WWV_FLOW_GLOBAL.VC_ARR2 default empty_vc_arr,
    p_wallet_path        IN VARCHAR2 default null,
    p_wallet_pwd         IN VARCHAR2 default null )
RETURN CLOB;
```

Parameters

[Table 19–5](#) describes the parameters available in the MAKE_REST_REQUEST function.

Table 19–5 MAKE_REST_REQUEST Function Parameters

Parameter	Description
p_url	The URL endpoint of the Web service.
p_http_method	The HTTP method to use, PUT, POST, GET, HEAD, or DELETE.
p_username	The username if basic authentication is required for this service.
p_password	The password if basic authentication is required for this service.
p_proxy_override	The proxy to use for the request. The proxy supplied overrides the proxy defined in the application attributes.
p_transfer_timeout	The amount of time in seconds to wait for a response.
p_body	The HTTP payload to be sent as CLOB.
p_body_blob	The HTTP payload to be sent as binary BLOB. For example, posting a file.
p_parm_name	The name of the parameters to be used in name/value pairs.
p_parm_value	The value of the parameters to be used in name/value pairs.
p_wallet_path	The file system path to a wallet if the URL endpoint is https. For example, file:/usr/home/oracle/WALLETS. The wallet path provided overrides the wallet defined in the instance settings.
p_wallet_pwd	The password to access the wallet.

Example

The following example calls a RESTful style Web service using the make_rest_request function passing the parameters to the service as name/value pairs. The response from the service is stored in a locally declared CLOB.

```
declare
    l_clob CLOB;
BEGIN

    l_clob := apex_web_service.make_rest_request(
        p_url => 'http://us.music.yahooapis.com/ video/v1/list/published/popular',
        p_http_method => 'GET',
        p_parm_name => apex_util.string_to_table('appid:format'),
        p_parm_value => apex_util.string_to_table('xyz:xml'));

END
```

PARSE_RESPONSE Function

Use this function to parse the response from a Web service that is stored in a collection and return the result as a VARCHAR2 type.

Syntax

```
APEX_WEB_SERVICE.PARSE_RESPONSE (
    p_collection_name  IN VARCHAR2,
    p_xpath            IN VARCHAR2,
    p_ns              IN VARCHAR2 default null )
RETURN VARCHAR2;
```

Parameters

[Table 19–6](#) describes the parameters available in the PARSE_RESPONSE function.

Table 19–6 PARSE_RESPONSE Function Parameters

Parameter	Description
p_collection_name	The name of the collection where the Web service response is stored.
p_xpath	The XPath expression to the desired node.
p_ns	The namespace to the desired node.

Example

The following example parses a response stored in a collection called STELLENT_CHECKIN and stores the value in a locally declared VARCHAR2 variable.

```
declare
    l_response_msg  VARCHAR2(4000);
BEGIN
    l_response_msg := apex_web_service.parse_response(
        p_collection_name=>'STELLENT_CHECKIN',
        p_xpath =>
        '//idc:CheckInUniversalResponse/idc:CheckInUniversalResult/idc:StatusInfo/idc:stat
        usMessage/text()',
        p_ns=>'xmlns:idc="http://www.stellent.com/CheckIn/"');
END;
```

PARSE_RESPONSE_CLOB Function

Use this function to parse the response from a Web service that is stored in a collection and return the result as a CLOB type.

Syntax

```
APEX_WEB_SERVICE.PARSE_RESPONSE_CLOB (
    p_collection_name    IN VARCHAR2,
    p_xpath              IN VARCHAR2,
    p_ns                 IN VARCHAR2 default null )
RETURN CLOB;
```

Parameters

[Table 19–7](#) describes the parameters available in the PARSE_RESPONSE_CLOB function.

Table 19–7 PARSE_RESPONSE_CLOB Function Parameters

Parameter	Description
p_collection_name	The name of the collection where the Web service response is stored.
p_xpath	The XPath expression to the desired node.
p_ns	The namespace to the desired node.

Example

The following example parses a response stored in a collection called STELLENT_CHECKIN and stores the value in a locally declared CLOB variable.

```
declare
    l_response_msg CLOB;
BEGIN
    l_response_msg := apex_web_service.parse_response_clob(
        p_collection_name=>'STELLENT_CHECKIN',
        p_xpath=>
        '//idc:CheckInUniversalResponse/idc:CheckInUniversalResult/idc:StatusInfo/idc:stat
        usMessage/text()',
        p_ns=>'xmlns:idc="http://www.stellent.com/CheckIn/"');
END;
```

PARSE_XML Function

Use this function to parse the response from a Web service returned as an XMLTYPE and return the value requested as a VARCHAR2.

Syntax

```
APEX_WEB_SERVICE.PARSE_XML (
    p_xml          IN XMLTYPE,
    p_xpath        IN VARCHAR2,
    p_ns           IN VARCHAR2 default null )
RETURN VARCHAR2;
```

Parameters

[Table 19–8](#) describes the parameters available in the PARSE_XML function.

Table 19–8 PARSE_XML Function Parameters

Parameter	Description
p_xml	The XML document as an XMLTYPE to parse.
p_xpath	The XPath expression to the desired node.
p_ns	The namespace to the desired node.

Example

The following example uses the `make_request` function to call a Web service and store the results in a local XMLTYPE variable. The `parse_xml` function is then used to pull out a specific node of the XML document stored in the XMLTYPE and stores it in a locally declared VARCHAR2 variable.

```
declare
    l_envelope CLOB;
    l_xml XMLTYPE;
    l_movie VARCHAR2(4000);
BEGIN
    l_envelope := ' <?xml version="1.0" encoding="UTF-8"?>
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:tns="http://www.ignyte.com/whatsshowing"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
    <soap:Body>
        <tns:GetTheatersAndMovies>
            <tns:zipCode>43221</tns:zipCode>
            <tns:radius>5</tns:radius>
        </tns:GetTheatersAndMovies>
    </soap:Body>
</soap:Envelope>';

    l_xml := apex_web_service.make_request(
        p_url => '
http://www.ignyte.com/webservices/ignyte.whatsshowing.webservice/moviefunctions.as
mx',
        p_action => ' http://www.ignyte.com/whatsshowing/GetTheatersAndMovies',
        p_envelope => l_envelope );

    l_movie := apex_web_service.parse_xml(
        p_xml => l_xml,
```



```
        p_xpath => '  
//GetTheatersAndMoviesResponse/GetTheatersAndMoviesResult/Theater/Movies/Movie/Name[1]',  
        p_ns => ' xmlns="http://www.ignite.com/whatsshowing" ' );  
  
END;
```

PARSE_XML_CLOB Function

Use this function to parse the response from a Web service returned as an XMLTYPE and return the value requested as a CLOB.

Syntax

```
APEX_WEB_SERVICE.PARSE_XML_CLOB (
    p_xml          IN XMLTYPE,
    p_xpath        IN VARCHAR2,
    p_ns           IN VARCHAR2 default null )
RETURN VARCHAR2;
```

Parameters

[Table 19–9](#) describes the parameters available in the PARSE_XML_CLOB function.

Table 19–9 PARSE_XML_CLOB Function Parameters

Parameter	Description
p_xml	The XML document as an XMLTYPE to parse.
p_xpath	The XPath expression to the desired node.
p_ns	The namespace to the desired node.

Example

The following example uses the `make_request` function to call a Web service and store the results in a local XMLTYPE variable. The `parse_xml` function is then used to pull out a specific node of the XML document stored in the XMLTYPE and stores it in a locally declared VARCHAR2 variable

```
declare
    l_envelope CLOB;
    l_xml XMLTYPE;
    l_movie CLOB;
BEGIN
    l_envelope := ' <?xml version="1.0" encoding="UTF-8"?>
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:tns="http://www.ignyte.com/whatsshowing"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
    <soap:Body>
        <tns:GetTheatersAndMovies>
            <tns:zipCode>43221</tns:zipCode>
            <tns:radius>5</tns:radius>
        </tns:GetTheatersAndMovies>
    </soap:Body>
</soap:Envelope>';

    l_xml := apex_web_service.make_request(
        p_url => '
http://www.ignyte.com/webservices/ignyte.whatsshowing.webservice/moviefunctions.as
mx',
        p_action => ' http://www.ignyte.com/whatsshowing/GetTheatersAndMovies',
        p_envelope => l_envelope );

    l_movie := apex_web_service.parse_xml_clob(
        p_xml => l_xml,
```

```
        p_xpath => '
//GetTheatersAndMoviesResponse/GetTheatersAndMoviesResult/Theater/Movies/Movie/Name[1]',
        p_ns => ' xmlns="http://www.ignite.com/whatsshowing" ' );

END;
```

JavaScript APIs

This section describes JavaScript functions and objects included with Oracle Application Express and available on every page. You can use these functions and objects to provide client-side functionality, such as showing and hiding page elements, or making XML HTTP Asynchronous JavaScript and XML (AJAX) requests.

Topics:

- [apex.event.trigger\(pSelector,pEvent,pData\)](#)
- [apex.widget.initPageItem\(pName,pOptions\)](#)
- [\\$x\(pNd\)](#)
- [\\$v\(pNd\)](#)
- [\\$v2\(pNd\)](#)
- [\\$s\(pNd, pValue, pDisplayValue, pSuppressChangeEvent\)](#)
- [\\$u_Carray\(pNd\)](#)
- [\\$u_Narray\(pNd\)](#)
- [\\$nvl\(pTest, pDefault\)](#)
- [apex.submit\(pOptions\)](#)
- [apex.submit\(pRequest\)](#)
- [apex.confirm\(pMessage, pRequest\)](#)
- [\\$x_Style\(pNd, pStyle, pString\)](#)
- [\\$x_Hide\(pNd\)](#)
- [\\$x_Show\(pNd\)](#)
- [\\$x_Toggle\(pNd\)](#)
- [\\$x_Remove\(pNd\)](#)
- [\\$x_Value\(pNd,pValue\)](#)
- [\\$x_UpTill\(pNd, pToTag\)](#)
- [\\$x_ItemRow\(pNd,pFunc\)](#)
- [\\$x_HideItemRow\(pNd\)](#)
- [\\$x_ShowItemRow\(pNd\)](#)
- [\\$x_ToggleItemRow\(pNd\)](#)
- [\\$x_HideAllExcept\(pNd,pNdArray\)](#)

-
- `$x_HideSiblings(pNd)`
 - `$x_ShowSiblings(pNd)`
 - `$x_Class(pNd,pClass)`
 - `$x_SetSiblingsClass(pNd, pClass, pNdClass)`
 - `$x_ByClass(pClass, pNd, pTag)`
 - `$x_ShowAllByClass(pNd, pClass, pTag)`
 - `$x_ShowChildren(pNd)`
 - `$x_HideChildren(pNd)`
 - `$x_disableItem(pNd, pTest)`
 - `$f_get_emptyys(pNd, pClassFail, pClass)`
 - `$v_Array(pNd)`
 - `$f_ReturnChecked(pNd)`
 - `$d_ClearAndHide(pNd)`
 - `$f_SelectedOptions(pNd)`
 - `$f_SelectValue(pNd)`
 - `$u_ArrayToString(pArray, pDelim)`
 - `$x_CheckImageSrc(pId,pSearch)`
 - `$v_CheckValueAgainst(pThis, pValue)`
 - `$f_Hide_On_Value_Item(pThis, pThat, pValue)`
 - `$f_Show_On_Value_Item(pThis, pThat, pValue)`
 - `$f_Hide_On_Value_Item_Row(pThis, pThat, pValue)`
 - `$f_Show_On_Value_Item_Row(pThis, pThat, pValue)`
 - `$f_DisableOnValue(pThis, pValue, pThat)`
 - `$x_ClassByClass(pNd, pClass, pTag, pClass2)`
 - `$f_ValuesToArray(pThis, pClass, pTag)`
 - `$x_FormItems(pNd, pType)`
 - `$f_CheckAll(pThis, pCheck, pArray)`
 - `$f_CheckFirstColumn(pNd)`
 - `$v_PopupReturn(pValue, pThat)`
 - `$x_ToggleWithImage(pThis,pNd)`
 - `$x_SwitchImageSrc(pNd, pSearch, pReplace)`
 - `$x_CheckImageSrc(pNd, pSearch)`
 - `$u_SubString(pText,pMatch)`
 - `html_RemoveAllChildren(pNd)`
 - `$v_IsEmpty(pThis)`
 - `html_SetSelectValue(pId,pValue)`
 - `addLoadEvent(pFunction)`

-
- `$f_Swap(pThis,pThat)`
 - `submitEnter(pNd,e)`
 - `$f_SetValueSequence(pArray,pMultiple)`
 - `$dom_AddTag(pThis, pTag, pText)`
 - `$tr_AddTD(pThis,pText)`
 - `$dom_AddInput(pThis,pType,pId,pName,pValue)`
 - `$dom_MakeParent(p_Node,p_Parent)`
 - `$x_RowHighlight(pThis, pColor)`
 - `$x_RowHighlightOff(pThis)`
 - `$v_Upper(pNd)`
 - `$v_Upper(pNd)`
 - `$d_Find(pThis,pString,pTags,pClass)`
 - `returnInput(p_R, p_D)`
 - `setReturn(p_R,p_D)`
 - `$f_First_field(pNd)`
 - `GetCookie (pName)`
 - `SetCookie (pName,pValue)`

apex.event.trigger(pSelector,pEvent,pData)

Given a jQuery selector, jQuery object or DOM Node the specified pEvent will be triggered. pEvent can be a browser event like "click" or "change" but also a custom event like "slidechange". This function should only be used to trigger events that are handled by the dynamic action framework. Otherwise, custom events registered by plug-ins installed in your application or any event that is already exposed in dynamic actions can be compromised.

Return Value

Boolean

Parameters

pSelector (jQuery selector | jQuery object | DOM Node)

pEvent (String)

pData (Object)

apex.widget.initPageItem(pName,pOptions)

Given a page item name different options can be registered for a page item with the Application Express JavaScript framework. This is necessary to seamlessly integrate a plug-in item type with the built-in page item related JavaScript functions of Application Express.

Parameters

pName (string)

pOptions (Object)

\$x(pNd)

Given a DOM node or string ID (pNd), this function returns a DOM node if the element is on the page, or returns false if it is not.

Return Value

(DOM Node | false)

Parameters

pNd (DOM Node | string ID)

`$v(pNd)`

Given a DOM node or string ID (pNd), this function returns the value of an Application Express item in the same format as it would be posted.

Parameters

pNd (DOM Node | string ID)

\$v2(pNd)

Given a DOM node or string ID (pNd), this function returns the value of an Application Express item as a string or an array. If the page item type can contain multiple values like a shuttle, checkboxes or a multi select list an array will be returned, otherwise a string.

Return Value

(string|array)

Parameters

pNd (DOM Node | string ID)

`$s(pNd, pValue, pDisplayValue, pSuppressChangeEvent)`

Given a DOM node or string ID (`pNd`), this function sets the Application Express item value taking into account the item type. The `pDisplayValue` is optional. If used for a page item of type "Popup LOV" where the attribute "Input Field" = "Not Enterable, Show Display Value and Store Return Value", it is used to set the "Input Field". The value of `pValue` will be stored in the hidden return field. The `pSuppressChangeEvent` parameter is optional. Passing either `FALSE` or not passing this parameter value results in a change event firing for the item being set. Pass `TRUE` to prevent the change event from firing for the item being set.

Parameters

`pNd` (DOM Node | string ID)
`pValue` (String | Array)
`pDisplayValue` (String)
`pSuppressChangeEvent` (Boolean)

\$u_Carray(pNd)

Given a DOM node or string ID or an array (pNd), this function returns an array. Used for creating DOM based functionality that can accept a single or multiple DOM nodes.

Return Value

pNd (DOM Node | string ID | Array)

Parameters

Array

`$u_Narray(pNd)`

Given a DOM node or string ID or an array (pNd), this function returns a single value, if an pNd is an array but only has one element the value of that element will be returned otherwise the array will be returned. Used for creating DOM based functionality that can accept a single or multiple DOM nodes.

Return Value

`Array (DOM Node | string ID | Array)`

Parameters

`Array or first value`

\$nvl(pTest, pDefault)

If `pTest` is empty or false return `pDefault` otherwise return `pTest`.

Return Value

(string | Array)

Parameters

`pTest` (String | Array)
`pDefault` (String | Array)

apex.submit(pOptions)

This function submits the page using the options specified in pOptions.

Parameters

pOptions (Object)

where Object can contain the following options:

request - The request value to set (defaults to null)

set - Object containing name/value pairs of items to be set on the page prior to submission (defaults to null).

showWait - Flag to control if a 'Wait Indicator' icon is displayed, which can be useful when running long page operations (Defaults to false).

Example

This example submits the page with a REQUEST value of 'DELETE' and 2 page item values are set, P1_DEPTNO to 10 and P1_EMPNO to 5433. During submit a wait icon is displayed as visual indicator for the user as well.

```
apex.submit({
  request:"DELETE",
  set:{"P1_DEPTNO":10, "P1_EMPNO":5433},
  showWait:true});
```

apex.submit(pRequest)

This function submits the page setting the Application Express Request value `pRequest`.

Parameters

`pRequest` (String)

Example

Submits the current page with a REQUEST value of 'DELETE'.

```
apex.submit({  
  request:"DELETE",  
  set:{"P1_DEPTNO":10, "P1_EMPNO":5433});
```

apex.confirm(pMessage, pRequest)

Displays a confirmation showing a message (pMessage) and depending on user's choice, submits a page setting request value (pRequest) or cancels page submit.

Parameters

pMessage (string)
pRequest (string)

Example

This example shows a confirmation dialog with the text 'Delete Department'. If the user chooses to proceed with the delete, the current page is submitted with a REQUEST value of 'DELETE'

```
apex.confirm('Delete Department', 'DELETE');
```

apex.confirm(pMessage, pOptions)

Displays a confirmation showing a message (pMessage) and depending on user's choice, submits a page setting request values specified by (pOptions) or cancels page submit.

Parameters

pMessage (string)

pOptions (object)

Object can contain the following options:

request - The request value to be set (Defaults to null)

set - Object containing name / value pairs of items to be set on the page prior to submission (Defaults to null)

Example 1

This example shows a confirmation message with the 'Save Department?' text. If the user chooses to proceed with the save, the page is submitted with a REQUEST value of 'SAVE' and 2 page item values are set, P1_DEPTNO to 10 and P1_EMPNO to 5433."

```
apex.confirm("Save Department?", {  
    request:"SAVE",  
    set:{"P1_DEPTNO":10, "P1_EMPNO":5433}  
  
});
```

Example 2

This example submits the current page and sets the REQUEST value to SAVE.

```
apex.submit('SAVE');
```

`$x_Style(pNd, pStyle, pString)`

Sets a specific style property (`pStyle`) to given value (`pString`) of a DOM node or DOM node Array (`pNd`).

Return Value

(DOM node | DOM Array)

Parameters

`pNd` (DOM node | string ID | DOM node Array)
`pStyle` (String)
`pString` (String)

\$x_Hide(pNd)

Hides a DOM node or array of DOM nodes (pNd). This will also take into consideration which type of Application Express item is being hidden.

Return Value

(DOM node | Array)

Parameters

pNd (DOM node | string ID | DOM node Array)

`$x_Show(pNd)`

Shows a DOM node or array of DOM nodes (`pNd`). This will also take into consideration which type of Application Express item is being hidden.

Return Value

(DOM node | Array)

Parameters

`pNd` (DOM node | string ID | DOM node Array)

\$x_Toggle(pNd)

Toggles a DOM node or array of DOM nodes (pNd).

Return Value

(DOM node | Array)

Parameters

pNd (DOM node | string ID | Array)

`$x_Remove(pNd)`

Removes a DOM node or array of DOM nodes.

Return Value

(DOM Node | Array)

Parameters

pNd (DOM node | string ID | DOM node Array)

\$x_Value(pNd,pValue)

Sets the value (`pValue`) of a DOM node or array of DOM nodes (`pNd`).

Return Value

Not applicable.

Parameters

`pNd` (DOM node | string ID | DOM node Array)
`pValue` (String)

`$x_UpTill(pNd, pToTag)`

Starting from a DOM node (`pNd`), this function cascades up the DOM tree until the tag of node name (`pToTag`) is found.

Return Value

(DOM Node | false)

Parameters

`pNd` (DOM Node | string ID)
`String` (`pToTag`)
`String` (`pToClass`)

\$x_ItemRow(pNd,pFunc)

Given DOM node or array of DOM nodes, this function (shows, hides, or toggles) the entire row that contains the DOM node or array of DOM nodes. This is most useful when using Page Items.

Return Value

Not applicable.

Parameters

pNd (DOM Node | string ID | Dom node Array)
pFunc ['TOGGLE','SHOW','HIDE'] (String)

`$x_HideItemRow(pNd)`

Given a page item name, this function hides the entire row that holds the item. In most cases, this will be the item and its label.

Return Value

Not applicable.

Parameters

`pNd` (DOM Node | string ID | DON node Array)

\$x_ShowItemRow(pNd)

Given a page item name, this function shows the entire row that holds the item. In most cases, this will be the item and its label.

Return Value

Not applicable.

Parameters

pNd (DOM node | string ID | DOM note Array)

`$x_ToggleItemRow(pNd)`

Given a page item name (pNd), this function toggles the entire row that holds the item. In most cases, this will be the item and its label.

Return Value

Not applicable.

Parameters

pNd (DOM node | string ID | DOM node ray)

\$x_HideAllExcept(pNd,pNdArray)

Hides all DOM nodes referenced in `pNdArray` and then shows the DOM node referenced by `pNd`. This is most useful when `pNd` is also a node in `pNdArray`.

Return Value

(DOM node | DOM Array)

Parameters

`pNd` (DOM node | string ID | DOM node Array)

`pNdArray` (DOM node | String | Array)

`$x_HideSiblings(pNd)`

Hides all sibling nodes of given `pNd`.

Return Value

(DOM node)

Parameters

`pNd` (DOM node | string ID)

\$x_ShowSiblings(pNd)

Shows all sibling DOM nodes of given DOM nodes (pNd).

Return Value

(DOM node)

Parameters

pNd (DOM node | string ID)

`$x_Class(pNd,pClass)`

Sets a DOM node or array of DOM nodes to a single class name.

Return Value

Not applicable.

Parameters

`pNd` (DOM node | string ID | DOM node Array)
`pClass` (String)

\$x_SetSiblingsClass(pNd, pClass, pNdClass)

Sets the class (`pClass`) of all DOM node siblings of a node (`pNd`). If `pNdClass` is not null the class of `pNd` is set to `pNdClass`.

Return Value

(DOM node | false)

Parameters

`pNd` (DOM Nnde | string ID)

`pClass` (String)

`pThisClass` (String)

`$x_ByClass(pClass, pNd, pTag)`

Returns an array of DOM nodes by a given class name (`pClass`). If the `pNd` parameter is provided, then the returned elements will be all be children of that DOM node. Including the `pTag` parameter further narrows the list to just return nodes of that tag type.

Return Value

(Array)

Parameters

`pClass` (String)
`pNd` (DOM node | string ID)
`pTag` (String)

\$x_ShowAllByClass(pNd, pClass, pTag)

Show all the DOM node children of a DOM node (`pNd`) that have a specific class (`pClass`) and tag (`pTag`).

Return Value

Not applicable.

Parameters

`pNd` (DOM node | string ID)
`pClass` (String)
`pTag` (String)

`$x_ShowChildren(pNd)`

Show all DOM node children of a DOM node (`pNd`).

Return Value

Not applicable.

Parameters

`pNd` (DOM node | string ID)

\$x_HideChildren(pNd)

Hide all DOM node children of a DOM node (pNd).

Return Value

Not applicable.

Parameters

pNd (DOM node | string ID)

`$x_disableItem(pNd, pTest)`

Disables or enables an item or array of items based on (pTest).

Return Value

Not applicable.

Parameters

pNd (DOM node | string ID | DOM node array)
a (true | false)

\$f_get_emptyys(pNd, pClassFail, pClass)

Checks an item or an array of items to see if any are empty, set the class of all items that are empty to `pClassFail`, set the class of all items that are not empty to `pClass`.

Return Value

`false, Array` Array of all items that are empty (`false | Array`)

Parameters

`pNd` (DOM node | string ID | DOM node Array)

`Sting` (`pClassFail`)

`Sting` (`pClass`)

`$v_Array(pNd)`

Returns an item value as an array. Useful for multiselects and checkboxes.

Return Value

(Array)

Parameters

pId (DOM Node | string ID)

\$f_ReturnChecked(pNd)

Returns an item value as an array. Useful for radio items and check boxes.

Return Value

(Array)

Parameters

pId (DOM node | string ID)

`$d_ClearAndHide(pNd)`

Clears the content of an DOM node or array of DOM nodes and hides them.

Return Value

Not applicable.

Parameters

`pNd` (DOM node | string ID | DOM node array)

\$f_SelectedOptions(pNd)

Returns the DOM nodes of the selected options of a select item (pNd).

Return Value

(DOM Array)

Parameters

pNd (DOM node | string ID)

`$f_SelectValue(pNd)`

Returns the values of the selected options of a select item (`pNd`).

Return Value

(DOM Array | String)

Parameters

`pNd` (DOM node | string ID)

\$u_ArrayToString(pArray, pDelim)

Given an array (pArray) return a string with the values of the array delimited with a given delimiter character (pDelim).

Return Value

Not applicable.

Parameters

pArray (pArray)

pDelim (String)

`$x_CheckImageSrc(pId,pSearch)`

Checks an image (`pId`) source attribute for a substring (`pSearch`). The function returns true if a substring (`pSearch`) is found. It returns false if a substring (`pSearch`) is not found.

Return Value

(true | false)

Parameters

`pId` (DOM Node | String)
`pSearch` (pSearch)

`$v_CheckValueAgainst(pThis, pValue)`

Checks an page item's (`pThis`) value against a set of values (`pValue`). This function returns true if any value matches.

Return Value

(true | false)

Parameters

`pThis` (DOM node | string ID)

`pValue` (Number | String | Array)

`$f_Hide_On_Value_Item(pThis, pThat, pValue)`

Checks page item's (`pThis`) value against a value (`pValue`). If it matches, a DOM node (`pThat`) is set to hidden. If it does not match, then the DOM node (`pThat`) is set to visible.

Return Value

(`true` | `false`)

Parameters

`pThis` (DOM node | string ID)
`pThat` (DOM node | string ID | DOM node Array)
`pValue` (Number | String | Array)

\$f_Show_On_Value_Item(pThis, pThat, pValue)

Checks page item's (pThis) value against a value (pValue). If it matches, a DOM node (pThat) is set to visible. If it does not match, then the DOM node (pThat) is set to hidden.

Return Value

(true | false)

Parameters

pThis (DOM node | string ID)
pThat (DOM node | string ID | DOM node Array)
pValue (Number | String | Array)

`$f_Hide_On_Value_Item_Row(pThis, pThat, pValue)`

Checks the value (`pValue`) of an item (`pThis`). If it matches, this function hides the table row that holds (`pThat`). If it does not match, then the table row is shown.

Return Value

(`true` | `false`)

Parameters

`pThis` (DOM node | string ID)
`pThat` (DOM node | string ID | DOM node Array)
`pValue` (Number | String | Array)

`$f_Show_On_Value_Item_Row(pThis, pThat, pValue)`

Checks the value (`pValue`) of an item (`pThis`). If it matches, this function shows the table row that holds (`pThat`). If it does not match, then the table row is hidden.

Return Value

(true | false)

Parameters

`pThis` (DOM node | string ID)
`pThat` (DOM node | string ID | DOM node Array)
`pValue` (Number | String | Array)

`$f_DisableOnValue(pThis, pValue, pThat)`

Checks the value (`pValue`) of an item (`pThis`). If it matches, this function disables the item or array of items (`pThat`). If it does not match, then the item is enabled.

Return Value

(`true` | `false`)

Parameters

`pThis` (DOM node | string ID)

`pValue` (String)

`pThat` (DOM node | string ID | DOM node Array)

\$x_ClassByClass(pNd, pClass, pTag, pClass2)

Sets a class attribute of an array of nodes that are selected by class.

Return Value

(DOM node | DOM node Array)

Parameters

pNd (DOM node | string ID)
pClass (String)
pTag (String)
pClass2 (String)

`$f_ValuesToArray(pThis, pClass, pTag)`

Collects the values of form items contained within DOM node (`pThis`) of class attribute (`pClass`) and nodeName (`pTag`) and returns an array.

Return Value

No applicable.

Parameters

`pThis` (DOM node | string ID)
`pClass` (String)
`pTag` (String)

\$x_FormItems(pNd, pType)

Returns all form input items contained in a DOM node (`pThis`) of a certain type (`pType`).

Return Value

DOM node Array

Parameters

`pNd` (DOM node | string ID)
`pType` (String)

\$f_CheckAll(pThis, pCheck, pArray)

Check or uncheck (`pCheck`) all check boxes contained within a DOM node (`pThis`). If an array of checkboxes DOM nodes (`pArray`) is provided, use that array for affected check boxes.

Return Value

Not applicable.

Parameters

`pThis` (DOM node | string ID)
`pCheck` (true | false)
`pArray` (DOM node array)

\$f_CheckFirstColumn(pNd)

This function sets all checkboxes located in the first column of a table based on the checked state of the calling checkbox (pNd), useful for tabular forms.

Return Value

DOM node Array

Parameters

pNd (DOM node | String)

`$v_PopupReturn(pValue, pThat)`

Sets the value of the item in the parent window (`pThat`), with (`pValue`) and then closes the popup window.

Return Value

Not applicable.

Parameters

`pValue` (string)

`pThat` (DOM node | string ID)

\$x_ToggleWithImage(pThis,pNd)

Given an image element (`pThis`) and a DOM node (`pNd`), this function toggles the display of the DOM node (`pNd`). The src attribute of the image element (`pThis`) will be rewritten. The image src will have any plus substrings replaced with minus substrings or minus substrings will be replaced with plus substrings.

Return Value

(DOM Node)

Parameters

`pThis` (DOM Node | string ID)

`pNd` (DOM Nnde | string iD | DOM node Array)

`$x_SwitchImageSrc(pNd, pSearch, pReplace)`

Checks an image (`pId`) src attribute for a substring (`pSearch`). If a substring is found, this function replaces the image entire src attribute with (`pReplace`).

Return Value

(DOM node | false)

Parameters

`pNd` (DOM node | string ID)

`pSearch` (String)

`pReplace` (String)

\$x_CheckImageSrc(pNd, pSearch)

Checks an image (pNd) source attribute for a substring (pSearch). The function returns true if a substring (pSearch) is found. It returns false if a substring (pSearch) is not found.

Return Value

(true | false)

Parameters

pNd (DOM node | string ID)
pSearch (String)

`$u_SubString(pText,pMatch)`

Returns a true or false if a string (`pText`) contains a substring (`pMatch`).

Return Value

(true | false)

Parameters

`pText` (String)

`pMatch` (String)

html_RemoveAllChildren(pNd)

Use DOM methods to remove all DOM children of DOM node (pNd).

Return Value

Not applicable.

Parameters

pNd (DOM node | string ID)

`$v_IsEmpty(pThis)`

Returns true or false if a form element is empty, this will consider any whitespace including a space, a tab, a form-feed, as empty. This will also consider any null value that has been specified on the item.

Return Value

`[true | false]`

Parameters

`pThis` (DOM Node | String)

html_SetSelectValue(pId,pValue)

Sets the value (`pValue`) of a select item (`pId`). If the value is not found, this functions selects the first option (usually the NULL selection).

Return Value

Not applicable.

Parameters

`pId` (DOM node | String)
`pValue` (String)

addLoadEvent(pFunction)

Adds an onload function (`func`) without overwriting any previously specified onload functions.

Return Value

Not applicable.

Parameters

`pFunction` (Javascript Function)

\$f_Swap(pThis,pThat)

Swaps the form values of two form elements (pThis,pThat).

Return Value

Not applicable.

Parameters

pThis (DOM Node | String)
pThat (DOM Node | String)

submitEnter(pNd,e)

Submits a page when ENTER is pressed in a text field, setting the request value to the ID of a DOM node (pNd).

Usage is `onkeypress="submitEnter(this,event) "`

Return Value

Not applicable.

Parameters

pNd (DOM node | String | Array)

`$f_SetValueSequence(pArray,pMultiple)`

Sets array of form item (`pArray`) to sequential number in multiples of (`pMultiple`).

Return Value

Not applicable.

Parameters

`pArray` (Array)

`pMultiple` (Number)

`$dom_AddTag(pThis, pTag, pText)`

Inserts the html element (`pTag`) as a child node of a DOM node (`pThis`) with the `innerHTML` set to (`pText`).

Return Value

DOM node

Parameters

`pThis` (DOM node | string ID)
`pTag` (String)
`pText` (String)

\$tr_AddTD(pThis,pText)

Appends a table cell to a table row (pThis). And sets the content to (pText).

Return Value

(DOM node)

Parameters

pThis (DOM node | string ID)
pText (String)

`$tr_AddTH(pThis,pText)`

Appends a table cell to a table row (`pThis`). And sets the content to (`pText`).

Return Value

DOM node

Parameters

`pThis` (DOM node | string ID)
`pText` (String)

\$dom_AddInput(pThis,pType,pId,pName,pValue)

Inserts the html form input element (pType) as a child node of a DOM node (pThis) with an id (pId) and name (pName) value set to pValue.

Return Value

(DOM node)

Parameters

pThis (DOM node | string ID)
pType (String)
pId (String)
pName (String)
pValue (String)

\$dom_MakeParent(p_Node,p_Parent)

Takes a DOM node (`p_Node`) and makes it a child of DOM node (`p_Parent`) and then returns the DOM node (`pNode`).

Return Value

(DOM node)

Parameters

`p_This` (DOM node | string ID)
`p_Parent` (DOM node | string ID)

\$x_RowHighlight(pThis, pColor)

Give an table row DOM element (`pThis`), this function sets the background of all table cells to a color (`pColor`). A global variable `gCurrentRow` is set to `pThis`.

Return Value

Not applicable.

Parameters

`pThis` (DOM node | String)
`pColor`(String)

`$x_RowHighlightOff(pThis)`

Give an table row Dom node (`pThis`), this function sets the background of all table cells to `NULL`.

Return Value

Not applicable.

Parameters

`pThis` (DOM Element | String)

\$v_Upper(pNd)

Sets the value of a form item (pNd) to uppercase.

Return Value

Not applicable.

Parameters

pNd (DOM Node | String)

`$d_Find(pThis,pString,pTags,pClass)`

Hides child nodes of a Dom node (`pThis`) where the child node's inner HTML matches any instance of `pString`. To narrow the child nodes searched by specifying a tag name (`pTag`) or a class name (`pClass`). Note that the child node will be set to a block level element when set to visible.

Return Value

Not applicable.

Parameters

`pThis` (DOM node | String)
`pString` (String)
`pTags` (String)
`pClass` (String)

returnInput(p_R, p_D)

Sets DOM node in the global variables `returnInput` (p_R) and `returnDisplay` (p_D) for use in populating items from popups.

Return Value

Not applicable.

Parameters

p_R (DOM node | String)
p_D (DOM node | String)

setReturn(p_R,p_D)

Sets DOM items in the global variables `returnInput` (p_R) and `returnDisplay` (p_D) for use in populating items from popups.

Return Value

Not applicable.

Parameters

p_R

p_D

\$f_First_field(pNd)

Places the user focus on the a form item (pNd). If pNd is not found then this function places focus on the first found user editable field.

Return Value

true (if successful)

Parameters

pNd

GetCookie (pName)

Returns the value of cookie name (pName).

Return Value

Not applicable.

Parameters

pName (String)

SetCookie (pName,pValue)

Sets a cookie (pName) to a specified value (pValue).

Return Value

Not applicable.

Parameters

pName (String)

pValue (String)

Index

A

APEX_APPLICATION

- global variables, 0-xxiii, 1-1
- HELP Procedure, 1-6
- package, 0-xxiii, 1-1
- Referencing Arrays
 - referencing, 1-3
- STOP_APEX_ENGINE Procedure, 1-8
- APEX_APPLICATION_INSTALL, 2-1
- CLEAR_ALL procedure, 2-7
- examples
 - import application into different workspaces
 - using different schema, 2-4
 - import application with generated application id, 2-4
 - import application with specified application id, 2-4
 - import application without modification, 2-4
 - import into training instance for three different workspaces, 2-5
- GENERATE_APPLICATION_ID procedure, 2-8
- GENERATE_OFFSET procedure, 2-9
- GET_APPLICATION_ALIAS function, 2-10
- GET_APPLICATION_ID function, 2-11
- GET_APPLICATION_NAME function, 2-12
- GET_IMAGE_PREFIX function, 2-13
- GET_OFFSET function, 2-14
- GET_PROXY function, 2-15
- GET_SCHEMA function, 2-16
- GET_WORKSPACE_ID function, 2-17
- import script examples, 2-4
- package overview, 2-2
- SET_APPLICATION_ALIAS procedure, 2-18
- SET_APPLICATION_ID procedure, 2-19
- SET_APPLICATION_NAME procedure, 2-20
- SET_IMAGE_PREFIX procedure, 2-21
- SET_OFFSET procedure, 2-22
- SET_PROXY procedure, 2-23
- SET_SCHEMA procedure, 2-24
- SET_WORKSPACE_ID procedure, 2-25
- APEX_COLLECTION, 3-3
 - ADD_MEMBER function, 3-14
 - ADD_MEMBER procedure, 3-12
 - ADD_MEMBERS procedure, 3-16
 - COLLECTION_EXISTS function, 3-18

- COLLECTION_HAS_CHANGED function, 3-19
- COLLECTION_MEMBER_COUNT
 - function, 3-20
- CREATE_COLLECTION procedure, 3-21
- CREATE_COLLECTION_FROM_QUERY, 3-23
- CREATE_COLLECTION_FROM_QUERY_B
 - procedure, 3-26
- CREATE_COLLECTION_FROM_QUERY2
 - procedure, 3-24
- CREATE_COLLECTION_FROM_QUERYB2
 - procedure, 3-28
- CREATE_OR_TRUNCATE_COLLECTION, 3-11
- CREATE_OR_TRUNCATE_COLLECTION
 - procedure, 3-22
- DELETE_ALL_COLLECTIONS procedure, 3-30
- DELETE_ALL_COLLECTIONS_SESSION
 - procedure, 3-31
- DELETE_COLLECTION procedure, 3-32
- DELETE_MEMBER procedure, 3-33
- DELETE_MEMBERS procedure, 3-34
- GET_MEMBER_MD5 function, 3-35
- MERGE_MEMBERS procedure, 3-36
- MOVE_MEMBER_DOWN procedure, 3-38
- MOVE_MEMBER_UP procedure, 3-39
- RESEQUENCE_COLLECTION procedure, 3-40
- RESET_COLLECTION_CHANGED
 - procedure, 3-41
- RESET_COLLECTION_CHANGED_ALL
 - procedure, 3-42
- SORT_MEMBERS procedure, 3-43
- TRUNCATE_COLLECTION procedure, 3-44
- UPDATE_MEMBER procedure, 3-45
- UPDATE_MEMBER_ATTRIBUTE procedure
 - signature 1, 3-49
- UPDATE_MEMBER_ATTRIBUTE procedure
 - signature 2, 3-51
- UPDATE_MEMBER_ATTRIBUTE procedure
 - signature 3, 3-53
- UPDATE_MEMBER_ATTRIBUTE procedure
 - signature 4, 3-55
- UPDATE_MEMBER_ATTRIBUTE procedure
 - signature 5, 3-57
- UPDATE_MEMBER_ATTRIBUTE procedure
 - signature 6, 3-59
- UPDATE_MEMBERS procedure, 3-47
- APEX_CSS, 4-1

- ADD_FILE procedure, 4-3
- APEX_CUSTOM_AUTH, 5-1
- APPLICATION_PAGE_ITEM_EXISTS function, 5-2
- CURRENT_PAGE_IS_PUBLIC function, 5-3
- DEFINE_USER_SESSION procedure, 5-4
- GET_COOKIE_PROPS, 5-5
- GET_LDAP_PROPS, 5-6
- GET_NEXT_SESSION_ID function, 5-8
- GET_SECURITY_GROUP_ID function, 5-9
- GET_SESSION_ID function, 5-10
- GET_SESSION_ID_FROM_COOKIE, 5-11
- GET_USER function, 5-12
- GET_USERNAME, 5-13
- IS_SESSION_VALID, 5-14
- LOGIN
 - Login API, 5-15
- LOGOUT, 5-16
- POST_LOGIN, 5-17
- SESSION_ID_EXISTS function, 5-18
- SET_SESSION_ID procedure, 5-19
- SET_SESSION_ID_TO_NEXT_VALUE procedure, 5-20
- SET_USER procedure, 5-21
- APEX_DEBUG_MESSAGE, 6-1
 - DISABLE_DEBUG_MESSAGES procedure, 6-2
 - ENABLE_DEBUG_MESSAGES procedure, 6-3
 - LOG_LONG_MESSAGE procedure, 6-5
 - LOG_MESSAGE procedure, 6-4
 - LOG_PAGE_SESSION_STATE procedure, 6-6
 - REMOVE_DEBUG_BY_AGE procedure, 6-7
 - REMOVE_DEBUG_BY_APP procedure, 6-8
 - REMOVE_DEBUG_BY_VIEW procedure, 6-9
 - REMOVE_SESSION_MESSAGES procedure, 6-10
- APEX_ERROR
 - ADD_ERROR Procedure Signature 1, 7-9
 - ADD_ERROR Procedure Signature 3, 7-11
 - ADD_ERROR Procedure Signature 4, 7-13
 - ADD_ERROR Procedure Signature 5, 7-15
- AUTO_SET_ASSOCIATED_ITEM Procedure, 7-17
- data types, 7-3
- example
 - error handling function, 7-7
- EXTRACT_CONSTRAINT_NAME Function, 7-18
- GET_ARIA_ERROR_ATTRIBUTES Function, 7-19
- GET_FIRST_ORA_ERROR_TEXT Procedure, 7-20
- INT_ERROR_RESULT Function, 7-21
- package overview, 7-2
- APEX_INSTANCE_ADMIN, 0-xxiii, 8-1
 - ADD_SCHEMA procedure, 8-2
 - ADD_WORKSPACE procedure, 8-3
 - GET_PARAMETER function, 8-4
 - GET_SCHEMAS function, 8-5
 - parameter values, 8-13
 - REMOVE_APPLICATION procedure, 8-6
 - REMOVE_SAVED_REPORT procedure, 8-8
 - REMOVE_SAVED_REPORTS procedure, 8-7
 - REMOVE_SCHEMA procedure, 8-9
 - REMOVE_WORKSPACE procedure, 8-10
 - SET_PARAMETER procedure, 8-11
 - TRUNCATE_LOG procedure, 8-12
- APEX_ITEM, 9-1
 - CHECKBOX2 function, 9-2
 - DATE_POPUP function, 9-4, 9-6
 - DISPLAY_AND_SAVE, 9-8
 - HIDDEN function, 9-9
 - MD5_CHECKSUM function, 9-11
 - MD5_HIDDEN function, 9-12
 - POPUP_FROM_LOV function, 9-13
 - POPUP_FROM_QUERY function, 9-15
 - POPUPKEY_FROM_LOV function, 9-17
 - POPUPKEY_FROM_QUERY function, 9-19
 - RADIOGROUP function, 9-21
 - SELECT_LIST function, 9-22
 - SELECT_LIST_FROM_LOV function, 9-24
 - SELECT_LIST_FROM_LOV_XL function, 9-25
 - SELECT_LIST_FROM_QUERY function, 9-27
 - SELECT_LIST_FROM_QUERY_XL function, 9-29
 - TEXT function, 9-31
 - TEXT_FROM_LOV function, 9-33
 - TEXT_FROM_LOV_QUERY function, 9-34
 - TEXTAREA function, 9-32
- APEX_JAVASCRIPT, 10-1
 - ADD_ATTRIBUTE function signature 1, 10-2
 - ADD_ATTRIBUTE function signature 2, 10-4
 - ADD_ATTRIBUTE function signature 3, 10-5
 - ADD_ATTRIBUTE function signature 4, 10-6
 - ADD_INLINE_CODE procedure, 10-7
 - ADD_LIBRARY procedure, 10-8
 - ADD_ONLOAD_CODE procedure, 10-9
 - ADD_VALUE function signature 1, 10-10
 - ADD_VALUE function signature 2, 10-11
 - ADD_VALUE function signature 3, 10-12
 - ADD_VALUE function signature 4, 10-13
 - ESCAPE function, 10-14
- APEX_LANG, 11-1
 - LANG function, 11-2
 - MESSAGE function, 11-3
- APEX_LDAP, 12-1
 - AUTHENTICATE, 12-2
 - GET_ALL_USER_ATTRIBUTES, 12-3
 - GET_USER_ATTRIBUTES, 12-5
 - IS_MEMBER, 12-7
 - MEMBER_OF, 12-9
 - MEMBER_OF2 Function, 12-10
- APEX_MAIL, 13-1
 - ADD_ATTACHMENT procedure, 13-3
 - PUSH_QUEUE procedure, 13-4
 - SEND procedure, 13-5
- APEX_MAIL_QUEUE
 - sending email in queue, 13-4
- APEX_PLSQL_JOB, 14-1
- APEX_PLSQL_JOBS
 - JOBS_ARE_ENABLED Function, 14-3
 - PURGE_PROCESS Procedure, 14-4
 - SUBMIT_PROCESS Function, 14-5

TIME_ELAPSED Function, 14-6
 UPDATE_JOB_STATUS Procedure, 14-7
 APEX_PLUGIN, 0-xxv, 15-1
 data types, 15-2
 GET AJAX_IDENTIFIER function, 15-8
 GET_INPUT_NAME_FOR_PAGE_ITEM function, 15-9
 APEX_PLUGIN_UTIL, 0-xxv, 16-1
 DEBUG_DYNAMIC_ACTION procedure, 16-2
 DEBUG_PAGE_ITEM procedure signature 1, 16-3
 DEBUG_PAGE_ITEM procedure signature 2, 16-4
 DEBUG_PROCESS procedure, 16-5
 DEBUG_REGION procedure signature 1, 16-6
 DEBUG_REGION procedure signature 2, 16-7
 ESCAPE function, 16-8
 EXECUTE_PLSQL_CODE procedure, 16-9
 GET_DATA function, 16-10
 GET_DATA2 function, 16-12
 GET_DISPLAY_DATA function signature 1, 16-14
 GET_DISPLAY_DATA function signature 2, 16-16
 GET_PLSQL_EXPRESSION_RESULT function, 16-18
 GET_PLSQL_FUNCTION_RESULT function, 16-19
 GET_POSITION_IN_LIST function, 16-20
 GET_SEARCH_STRING function, 16-21
 IS_EQUAL function, 16-22
 PAGE_ITEM_NAMES_TO_JQUERY function, 16-23
 PRINT_DISPLAY_ONLY procedure, 16-24
 PRINT_ESCAPED_VALUE procedure, 16-25
 PRINT_HIDDEN_IF_READONLY procedure, 16-26
 PRINT_JSON_HTTP_HEADER procedure, 16-27
 PRINT_LOV_AS_JSON procedure, 16-28
 PRINT_OPTION procedure, 16-29
 REPLACE_SUBSTITUTIONS function, 16-30
 APEX_UI_DEFAULT_UPDATE, 17-1
 ADD_AD_COLUMN procedure, 17-3
 ADD_AD_SYNONYM procedure, 17-5
 DEL_AD_COLUMN procedure, 17-6
 DEL_AD_SYNONYM procedure, 17-7
 DEL_COLUMN procedure, 17-8
 DEL_GROUP procedure, 17-9
 DEL_TABLE procedure, 17-10
 SYNCH_TABLE procedure, 17-11
 UPD_AD_COLUMN procedure, 17-12
 UPD_AD_SYNONYM procedure, 17-14
 UPD_COLUMN procedure, 17-15
 UPD_DISPLAY_IN_FORM procedure, 17-17
 UPD_DISPLAY_IN_REPORT procedure, 17-18
 UPD_FORM_REGION_TITLE procedure, 17-19
 UPD_GROUP procedure, 17-20
 UPD_ITEM_DISPLAY_HEIGHT procedure, 17-21
 UPD_ITEM_DISPLAY_WIDTH procedure, 17-22
 UPD_ITEM_FORMAT_MASK procedure, 17-23
 UPD_ITEM_HELP procedure, 17-24
 UPD_ITEM_LABEL procedure, 17-25
 UPD_REPORT_ALIGNMENT procedure, 17-26
 UPD_REPORT_FORMAT_MASK procedure, 17-27
 UPD_REPORT_REGION_TITLE procedure, 17-28
 UPD_TABLE procedure, 17-29
 APEX_UTIL, 0-xxiv, 18-1
 CACHE_GET_DATE_OF_PAGE_CACHE function, 18-5, 18-6
 CACHE_PURGE_BY_APPLICATION procedure, 18-7
 CACHE_PURGE_BY_PAGE procedure, 18-8
 CACHE_PURGE_STALE procedure, 18-9
 CHANGE_CURRENT_USER_PW procedure, 18-10
 CHANGE_PASSWORD_ON_FIRST_USE function, 18-11
 CLEAR_APP_CACHE procedure, 18-12
 CLEAR_PAGE_CACHE procedure, 18-13
 CLEAR_USER_CACHE procedure, 18-14
 COUNT_CLICK procedure, 18-15
 CREATE_USER procedure, 18-16
 CREATE_USER_GROUP procedure, 18-19
 CURRENT_USER_IN_GROUP function, 18-20
 DELETE_USER_GROUP procedure signature 1, 18-22
 DELETE_USER_GROUP procedure signature 2, 18-23
 DOWNLOAD_PRINT_DOCUMENT procedure signature 1, 18-24
 DOWNLOAD_PRINT_DOCUMENT procedure signature 2, 18-25
 DOWNLOAD_PRINT_DOCUMENT procedure signature 3, 18-27
 DOWNLOAD_PRINT_DOCUMENT procedure signature 4, 18-29
 EDIT_USER procedure, 18-30
 END_USER_ACCOUNT_DAYS_LEFT function, 18-34
 EXPIRE_END_USER_ACCOUNT procedure, 18-35
 EXPIRE_WORKSPACE_ACCOUNT procedure, 18-36
 EXPORT_USERS procedure, 18-37
 FETCH_APP_ITEM function, 18-38
 FETCH_USER procedure signature 1, 18-39
 FETCH_USER procedure signature 2, 18-42
 FETCH_USER procedure signature 3, 18-44
 FIND_SECURITY_GROUP_ID function, 18-47
 FIND_WORKSPACE function, 18-48
 GET_ACCOUNT_LOCKED_STATUS function, 18-49
 GET_ATTRIBUTE function, 18-50
 GET_AUTHENTICATION_RESULT function, 18-51
 GET_BLOB_FILE_SRC function, 18-52
 GET_CURRENT_USER_ID function, 18-54

GET_DEFAULT_SCHEMA function, 18-55
 GET_EDITION function, 18-56
 GET_EMAIL function, 18-57
 GET_FEEDBACK_FOLLOW_UP function, 18-58
 GET_FILE procedure, 18-59
 GET_FILE_ID function, 18-61
 GET_FIRST_NAME function, 18-62
 GET_GROUP_ID function, 18-64
 GET_GROUP_NAME function, 18-65
 GET_GROUPS_USER_BELONGS_TO
 function, 18-63
 GET_HIGH_CONTRAST_MODE_TOGGLE
 function, 18-66
 GET_LAST_NAME function, 18-67
 GET_NUMERIC_SESSION_STATE
 function, 18-68
 GET_PREFERENCE function, 18-69
 GET_PRINT_DOCUMENT function signature
 1, 18-70
 GET_PRINT_DOCUMENT function signature
 2, 18-71
 GET_PRINT_DOCUMENT function signature
 3, 18-72
 GET_PRINT_DOCUMENT function signature
 4, 18-73
 GET_SCREEN_READER_MODE_TOGGLE
 function, 18-75
 GET_SESSION_LANG function, 18-76
 GET_SESSION_STATE function, 18-77
 GET_SESSION_TERRITORY function, 18-78
 GET_SESSION_TIME_ZONE function, 18-79
 GET_USER_ID function, 18-80
 GET_USER_ROLES function, 18-81
 GET_USERNAME function, 18-82
 HOST_URL function, 18-83
 IR_CLEAR procedure, 18-86
 IR_DELETE_REPORT procedure, 18-87
 IR_DELETE_SUBSCRIPTION procedure, 18-88
 IR_FILTER procedure, 18-89
 IR_RESET procedure, 18-91
 IS_HIGH_CONTRAST_SESSION function, 18-92
 IS_HIGH_CONTRAST_SESSION_YN
 function, 18-93
 IS_LOGIN_PASSWORD_VALID function, 18-94
 IS_SCREEN_READER_SESSION function, 18-95
 IS_SCREEN_READER_SESSION_YN
 function, 18-96
 IS_USERNAME_UNIQUE function, 18-97
 KEYVAL_NUM function, 18-98
 KEYVAL_VC2 function, 18-99
 LOCK_ACCOUNT procedure, 18-100, 18-156
 PASSWORD_FIRST_USE_OCCURRED
 function, 18-101
 PREPARE_URL function, 18-102
 PUBLIC_CHECK_AUTHORIZATION
 function, 18-104
 PURGE_REGIONS_BY_APP procedure, 18-105
 PURGE_REGIONS_BY_NAME
 procedure, 18-106
 PURGE_REGIONS_BY_PAGE procedure, 18-107

REDIRECT_URL procedure, 18-108
 REMOVE_PREFERENCE procedure, 18-109
 REMOVE_SORT_PREFERENCES
 procedure, 18-110
 REMOVE_USER procedure, 18-111
 RESET_AUTHORIZATIONS procedure, 18-112
 RESET_PW procedure, 18-113
 SAVEKEY_NUM function, 18-114
 SAVEKEY_VC2 function, 18-115
 SET_ATTRIBUTE procedure, 18-116
 SET_AUTHENTICATION_RESULT
 procedure, 18-117
 SET_BUILD_OPTION_STATUS
 procedure, 18-118
 SET_COMPATIBILITY_MODE
 procedure, 18-119
 SET_CUSTOM_AUTH_STATUS
 procedure, 18-121
 SET_EDITION procedure, 18-122
 SET_EMAIL procedure, 18-123
 SET_FIRST_NAME procedure, 18-124
 SET_LAST_NAME procedure, 18-125
 SET_PREFERENCE procedure, 18-126
 SET_SECURITY_GROUP_ID procedure, 18-127,
 18-131
 SET_SECURITY_HIGH_CONTRAST_OFF
 procedure, 18-129
 SET_SECURITY_HIGH_CONTRAST_ON
 procedure, 18-130
 SET_SESSION_SCREEN_READER_OFF
 procedure, 18-136, 18-137
 SET_SESSION_STATE procedure, 18-132, 18-134,
 18-138
 SET_SESSION_TERRITORY procedure, 18-139
 SET_SESSION_TIME_ZONE procedure, 18-140
 SET_USERNAME procedure, 18-141
 SHOW_HIGH_CONTRAST_MODE_TOGGLE
 procedure, 18-142
 SHOW_SCREEN_READER_MODE_TOGGLE
 function, 18-143
 STRING_TO_TABLE function, 18-144
 STRONG_PASSWORD_CHECK
 procedure, 18-145
 STRONG_PASSWORD_VALIDATION
 function, 18-149
 SUBMIT_FEEDBACK procedure, 18-150
 SUBMIT_FEEDBACK_FOLLOWUP
 procedure, 18-152
 TABLE_TO_STRING function, 18-153
 UNEXPIRE_END_USER_ACCOUNT
 procedure, 18-154
 UNEXPIRE_WORKSPACE_ACCOUNT
 procedure, 18-155
 URL_ENCODE function, 18-157
 WORKSPACE_ACCOUNT_DAYS_LEFT
 function, 18-159
 APEX_WEB_SERVICE, 0-xxv, 19-1
 About the APEX_WEB_SERVICE API, 19-2
 BLOB2CLOBBASE64 function, 19-8
 CLOBBASE64BLOB function, 19-9

- Invoking a RESTful Style Web Service, 19-5
- Invoking a SOAP Style Web Service, 19-3
- MAKE_REQUEST function, 19-12
- MAKE_REQUEST procedure, 19-10
- MAKE_REST_REQUEST function, 19-14
- PARSE_RESPONSE function, 19-16
- PARSE_RESPONSE_CLOB function, 19-17
- PARSE_XML function, 19-18
- PARSE_XML_CLOB function, 19-20
- Retrieving Cookies and HTTP HeadersI, 19-6
- Setting Cookies and HTTP Headers, 19-7
- APIs
 - APEX_APPLICATION, 0-xxiii, 1-1
 - APEX_APPLICATION_INSTALL, 2-1
 - APEX_COLLECTION, 3-3
 - APEX_CSS, 4-1
 - APEX_CUSTOM_AUTH, 5-1
 - APEX_DEBUG_MESSAGE, 6-1
 - APEX_INSTANCE_ADMIN, 0-xxiii, 8-1
 - APEX_ITEM, 9-1
 - APEX_JAVASCRIPT, 10-1
 - APEX_LANG, 11-1
 - APEX_LDAP, 12-1
 - APEX_MAIL, 13-1
 - APEX_PLSQL_JOB, 14-1
 - APEX_PLUGIN, 0-xxv, 15-1
 - APEX_PLUGIN_UTIL, 0-xxv, 16-1
 - APEX_UI_DEFAULT_UPDATE, 17-1
 - APEX_UTIL, 0-xxiv, 18-1
 - APEX_WEB_SERVICE, 0-xxv, 19-1
 - JavaScript API, 0-xxv, 20-1
- application
 - sending messages in APEX_MAIL_QUEUE, 13-4
 - sending outbound email, 13-5
 - sending outbound email as attachment, 13-3
- attribute values
 - setting, 18-116
- authenticated user
 - create user group, 18-19
 - delete user group, 18-22, 18-23
- authentication
 - scheme session cookies, 5-5

C

- check box
 - creating, 9-2
- clicks
 - counting, 18-15
- collections
 - accessing, 3-5
 - APEX_COLLECTION API, 3-3
 - clearing session state, 3-10
 - creating, 3-4
 - deleting members, 3-9
 - determining status, 3-11
 - managing, 3-10
 - merging, 3-7
 - truncating, 3-7
 - updating members, 3-8

E

- email
 - sending as an attachment, 13-3
 - sending messages in APEX_MAIL_QUEUE, 13-4
 - sending outbound, 13-5
- export file
 - of workspace, 18-37

F

- F01, 1-3
- file repository
 - downloading files, 18-59
 - obtaining primary key, 18-61
- Function, 19-20

J

- JavaScript API, 0-xxv, 20-1
 - \$d_ClearAndHide(pNd), 20-41
 - \$d_Find(pThis,pString,pTags,pClass), 20-77
 - \$dom_
 - AddInput(pThis,pType,pId,pName,pValue), 20-72
 - \$dom_AddTag(pThis, pTag, pText), 20-69
 - \$dom_MakeParent(p_Node,p_Parent), 20-73
 - \$f_CheckAll(pThis, pCheck, pArray), 20-55
 - \$f_CheckFirstColumn(pNd), 20-56
 - \$f_DisableOnValue(pThis, pValue, pThat), 20-51
 - \$f_First_field(pNd), 20-80
 - \$f_get_emptyys(pNd, pClassFail, pClass), 20-38
 - \$f_Hide_On_Value_Item(pThis, pThat, pValue), 20-47
 - \$f_Hide_On_Value_Item_Row(pThis, pThat, pValue), 20-49
 - \$f_ReturnChecked(pNd), 20-40
 - \$f_SelectedOptions(pNd), 20-42
 - \$f_SelectValue(pNd), 20-43
 - \$f_SetValueSequence(pArray,pMultiple), 20-68
 - \$f_Show_On_Value_Item(pThis, pThat, pValue), 20-48
 - \$f_Show_On_Value_Item_Row(pThis, pThat, pValue), 20-50
 - \$f_Swap(pThis,pThat), 20-66
 - \$f_ValuesToArray(pThis, pClass, pTag), 20-53
 - \$nvl(pTest, pDefault), 20-12
 - \$s(pNd, pValue), 20-9
 - \$tr_AddTD(pThis,pText), 20-70
 - \$tr_AddTH(pThis,pText), 20-71
 - \$u_ArrayToString(pArray, pDelim), 20-44
 - \$u_Carray(pNd), 20-10
 - \$u_Narray(pNd), 20-11
 - \$u_SubString(pText,pMatch), 20-61
 - \$v(pNd), 20-7
 - \$v_Array(pNd), 20-39
 - \$v_CheckValueAgainst(pThis, pValue), 20-46
 - \$v_IsEmpty(pThis), 20-63
 - \$v_PopupReturn(pValue, pThat), 20-57
 - \$v_Upper(pNd), 20-76
 - \$v2(pNd), 20-8

- \$x(pNd), 20-6
- \$x_ByClass(pClass, pNd, pTag), 20-33
- \$x_CheckImageSrc(pId, pSearch), 20-45
- \$x_CheckImageSrc(pNd, pSearch), 20-60
- \$x_Class(pNd, pClass), 20-31
- \$x_ClassByClass(pNd, pClass, pTag, pClass2), 20-52
- \$x_disableItem(pNd, a), 20-37
- \$x_FormItems(pNd, pType), 20-54
- \$x_Hide(pNd), 20-18
- \$x_HideAllExcept(pNd, pNdArray), 20-28
- \$x_HideItemRow(pNd), 20-25
- \$x_HideSiblings(pNd), 20-29
- \$x_ItemRow(pNd, pFunc), 20-24
- \$x_Remove(pNd), 20-21
- \$x_RowHighlight(pThis, pColor), 20-74
- \$x_RowHighlightOff(pThis), 20-75
- \$x_SetSiblingsClass(pNd, pClass, pNdClass), 20-32
- \$x_Show(pNd), 20-19
- \$x_ShowAllByClass(pNd, pClass, pTag), 20-34
- \$x_ShowChildren(pThis), 20-35, 20-36
- \$x_ShowItemRow(pNd), 20-26
- \$x_ShowSiblings(pNd), 20-30
- \$x_Style(pNd, pStyle, pString), 20-17
- \$x_SwitchImageSrc(pNd, pSearch, pReplace), 20-59
- \$x_Toggle(pNd), 20-20
- \$x_ToggleItemRow(pNd), 20-27
- \$x_ToggleWithImage(pThis, pNd), 20-58
- \$x_UpTill(pNd, pToTag), 20-23
- \$x_Value(pNd, pValue), 20-22
- addLoadEvent(pFunction), 20-65
- apex.event.trigger(pSelector, pEvent, dData), 20-4
- apex.submit(pRequest | pOptions), 20-13, 20-14
- apex.widget.initPageItem(pName, pOptions), 20-5
- confirmDelete(pMessage, pRequest), 20-15, 20-16
- GetCookie (pName), 20-81
- html_RemoveAllChildren(pNd), 20-62
- html_SetSelectValue(pId, pValue), 20-64
- returnInput(p_R, p_D), 20-78
- SetCookie (pName, pValue), 20-82
- setReturn(p_R, p_D), 20-79
- submitEnter(pNd, e), 20-67

L

- LDAP attributes
 - obtaining, 5-6

P

- password
 - changing, 18-10
 - resetting and emailing, 18-113

R

- radio group
 - generate, 9-21

Index-6

S

- session
 - cookies, 5-5
- session state
 - fetching for current application, 18-38
 - removing for current page, 18-13
 - removing for current session, 18-12
 - setting, 18-132, 18-134, 18-138
- special characters
 - encoding, 18-157

U

- user
 - get e-mail address, 18-57
 - remove preference, 18-109
- user account
 - altering, 18-30
 - creating new, 18-16
 - fetching, 18-39, 18-42, 18-44
 - removing, 18-111
 - update email address, 18-123
 - updating FIRST_NAME, 18-124
 - updating LAST_NAME value, 18-125
 - updating USER_NAME value, 18-141

V

- variables
 - global, 0-xxiii, 1-1

W

- workspace
 - export file, 18-37
 - numeric security group ID, 18-47