

APEX Debug Options

Karen Cannell



kcannell@integratc.com



About Me ...(Speaker Qualifications)

Karen Cannell ~ Principal

- ⑩ Analyzed, designed developed, converted, upgraded, enhanced and otherwise worked on database applications for 22+ years, focused on Oracle since 1994. Currently migrating business processes to web-based systems, leveraging the Oracle10g and 10g suite of tools. Lately APEX, Discoverer.
- VOLUNTEER for IOUG, ODTUG, Oracle Magazine.
ODTUG Technical Journal Editor
Volunteer to author SELECT and ODTUG Journal Articles!!
- ⑩ Using APEX since the HTMLDB beginning

About You ... (Audience Background)

- New to APEX?
- APEX Experience?
- Previous Tools?



Session Objectives

- Review APEX Debug Options
 - APEX-supplied
 - General PL/SQL
- Demonstrate Remote PL/SQL Debug
- Overview Web Development Tools
- Reinforce APEX best practices

APEX ... Debug? .. Where to Start?

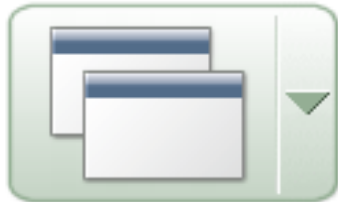
- APEX is a blend of technologies ...
- How to Debug? ...
 - PL/SQL Debugger?
 - DMB\$_OUTPUT? ...
 - View Source?
 - Java-what Console?

We don't intuitively know everything!

APEX 30-second Intro

- Part of Database – Fully Supported
- Browser-based – no client install
- HTTP Server
- Rapid Web Development Tool
- Declarative Programming
- Wizards Wizards Wizards
- All Applications are HTML - no applet downloads

ORACLE® Application Express

[Logout](#) [Help](#)[Home](#)[Application Builder](#)[SQL Workshop](#)[Utilities](#)[Home](#)[Application Builder](#)[SQL Workshop](#)[Utilities](#)

Administration

- ◇ [Administration](#)
 - ◇ [Manage Services](#)
 - ◇ [Manage Application Express Users](#)
 - ◇ [Monitor Activity](#)
- ◇ [Change Password](#)
- ◇ [About Application Express](#)

Migrations

- ◇ [Application Migrations](#)

- Application Builder
- SQL Workshop
- Utilities

APEX Demonstration

Quick APEX Demo ?

APEX Debugging

Conundrum

co·nun·drum [kə núndrəm] (*plural* co·nun·drums)

noun Definition: 1. **something confusing:**
something that is puzzling or confusing



APEX Debugging

Where to Start?

- What Happens Where?
- What Language?
- What Level?
- Which Process?
- Which Template? Page? Region? Item?
- Function? Web Service?

*We need a new toolbox for
debugging!*

APEX Debugging

Where to Start?

- Where do I put debug output?
- How do I step through it?
- How do I set a break?
- How do I tune?
- Which Tool?
- What Debug Mode?

*We need a new thought process
for debugging!*



What we'll Cover:

APEX-supplied

- Session State
- Debug Mode
- Activity & Events
- Simple Tuning
 - Bind Variables
 - #TIMING#
- PL/SQL Debug

- SQL Developer
- Web Development
 - Web Developer
 - Firebug
 - JavaScript Debug
- Best Practices
- References

APEX-Supplier Debug Options

- Session State
- Debug Mode
- Activity
- Events
- Page View Select List
- DBMS_APP_INFO
- Application Reports
- DB Object Dependencies
- #TIMING#
- ?p_trace

ORACLE Application Express 3.1
Interactive Reports, Enhanced Printing, Declarative BLOB Support, and more - [Download Now !](#)

Developer Toolbar


Home	Application 1103	Edit Page 56	Create	Session	Activity	Debug	Show Edit Links
------	------------------	--------------	--------	---------	----------	-------	-----------------

**View
Session
State**

**Activity
Reports**

**Toggle
Debug
Mode**

Session State

- Session
 - Application Items
 - Page Items
- 
- Validate values of App Items, Page Items, Session State
 - Check **I**nserted, **U**pside or **R**eset

Session State

http://tunahuntress.tunahunter.com:7777 - Session State - Mozilla Firefox

Page 24 Find Display 15 View Page Items Go

Application: 1117 Participant Match - WORKING

Session 2613111170058078

User IOUG

Workspace 3771531489660401

Browser Language en-us

Page Items



Application	Page	Item Name	Display	Item Value	Status
1117	24	P24_SHOW_UNCONFIRMED_ONLY_FLAG	Hidden	OFF	I
1117	24	P24_SHOW_CONF_AND_UNCONF	Button		
1117	24	P24_UNCONF_SEARCH	Text Field (always submits page when Enter pressed)		
1117	24	P24_UNCONF_GO	Button		
1117	24	P24_UNCONF_RESET	Button		
1117	24	P24_UNCONF_CONFIRM_SELECTED	Button		
1117	24	P24_UNCONF_ROWS	Select List with Submit		
1117	24	P24_UNCONFIRM_BY_TYPE	Button		
1117	24	P24_UNCONFIRM_SELECTED	Button		
1117	24	P24_CONFIRM_SELECTED	Button		
1117	24	P24_REPORT_SEARCH	Text Field (always submits page when Enter pressed)	test	U
1117	24	P24_ROWS	Select List with Submit	15	I
1117	24	P24_GO	Button		
1117	24	P24_MATCH_TYPES	Radiogroup (with Submit)	8	U
1117	24	P24_CONFIRM_CONTROL	Hidden		I

Debug Mode



 Debug from Developer Toolbar
 Toggle

Or

 DEBUG arg in f?p argument 5th position = YES
YES Must be UPPERcase
 NO to turn Off

f?p Syntax

**Application : Page : Session : Request : Debug:
Clear Cache : Item Names: Item Values : Printer Friendly**

**All Programmers Smartly Request Double
Cash In Virtual Programs**



Debug Mode - Why

- Page Generation Process, Step by Step
- Which Processes Fire
- In What Order
- With What Conditions
- With What Values
- Time is cumulative CPU



Debug Mode



April 13-17, 2008
Denver, Colorado, USA
Colorado Convention Center

ORA-01722: invalid number

Error in show_hide_collection_output(): ORA-01722: invalid number

Return to application.

Debug Mode On

```

0.02:
0.02: S H O W: application="1107" page="101" workspace="" request="" session="3245814229267404"
0.02: Language derived from: FLOW_PRIMARY_LANGUAGE, current browser language: en-us
0.03: alter session set nls_language="AMERICAN"
0.03: alter session set nls_territory="AMERICA"
0.03: NLS: CSV charset=WE8MSWIN1252
0.03: ...NLS: Set Decimal separator=","
0.03: ...NLS: Set NLS Group separator=","
0.03: ...NLS: Set date format="DD-MON-RR"
0.03: ...Setting session time_zone to -05:00
0.03: NLS: Language=en-us
0.03: Application 1107, Authentication: CUSTOM2, Page Template: 15058880801968227
0.03: ...Session ID 3245814229267404 can be used
0.03: ...Application session: 3245814229267404, user=
0.03: ...Determine if user "ACCSP3" workspace "3771531489660401" can develop application "1107" in workspace "3771531489660401"
0.03: Session: Fetch session header information
0.03: ...Metadata: Fetch page attributes for application 1107, page 101
0.03: Fetch session state from database
0.03: Branch point: BEFORE_HEADER
0.03: Fetch application meta data
0.05: Computation point: BEFORE_HEADER
0.05: Processing point: BEFORE_HEADER
0.05: ...Process "Get Username Cookie": PLSQL (BEFORE_HEADER) declare v varchar2(255) := null; c owa_cookie.cookie; begin c := owa_cookie.get('LOGIN_US
:P101_USERNAME := c.vals(1); exception when others then null; end;
0.05: Show page template header
0.06: Computation point: AFTER_HEADER
0.06: Processing point: AFTER_HEADER
0.06: ...Process "SHOW_HIDE_OUTPUT": PLSQL (AFTER_HEADER) show_hide_memory.show_hide_collection_output();
0.09: Processing point: AFTER_ERROR_HEADER

```


COLLABORATE08
 Technology and Applications Forum for the Oracle Community

April 13-17, 2008
 Denver, Colorado, USA
 Colorado Convention Center

ORA-01722: invalid number

Error in show_hide_collection_output(): ORA-01722: invalid number

Return to application.

Debug Mode On

```

0.01: Computation point: BEFORE_COMPUTATION
0.01: Computation point: AFTER_SUBMIT
0.01: Tabs: Perform Branching for Tab Requests
0.01: Branch point: BEFORE_VALIDATION
0.01: Perform validations:
0.01: Branch point: BEFORE_PROCESSING
0.01: Processing point: AFTER_SUBMIT
0.03: ...Do not run process "EXECUTE_PM", process point=AFTER_SUBMIT, condition type=ALWAYS, when button pressed=EXECUTE_PM
0.03: ...Do not run process "Create_MV_PINFO_ORIG_PPT", process point=AFTER_SUBMIT, condition type=NEVER, when button pressed=
0.03: ...Do not run process "BATCH_PRELOAD_REORG_TABLES", process point=AFTER_SUBMIT, condition type=, when button pressed=I
0.03: ...Do not run process "BATCH_PRELOAD_NEW_TABLES", process point=AFTER_SUBMIT, condition type=, when button pressed=PRI
0.03: ...Process "CLEAN_PPT_MATCH_TABLES": PLSQL (AFTER_SUBMIT) DECLARE v_status PLS_INTEGER := 0; BEGIN REORG.CLEA
<> 0 THEN RAISE_APPLICATION_ERROR( -20001,'Error Clearing Match Tables'||SQLERRM); END IF; END;
0.32: ...Do not run process "CLEAR_REORG_TABLES", process point=AFTER_SUBMIT, condition type=, when button pressed=CLEAR_REC
0.32: ...Do not run process "BATCH_PROCESS_CONFIRMED", process point=AFTER_SUBMIT, condition type=, when button pressed=BATC
0.32: ...Do not run process "BATCH_PROCESS_TO_NEW_STRUCTURES", process point=AFTER_SUBMIT, condition type=, when button p
0.32: ...Do not run process "FLUSH_UNMATCHED_PPT", process point=AFTER_SUBMIT, condition type=, when button pressed=FLUSH_UN
0.32: ...Do not run process "FLUSH_REMAINING_PPT", process point=AFTER_SUBMIT, condition type=, when button pressed=FLUSH_UNI
0.32: ...Process "SET AJAX_LOAD_MSG": ON_DEMAND (AFTER_SUBMIT) 9310448235151815
0.32: ...Session State: Saved Item "A AJAX_LOAD_MSG" New Value="...Clearing Matches..."
0.32: Branch point: AFTER_PROCESSING
0.32: ...Evaluating Branch: AFTER_PROCESSING type: "REDIRECT_URL" button: 12360766432457077 branch: (Unconditional)
0.32: ...Evaluating Branch: AFTER_PROCESSING type: "REDIRECT_URL" button: 12361558400457080 branch: (Unconditional)
0.32: ...Evaluating Branch: AFTER_PROCESSING type: "REDIRECT_URL" button: 12360965129457079 branch: (Unconditional)
0.32: ...Evaluating Branch: AFTER_PROCESSING type: "REDIRECT_URL" button: 12361140368457079 branch: (Unconditional)
0.32: ...Evaluating Branch: AFTER_PROCESSING type: "REDIRECT_URL" button: 12361368434457080 branch: (Unconditional)
0.32: ...Evaluating Branch: AFTER_PROCESSING type: "REDIRECT_URL" button: 12361756104457080 branch: (Unconditional)
0.32: ...Evaluating Branch: AFTER_PROCESSING type: "REDIRECT_URL" button: 12069255230421234 branch: (Unconditional)
0.32: ...Evaluating Branch: AFTER_PROCESSING type: "REDIRECT_URL" button: 12362753122457081 branch: (Unconditional)
0.32: ...Evaluating Branch: AFTER_PROCESSING type: "REDIRECT_URL" button: 12373336686577997 branch: (Unconditional)
0.32: ...Evaluating Branch: AFTER_PROCESSING type: "REDIRECT_URL" button: 12376447130685154 branch: (Unconditional)
0.32: ...Evaluating Branch: AFTER_PROCESSING type: "REDIRECT_URL" button: 12426858599524165 branch: (Unconditional)
0.32: ...Evaluating Branch: AFTER_PROCESSING type: "REDIRECT_URL" button: (No Button Pressed) branch: (Unconditional)
0.34: ...Unconditional branch taken
0.00:
0.00: S H O W: application="1107" page="41" workspace="" request="" session="2799892843302560"
0.00: Language default LANGUAGE, current browser language: en-us

```

wwv_flow.debug



- Set you own debug messages

```
wwv_flow.debug( 'Your message here');
```

```
wwv_flow.debug( '<font color="red">' ||  
                '<br>Your message here' ||  
                '<br></font>' );
```

Application Reports

ORACLE Application Express

[Logout](#) [Help](#)

Home

Application Builder

SQL Workshop

Utilities

Home > Application Builder > Application 1117 > **Application Reports**

Page 24    



Shared Components



Page Components



Activity



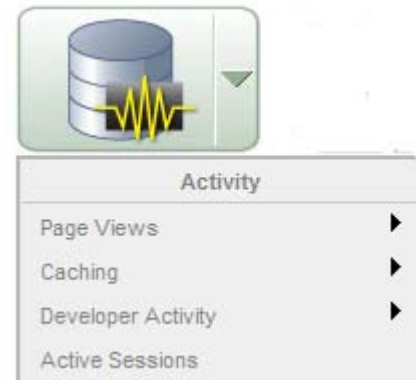
Cross Application

Tasks

- ◇ Page Groups
- ◇ Page Locks
- ◇ User Interface Defaults
- ◇ Export Repository
- ◇ Monitor Workspace Activity

Activity Reports

- Activity from Developer Toolbar
- Subset of Application Reports
- Page Views
- Caching
- Developer Activity
- Sessions




Activity Reports










ORACLE® Application Express [Logout](#) [Help](#)

Home Application Builder SQL Workshop Utilities


Home > Application Builder > Application 1117 > Application Reports > **Activity** Page 56







Page Views




-  [By View](#)
-  [By View for Page 56](#)
-  [By User](#)
-  [By User for Page 56](#)
-  [By Page](#)
-  [By Day](#)
-  [By User By Day](#)
-  [By Hour](#)
-  [By Session](#)


Developer Activity




-  [By Application Change](#)
-  [By Application Change for Page 56](#)
-  [By Developer](#)
-  [By Developer By Day](#)
-  [By Page Creation By Day](#)
-  [By Page Modification By Day](#)




Sessions



-  [Active Sessions](#)

Caching



-  [Cached Pages](#)
-  [Cached Regions](#)
-  [Cached Regions for Page 56](#)

Tasks

- ◊ [Monitor Workspace Activity](#)
- ◊ [View Developer Comments](#)
- ◊ [View Developer Comments for Page 56](#)

Activity Reports

- Most are Informational
 - Page Views, Caching, Session
- Developer Activity
 - Clues as to What Changed
 - Recent Changes - - > Hint to Recent Errors

Developer Activity by Application Change

ORACLE® Application Express

Home Application Builder SQL Workshop Utilities

Home > Application Builder > Application 1107 > Application Reports > Activity > **Developer Activity By Application Change**

Page 1

Page Developer Component Since 10 seconds Display 15 Go

Application	Page	Page Name	Date	Updated	Action	Developer	Component	Component Name	Identifier
1107	1	Home	03/09/2008 09:15:16 PM	64 minutes ago	Update	ACCSP3	Region Attributes	Participant Match Home Page - Blank!	9302540917003298
1107	41	INITIAL RUN - Participant Match Administration	03/08/2008 09:51:21 PM	24 hours ago	Update	ACCSP3	Page Process	CLEAN_PPT_MATCH_TABLES	12365541425457091
1107	Shared Component	-	03/08/2008 08:54:13 PM	25 hours ago	Update	ACCSP3	Application Process	SHOW_HIDE_OUTPUT	16804277274001427
1107	Shared Component	-	03/08/2008 08:44:03 PM	26 hours ago	Update	ACCSP3	Application Process	SHOW_HIDE_OUTPUT	16804277274001427
1107	Shared Component	-	03/08/2008 07:32:47 PM	27 hours ago	Update	ACCSP3	Application Process	SHOW_HIDE_OUTPUT	16804277274001427
1107	41	INITIAL RUN - Participant Match Administration	03/07/2008 11:40:35 PM	47 hours ago	Update	ACCSP3	Region Attributes	Step 4: Process Confirmed Matches	12460850134229421

Activity – Page Performance

Home > Application Builder > Application 1103 > Application Reports > Activity > **Page Performance** Page 56

Find Since Display

Application	Page	Page Name	Page Views	Average Elapsed	Weight	Percent of Total		Dynamic Views
1103	44	Prod PPT Match Admin	14	3.2264	45.1700	51.4289	<div></div>	8
1103	56	Production Duplicate Permits	4	10.2450	40.9800	46.6583	<div></div>	3
1103	1	Home	3	0.3400	1.0200	1.1613	<div></div>	3
1103	101	Login	2	0.3300	0.6600	0.7515	<div></div>	2
report total:			23			100.0000		16

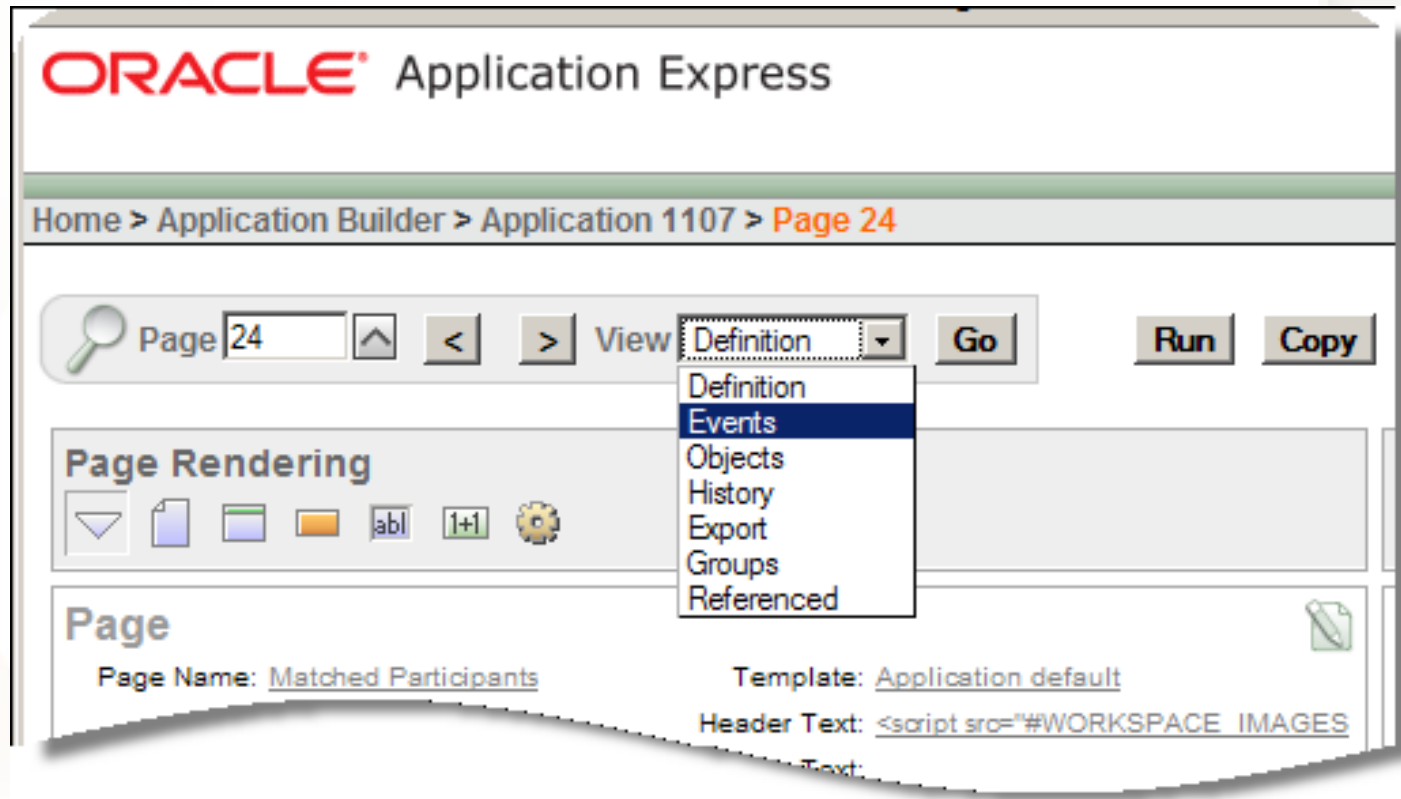
- Where is time spent
- Clue to performance issues

Cross Application

- Components Used Across Applications
- Developer Comments
- Build Options
- Security Profiles
- Authentication Schemes
- Application Comparison
- Difference Counts by Component



Page - View Select List



Page – View Select List - Events

ORACLE® Application Express

Logout Help

Home Application Builder SQL Workshop Utilities

Home > Application Builder > Application 1107 > Page 24 > Page Events

Page 24

Page 24 View Events Go Show All Show Used Name: Matched Participants Last Updated: RMOUG, 2 weeks ago

Page Rendering

Process: After Header [SHOW_HIDE_OUTPUT](#) (show_hide_memor..)

Region: Breadcrumb: Breadcrumb Region Position 01 (1,10)
Matched Participants

Region: HTML Text Page Template Body (3) (1,4)
Navigation Buttons

Region: HTML Text Page Template Body (3) (1,20)
Review and Confirm Matches
HTML: <p>Use options on this page to review data accordi...
(60) P24_MATCH_TYPE_DISPLAY [Hidden]

Region: HTML Text Escape SC Page Template Body (3) (1,30)
Select Match Type

HTMLesc:

(20)	SUBMIT	Location: Bottom
(40)	P24_MATCH_TYPES	[Radiogroup (with Submit)]
(50)	P24_QUERY_CONTROL	[Hidden]
(100)	P24_SHOW_UNCONFIRMED_ONLY_FLAG	[Hidden]

Region: HTML Text Page Template Body (3) (1,40)
Bulk Confirm Options

(5)	P24_CONFIRM_BY_TYPE	[Buttons]
(6)	P24_CONFIRM_BY_SCORE	[Buttons]
(20)	P24_UNCONFIRM_BY_TYPE	[Buttons]
(70)	P24_MATCH_SCORE_CUTOFF	[Select List with Submit]

Page Processing

Process: On Submit and Before Computation [ApexLib_SaveRequest](#) (APEXLIB_SAVED_..)

Process: On Submit and Before Computation [SET AJAXLOAD_MESSAGE](#) (DECLARE v_ajl..)

Computation: After Submit 10: P24_SHOW_UNCONFIRMED_ONLY_FLAG (ON..)

Computation: After Submit 20: P24_SHOW_UNCONFIRMED_ONLY_FLAG (OFF..)

No validations

Process: After Submit [Reset Pagination](#) (reset_paginatio..)

Process: After Submit [Reset report search](#) (P24_REPORT_SEAR..)

Process: After Submit [CONFIRM_MATCHES_BY_TYPE](#) (DECLARE v_i ..)

Process: After Submit [CONFIRM_MATCHES_BY_SCORE](#) (DECLARE v_i ..)

Process: After Submit [CONFIRM_SELECTED_MATCHES](#) (DECLARE vRo..)

Process: After Submit [UNCONFIRM_MATCHES_BY_TYPE](#) (DECLARE v_i..)



Page – View Select List - Referenced

Referenced Components

ORACLE® Application Express

Home > Application Builder > Application 1117 > Page 24 > Referenced Components

Page 24 View Referenced Go

Application	From Component	Relation	To Page
1117	Breadcrumb	Breadcrumb	24
	Matched Participants	List Item	24
	Review & Confirm Matches	List Item	24
	Matched Participants	List Item	24
	Review & Confirm Matches	List Item	24
	Page 24	Branch	24
	Page 24	Branch	24
	Page 41	Branch	24
	Page 42	Branch	24
	Page 43	Branch	24
	Page 44	Branch	24
	Matched Participants	Tab	24
	Review & Confirm Matches	Parent Tab	24

row(s) 1 - 13 of 13

Validate PL/SQL in APEX

ORACLE® Application Express

Home > Application Builder > Application 1103 > Application Reports > **Shared Components**

Page 56

Application

- Application Comments
- Developer Comments
- Developer Comments Calendar
- Database Object Dependencies**

Logic

- Application Items
- Application Processes
- Application Computations
- Web Service References
- Build Options

Security

Navigation

- Tabs
- Lists
- Tree Entries
- Tree Hierarchy
- Trees
- Navigation Bar Entries

User Interface

- Themes
- Workspace Themes
- Templates
- Template Comments

Database Object Dependencies

Application Reports → Shared Components

- Database Object Dependencies
- PL/SQL Process Validation

App Reports → Shared Components →
Database Object Dependencies →
Compute Dependencies

Home > Application Builder > Application 1117 > Application Reports > Shared Components >
Database Object Dependencies

Compute Dependencies

Parsing Errors == PL/SQL to fix

▼ Parsing Errors

Name	Page	Error	Compiled As	Parsed As	Temp Object Status	Lines
ALL Participants	30	line=11 errm=PL/SQL: ORA-00904: "DW_REORG"."GET_MATCHES_INLINE": invalid identifier line=6 errm=PL/SQL: SQL Statement ignored	create or replace procedure HTMLDBD2837074069170310 as L_value varchar2(30); L_boolean boolean; begin return; for c1 in (select "PARTICIPANT_ID", "PA_TYPE", SUBSTR(ein_ssn,1,3) "- "SUBSTR(ein_ssn,4,2) "- "SUBSTR(ein_ssn,6,4) "EIN_SSN", "CORPORATE_NAME", "PARTICIP_NAME", dw_reorg.get_matches_inline(participant_id, 5) matches, "LAST_NAME", "FIRST_NAME", "MIDDLE_NAME", "NAME_SUFFIX", "BIRTH_DATE", "DATA_SOURCE", "IDENT", "SUPPLIER_LICENSE_TYPE", "ENTRY_DATE", "UPDATE_DATE", "EVENT_ID", "ADDRESS_ID", "ADDRESS_TYPE", "ADDRESS_L1", "ADDRESS_1", "ADDRESS_2", "CITY", "STATE", "ZIP5", SUBSTR(phone_nbr,1,3) "- "SUBSTR(phone_nbr,4,3) "- "SUBSTR(phone_nbr,7,4) "PHONE_NBR", "EMAIL" from "MV_PINFO" where (corporate_name IS NOT NULL OR (first_name IS NOT NULL or last_name IS NOT NULL)) ---AND 'XXX' = :P30_QUERY_CONTROL AND (instr(upper("PA_TYPE"),upper(nvl(L_value,"PA_TYPE")))) > 0 or instr(upper("SUPPLIER_ID"),upper(nvl(L_value,"SUPPLIER_ID")))) > 0 or instr(upper("LICENSE_NBR"),upper(nvl(L_value,"LICENSE_NBR")))) > 0 or	ACCSP3	INVALID	65

Parsing Errors

Name	Page	Error	Compiled As
Parent PARTICIPANTS Record	<u>12</u>	line=24 errm=PLS-00302: component 'SUPPLIER_ID' must be declared line=24 errm=PL/SQL: ORA-00904: "PARTICIPANTS"."SUPPLIER_ID": invalid identifier line=6 errm=PL/SQL: SQL Statement ignored	<pre> create or replace procedure HTMLDBD1137149398465855 as l_value varchar2(30); l_boolean boolean; begin return; for c1 in (SELECT "PARTICIPANTS"."PARTICIPANT_ID" edit_link, "PARTICIPANTS"."PARTICIPANT_ID" "PARTICIPANT_ID", "PARTICIPANTS"."PA_TYPE" "PA_TYPE", "PARTICIPANTS"."CORPORATE_NAME" "CORPORATE_NAME", --- "PARTICIPANTS"."CORPORATION_TYPE" "CORPORATION_TYPE", "PARTICIPANTS"."LAST_NAME" "LAST_NAME", "PARTICIPANTS"."FIRST_NAME" "FIRST_NAME", "PARTICIPANTS"."MIDDLE_NAME" "MIDDLE_NAME", "PARTICIPANTS"."NAME_SUFFIX" "NAME_SUFFIX", "PARTICIPANTS"."BIRTH_DATE" "BIRTH_DATE", "PARTICIPANTS"."EIN_SSN" "EIN_SSN", "PARTICIPANTS"."IDENT" "IDENT", "PARTICIPANTS"."DATA_SOURCE" "DATA_SOURCE", "PARTICIPANTS"."DATA_SUPPLIER" "DATA_SUPPLIER", "PARTICIPANTS"."LICENSE_NBR" "LICENSE_NBR", "PARTICIPANTS"."SUPPLIER_LICENSE_TYPE" "SUPPLIER_LICENSE_TYPE", "PARTICIPANTS"."DEALER_NUMBER" "DEALER_NUMBER", "PARTICIPANTS"."SUPPLIER_ID" "SUPPLIER_ID", "PARTICIPANTS"."EVENT_ID" "EVENT_ID", "PARTICIPANTS"."ENTRY_DATE" "ENTRY_DATE", "PARTICIPANTS"."UPDATE_DATE" "UPDATE_DATE" FROM "ACCSP3"."PARTICIPANTS" "PARTICIPANTS" WHERE "PARTICIPANTS"."PARTICIPANT_ID" = l_value) loop null; end loop; end; </pre>
		line=26 errm=PL/SQL: ORA-00904:	<pre> create or replace procedure HTMLDBD1137149398465855 as l_value varchar2(30); l_boolean boolean; begin return; for c1 in (select "PARTICIPANT_ID", "PARTICIPANT_ID" PARTICIPANT_ID_DISPLAY, "PA_TYPE", "ENTRY_DATE", "SUPPLIER_ID", "LICENSE_NBR", "DEALER_NUMBER", </pre>

DBMS_APPLICATION_INFO

- APEX Sets Values:
- Module APEX:APPLICATION <App Id> <Page>
- Client Info User
- Identifier User: Session Id
- Action PAGE <Page>

DBMS_APPLICATION_INFO

Retrieve Info:

V\$SQL

```
SELECT  sql_text,  
        action,  
        module,  
        program_id,  
        program_line#  
FROM    v$sql  
WHERE   module LIKE '%APEX%'
```

DBMS_APPLICATION_INFO

Retrieve Info:

● V\$SESSION (10.2.0.2 and higher)

```
SELECT  plsql_entry_object_id,  
        plsql_entry_subprogram_id,  
        plsql_object_id,  
        plsql_subprogram_id,  
        module,  
        action  
FROM    v$session  
WHERE   module = 'APEX:APPLICATION 1103'
```


Utilities → Database Monitor → Top SQL

ORACLE® Application Express

[Logout](#) [Help](#)

[Home](#)

[Application Builder](#)





[SQL Workshop](#)

[Utilities](#)

Home > Utilities > Database Monitor > Top SQL

SQL Text Minimum Executions Module

Top By Display Top

	Time in Seconds	Reads	Executions	Buffer Gets / Rows Processed	Buffer Gets / Executions	Module	SQL Text
	Elapsed: .01 CPU: .01	Disk: 0 Buffer: 81	15	41	5.40	APEX:APPLICATION 1103	UPDATE WWV_FLOW_PREFERENCES\$ SET ATTRIBUTE_VALUE = :B2 WHERE USER_ID = NVL(:B5 , NVL(:B4 , USER)) AND PREFERENCE_NAME = :B3 AND NVL(ATTRIBUTE_VALUE, 'x%x') <> NVL(:B2 , 'x%x') AND SECURITY_GROUP_ID = :B1
	Elapsed: .02 CPU: .01	Disk: 1 Buffer: 233	27	11	8.63	APEX:APPLICATION 1103	SELECT ATTRIBUTE_VALUE FROM WWV_FLOW_PREFERENCES\$ WHERE PREFERENCE_NAME = :B3 AND USER_ID IN (NVL(:B1 , USER), 'DEFAULT') AND SECURITY_GROUP_ID = :B2 ORDER BY DECODE(NVL(:B1 , USER_ID), 'DEFAULT', 2, 1)
	Elapsed: .01 CPU: .01	Disk: 0 Buffer: 204	24	9	8.50	APEX:APPLICATION 1103	SELECT CURRENT_LOG_NUMBER, CURRENT_LOG_TIMESTAMP FROM WWV_FLOW_ACTIVITY_LOG_NUMBER\$
	Elapsed: .04 CPU: .02	Disk: 4 Buffer: 123	16	8	7.69	APEX:APPLICATION 1103	SELECT ID FROM WWV_FLOW_MENU_OPTIONS WHERE PAGE_ID = :B2 AND MENU_ID = :B1
-	Elapsed: .01 CPU: .01	Disk: 0 Buffer: 228	30	7	7.35	APEX:APPLICATION 1103	INSERT INTO WWV_FLOW_ACTIVITY_LOG1\$ (TIME_STAMP, COMPONENT_ATTRIBUTE, ELAP, NUM_ROWS, USERID, IP_ADDRESS, USER_AGENT, FLOW_ID, STEP_ID, SESSION_ID, SECURITY_GROUP_ID, SQLERRM, SQLERRM_COMPONENT_TYPE, SQLERRM_COMPONENT_NAME, PAGE_MODE, CACHED_REGIONS) VALUES (:B16 , UPPER(:B15) , :B14 , :B13 , :B12 , :B11 , :B10 , :B9 , :B8 , :B7 , :B6 , :B5 , :B4 , :B3 , NVL(:B2 , 'D') , :B1)



P_trace

- Add &p_trace=YES to APEX URL
- Turns on DB Trace Output
- Output to **user_dump_dest**
- View trace information by
tkprof or Trace analyzer

```
ALTER SESSION SET EVENTS '10046 TRACE NAME CONTEXT  
FOREVER, LEVEL 12'
```

Alternate Trace Settings

- Custom Trace On and Off Processes:

- On Load – Before Header

```
EXECUTE IMMEDIATE 'ALTER SESSION SET EVENT ''<alternate  
trace setting>> CONTEXT FOREVER, LEVEL 12''';
```

- On Load – After Footer

```
EXECUTE IMMEDIATE 'ALTER SESSION SET EVENTS ''< same  
trace settings>> CONTEXT OFF''';
```

- Some Reports of Trace File Keeps Growing ..

See Forum

... CONTEXT FOREVER ...

PL/SQL Debug and Performance

- Build & Tune Outside First
 - Tune SQL, PL/SQL Outside of APEX
 - Same Principles Apply
- Modularize
- Validate PL/SQL Processes in APEX
 - Compute Dependencies
- Use Bind Variables
- #TIMING# in Region Footer
- &p_trace

Use Bind Variables

- :P1_ITEM
- In SQL
- PL/SQL
- Conditions, Validations,
- Most frequently used substitution syntax

#TIMING# in Region Footer

- Add #TIMING# to Region Footer
(doesn't work in Header)
- Displays CPU Time in Region Footer

SQL Developer

- APEX Reports
 - Supplied - Information
 - Build Custom – Most Power Here
- Remote Debugging
 - Ability to Step Through PL/SQL in an APEX Session

SQL Developer – Remote Debug

- Code modules – procedures, functions, etc.
- Must be a stored procedure
- Start Debug Listener in SQL Developer
- Connect APEX app to SQL Dev via
DBMS_DEBUG_JDWP.SESSION call in APEX
App
- Debug in SQL Developer

Web Development Tools

- View and Edit HTML, CSS, DOM, JavaScript
- Web Developer
- Firebug
- Free
- Browser-Based
- Popular in APEX Community

Web Developer

- Firefox Add-In
- Free Download

<https://addons.mozilla.org/en-US/firefox/addon/60>

Adds a menu and a toolbar with various web developer tools.

Works with:

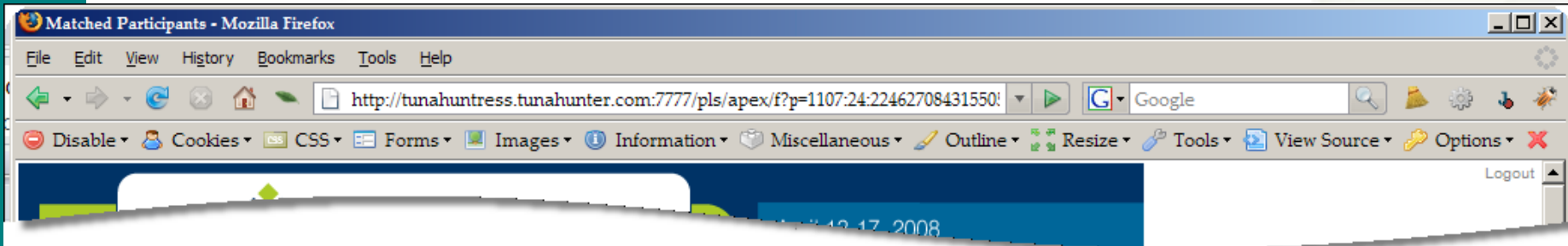


Firefox: 1.0 – 2.0.0.*

Install Now



Web Developer Tool Bar



Web De

Display Element Information

Matched Participants - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://tunahuntress.tunahunter.com:7777/pls/apex/f?p=1107:24:27998928433025...

Disable Cookies CSS Forms Images Information Miscellaneous Outline Resize Tools View So

Web Developer html > body > form #wwwFlowForm > div #t13MessageHolder > font > table > tbody > tr > td > p > table #R15221176926544673 .t13BorderlessRe

Matched Participants Image Information - http://tunah... Firebug - Web Development Evol... Oracle Enterprise

Denver, Colorado, USA
Colorado Convention Center

Home Match Admin Processes Review & Confirm Matches Reorganized Participants & Results

input
Attributes
type = checkbox
onclick = ToggleAll(this)
value =
name = f30
Position
Left: 77px Top: 724px
Width: 8px Height: 9px
Other
Font Family: Arial,Helvetica,Genève,sans-serif
Font Size: 12px
Ancestors
html
body
form #wwwFlowForm
div #t13MessageHolder
font
table
tbody
tr
td
p
table #R15221176926544673 .t13BorderlessRegion
tbody
tr
td
div #reportR15221176926544673
table #R15221176926544673 .t13Standard
tbody
tr
th #CONF .t13ReportHeader
Children
None

See the instructions within each region for more information on the items and buttons in that region.
Most regions may be displayed or hidden by clicking on the + or - button to the right of the region title.

options on this page to review data according to match type and confirm matches by match type or by selected parent participant.

make or change the Match Type selection, expand the Select Match Type region and choose one of the match type options.

any of the Confirm options below.

Match Admin Processes using the Match Admin Processes tab.

Matched Participants - by Name, Ident (score 90)

All participants matched by Name, Ident (score 90) Click on a column heading to sort by that column.

Use the Search function to narrow the results.

Click on the Display UNConfirmed Matches button to view only UNConfirmed matches.

Search [] Display 15 [v] Go [] Reset [] Display Unconfirmed Matches Only [] Confirm Selected Match Sets []

Match Detail	<input checked="" type="checkbox"/> Conf All	Confirm Display	Name	Address	Ident	Ein Ssn	Phone Nbr	Birth Date	Matche
--------------	--	-----------------	------	---------	-------	---------	-----------	------------	--------

Score	Name	Addr	Iden
-------	------	------	------

Firebug

- Another Firefox Add-In

- Download from

<https://addons.mozilla.org/en-US/firefox/addon/1843>

Firebug integrates with Firefox to put a wealth of development tools at your fingertips while you browse. You can edit, debug, and monitor CSS, HTML, and JavaScript live in any web page. [See all preview images](#)

Visit the Firebug website for documentation, screen shots, and discussion forums:

<http://www.getfirebug.com>

Works with:



Firefox: 1.5 - 2.0.0.*

Install Now



Firebug

- Console
- HTML
- CSS
- Script (JavaScript)
- DOM
- Net

<http://www.getfirebug.com/> for more information

Firebug

JavaScript Debug Interface



Parent-Child Match Details - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://tunahuntress.tunahunter.com:7777/pls/apex/f?p=1107:12:22462708431550::

Disable Cookies CSS Forms Images Information Miscellaneous Outline Resize Tools View Source Options

AlternateIdea: An In-depth Look ... Parent-Child Match Details

Parent PARTICIPANTS Record

Parent ADDRESSES Record

View & Confirm Child Matches Cancel Delete Selected Child Matches Confirm/UnConfirm Individual Child Match

Match Id	Child Pid	Processed	Confirm	Match Score	Particip Name	Address	City	St	Zip	Ident	Phone	Ein Ssn	Birth Date	Pro
5990	442	N	N	68 (SOUNDEX Name, Address, City, State, Zip)	SCHULTZ JOHN B BRITT	108 GLORY AVE	ST MICHAELS	MD	21663	01SZJ1974312	410-634-2152	215-92-7217	31-JAN-74	N

Inspect | htmldb_html_elements.js

Console HTML CSS Script DOM Net Options Watch Breakpoints Options

```

864
865     if (pctFull >= 90){
866         ctrBlk.style.color='red';
867     }else if (pctFull >= "80"){
868         ctrBlk.style.color='#EAA914';
869     }else{
870         ctrBlk.style.color='black';
871     }
872
873 } // End charCount()
874
875 function confirmDelete(msg,req){
876     if(req==null){req='Delete';}
877     var confDel = msg;
878     if(confDel ==null){
879         confDel= confirm("Would you like to perform this delete action?");
880     }else{
881         confDel= confirm(msg);
882     }
883     if (confDel==true){doSubmit(req);}
884 }
885
886 function submitEnter(itemObj,e){
887     var keycode;
888     if (window.event) keycode = window.event.keyCode;
889     else if (e) keycode = e.which;
890     else return true;
891     if (keycode == 13){
892         doSubmit(itemObj.id);
893         return false;
894     }else{
895         return true;

```

Watch

- (no name) htmldb_html_eleme... (line 875) function confirmDelete(msg,req){
- (no name) htmldb_html_eleme... (line 879) confDel= confirm("Would you like to perform this delete action?");
- (no name) f (line 18) htmldb_delete_message='Would you like to perform this delete action?';
- (no name) f (line 34) doSubmit(r);

1 Error



APEX Debug - Triage

- Think.
 - HTML? PL/SQL? SQL?
- APEX Debug Mode
 - Where, What, Messages
- Flow
 - APEX Reports & Utilities
- SQL, PL/SQL
 - IDE to Validate, Refine, Tune
 - Remote Debug
- HTML, JavaScript, AJAX
 - Web Development Tools

APEX Debug Options - Recap

- Multi-Layer App means
 - Expanded Toolset
 - Expanded Thought Process
- APEX-supplied Reports & Utilities
- APEX Debug Mode
- SQL Developer Remote Debug
- Web Development Tools
- Best Practices



What's Wrong With What Code?...

New Consumer With ...

HTML Web Service AJAX
JavaScript SQL JAVA
XHTTP CSS
PL/SQL XML F?P FCK
LDAP &P1_ITEM.
http



Resources

- **The APEX OTN Forum -**
<http://forums.oracle.com/forums/forum.jspa?forumID=137> .
- **SQL Developer - Home Page on OTN**
http://www.oracle.com/technology/products/database/sql_developer/index.html
- **Web Developer**
<http://chrispederick.com/work/web-developer/>.
- **Firebug**
<http://www.getfirebug.com/>.

Share Your Knowledge!

Call for Articles/Reviewers

- ODTUG Journal



- IOUG SELECT Journal



Questions ?

APEX Debug Options

Please fill out the evaluations!



Karen Cannell
kcannell@integratc.com

Thank You ~

APEX Debug Options

Please fill out the evaluations!



NYOUG

Karen Cannell

kcannell@integratc.com

Blog: <http://www.tunahuntress.com>