APEX Debug Options

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Karen Cannell ~ Principal

- 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!!

- 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?
  - DMBS_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
- Application Builder
- SQL Workshop
- Utilities
APEX Demonstration

Quick APEX Demo?
Conundrum
co·nun·drum [ˈkə nǔndrəm] (plural co·nun·drums)
noun Definition: 1. something confusing: something that is puzzling or confusing
APELL Debugging

Where to Start?
- What Happens Where?
- What Language?
- What Level?
- Which Process?
- 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
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 Inserted, Updated or Reset
### Session State

**Application:** 1117 Participant Match - WORKING  
**Session:** 2513111170058078  
**User:** IOUG  
**Workspace:** 3771531489660401  
**Browser Language:** on-us

#### Page Items

<table>
<thead>
<tr>
<th>Application</th>
<th>Page</th>
<th>Item Name</th>
<th>Display</th>
<th>Item Value</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1117</td>
<td>24</td>
<td>P24_SHOW_UNCONFIRMED_ONLY_FLAG</td>
<td>Hidden</td>
<td>OFF</td>
<td>I</td>
</tr>
<tr>
<td>1117</td>
<td>24</td>
<td>P24_SHOW_CONF_AND_UNCONF</td>
<td>Button</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1117</td>
<td>24</td>
<td>P24_UNCONF_SEARCH</td>
<td>Text Field (always submits page when Enter pressed)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1117</td>
<td>24</td>
<td>P24_UNCONF_GO</td>
<td>Button</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1117</td>
<td>24</td>
<td>P24_UNCONF_RESET</td>
<td>Button</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1117</td>
<td>24</td>
<td>P24_UNCONF_CONFIRM_SELECTED</td>
<td>Button</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1117</td>
<td>24</td>
<td>P24_UNCONF_ROWS</td>
<td>Select List with Submit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1117</td>
<td>24</td>
<td>P24_UNCONF_TYPE</td>
<td>Button</td>
<td></td>
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<td>24</td>
<td>P24_UNCONF_SELECT</td>
<td>Button</td>
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<tr>
<td>1117</td>
<td>24</td>
<td>P24_CONFIRM_SELECTED</td>
<td>Button</td>
<td></td>
<td></td>
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<tr>
<td>1117</td>
<td>24</td>
<td>P24_REPORT_SEARCH</td>
<td>Text Field (always submits page when Enter pressed)</td>
<td>test</td>
<td>U</td>
</tr>
<tr>
<td>1117</td>
<td>24</td>
<td>P24_ROWS</td>
<td>Select List with Submit</td>
<td>15</td>
<td>I</td>
</tr>
<tr>
<td>1117</td>
<td>24</td>
<td>P24_GO</td>
<td>Button</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1117</td>
<td>24</td>
<td>P24_FRIENDS</td>
<td>Button</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1117</td>
<td>24</td>
<td>P24_MATCH_TYPE</td>
<td>Radiogroup (with Submit)</td>
<td>8</td>
<td>U</td>
</tr>
</tbody>
</table>
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
ORA-01722: invalid number

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

Return to application.
Debug Mode On

ORA-01722: invalid number

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

Return to application.
Debug Mode On

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=CREATE_MV_PINFO_ORIG_PPT
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=PR
0.03: Process "CLEAN_PPT_MATCH_TABLES": PLSQL (AFTER_SUBMIT) DECLARE v_status PLS_INTEGER := 0, BEGIN REORG CLEAN_CLE -> 0 THEN RAISE_APPLICATION_ERROR(-20001, 'Error Clearing Match Tables'||SQLERRM); END IF, END;
0.03: Do not run process "CLEAR_REORG_TABLES", process point=AFTER_SUBMIT, condition type=, when button pressed=CLEAR_REORG_TABLES
0.03: Do not run process "BATCH_PROCESS_CONFIRMED", process point=AFTER_SUBMIT, condition type=, when button pressed=CONFIRM_BATCH_PROCESS
0.03: Do not run process "BATCH_PROCESS_TO_NEW_STRUCTURES", process point=AFTER_SUBMIT, condition type=, when button pressed=TRANSFORM_BATCH_PROCESS
0.03: Do not run process "FLUSH_UNMATCHED_PPT", process point=AFTER_SUBMIT, condition type=, when button pressed=FLUSH_UNMATCHED_PPT
0.03: Do not run process "FLUSH_REMAINING_PPT", process point=AFTER_SUBMIT, condition type=, when button pressed=FLUSH_REMAINING_PPT
0.32: Process "SET_AJAX_LOAD_MSG": ON_DEMAND (AFTER_SUBMIT) 9310448235151816...
0.32: Session state: saved item "A_AJAX_LOAD_MSG" new value="Cleaning 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: 123611403685457079 branch: (Unconditional)
0.32: Evaluating Branch: AFTER_PROCESSING type: "REDIRECT_URL" button: 12361388434457080 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: 1236925523042123 branch: (Unconditional)
0.32: Evaluating Branch: AFTER_PROCESSING type: "REDIRECT_URL" button: 123620753122457081 branch: (Unconditional)
0.32: Evaluating Branch: AFTER_PROCESSING type: "REDIRECT_URL" button: 1237333686857797 branch: (Unconditional)
0.32: Evaluating Branch: AFTER_PROCESSING type: "REDIRECT_URL" button: 12376447130665154 branch: (Unconditional)
0.32: Evaluating Branch: AFTER_PROCESSING type: "REDIRECT_URL" button: 124286858599524165 branch: (Unconditional)
0.32: Evaluating Branch: AFTER_PROCESSING type: "REDIRECT_URL" button: (No Button Pressed) branch: (Unconditional)
0.34: Unconditional branch taken
0.00: SHOW: application="1107" page="41" workspace="" request="" session="27998982843302560"
0.00: Language detected: 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
Activity Reports

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

#### Application Express

![Image of Application Express interface]

#### Oracle Application Express Reports:

- **Application 1107**
  - **Page Name:** Home
  - **Date:** 03/07/2008 11:40:35 PM
  - **Updated:** 47 hours ago
  - **Action:** Update
  - **Developer:** ACCSP3
  - **Component:** Region Attributes
  - **Component Name:** Step 4: Process Confirmed Matches
  - **Identifier:** 12460850134229421

- **Application 1107**
  - **Page Name:** INITIAL RUN - Participant Match Administration
  - **Date:** 03/08/2008 09:51:21 PM
  - **Updated:** 24 hours ago
  - **Action:** Update
  - **Developer:** ACCSP3
  - **Component:** Page Process
  - **Component Name:** CLEAN_PPT_MATCH_TABLES
  - **Identifier:** 12385541425457091

- **Application 1107**
  - **Page Name:** INITIAL RUN - Participant Match Administration
  - **Date:** 03/08/2008 08:54:13 PM
  - **Updated:** 25 hours ago
  - **Action:** Update
  - **Developer:** ACCSP3
  - **Component:** Application Process
  - **Component Name:** SHOW_MDE_OUTPUT
  - **Identifier:** 16604277274001427

- **Application 1107**
  - **Page Name:** INITIAL RUN - Participant Match Administration
  - **Date:** 03/08/2008 08:44:33 PM
  - **Updated:** 26 hours ago
  - **Action:** Update
  - **Developer:** ACCSP3
  - **Component:** Application Process
  - **Component Name:** SHOW_MDE_OUTPUT
  - **Identifier:** 16604277274001427

- **Application 1107**
  - **Page Name:** INITIAL RUN - Participant Match Administration
  - **Date:** 03/08/2008 07:32:47 PM
  - **Updated:** 27 hours ago
  - **Action:** Update
  - **Developer:** ACCSP3
  - **Component:** Application Process
  - **Component Name:** SHOW_MDE_OUTPUT
  - **Identifier:** 16604277274001427

### NYOUG
Activity – Page Performance

- 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

**ORACLE** Application Express

**Home > Application Builder > Application 1107 > Page 24**

- **Page Rendering**
  - **Page Name:** Matched Participants
  - **Template:** Application default
  - **Header Text:** `<script src="#WORKSPACE/Images" text=""></script>`

- **Definition**
- **Events**
  - Objects
  - History
  - Export
  - Groups
  - Referenced
Page – View Select List - Referenced Components
Validate PL/SQL in APEX

Database Object Dependencies
Application Reports → Shared Components

- Database Object Dependencies
- PL/SQL Process Validation

App Reports → Shared Components →
Database Object Dependencies →
Compute Dependencies
Parsing Errors == PL/SQL to fix

<table>
<thead>
<tr>
<th>Name</th>
<th>Page</th>
<th>Error</th>
<th>Compiled As</th>
<th>Parsed As</th>
<th>Temp Object Status</th>
<th>Linea</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL Participant</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>65</td>
</tr>
</tbody>
</table>

create or replace procedure HTMLDB203787406817B310 as
  L_value varchar2(200);
  L_boolean boolean;
begin
  return;
  for c1 in (select
    "PARTICIPANT_ID",
    "PA_TYPE",
    SUBSTR( en_ann_1,1,3)||SUBSTR( en_ann_1,4,2)||SUBSTR(en_ann_1,6,4) "EN_SSN",
    "CORPORATE_NAME",
    "PARTNED_NAME",
    dw_reorg.get_matches_nine(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_1",
    "ADDRESS_TYPE",
    "ADDRESS_2",
    "STATE",
    "ZIP"
from "acv_line"
where Corporate_name IS NOT NULL OR
  (first_name IS NOT NULL OR last_name IS NOT NULL)
  AND "X" = "PL_QUERY_CONTROL"
  AND (instr(upper("PA_TYPE"), upper(lv), value "PA_TYPE") = 0 OR
        instr(upper("SUPPLIER_ID"), upper(lv), value "SUPPLIER_ID") > 0)
    union all
    select
  "PARTICIPANT_ID",
  "PA_TYPE",
  SUBSTR( en_ann_1,1,3)||SUBSTR( en_ann_1,4,2)||SUBSTR(en_ann_1,6,4) "EN_SSN",
  "CORPORATE_NAME",
  "PARTNED_NAME",
  dw_reorg.get_matches_nine(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_1",
  "ADDRESS_TYPE",
  "ADDRESS_2",
  "STATE",
  "ZIP"
from "acv_line"
where Corporate_name IS NOT NULL OR
  (first_name IS NOT NULL OR last_name IS NOT NULL)
  AND "X" = "PL_QUERY_CONTROL"
  AND (instr(upper("PA_TYPE"), upper(lv), value "PA_TYPE") = 0 OR
        instr(upper("SUPPLIER_ID"), upper(lv), value "SUPPLIER_ID") > 0)
    union all
    select
  "PARTICIPANT_ID",
  "PA_TYPE",
  SUBSTR( en_ann_1,1,3)||SUBSTR( en_ann_1,4,2)||SUBSTR(en_ann_1,6,4) "EN_SSN",
  "CORPORATE_NAME",
  "PARTNED_NAME",
  dw_reorg.get_matches_nine(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_1",
  "ADDRESS_TYPE",
  "ADDRESS_2",
  "STATE",
  "ZIP"
### Parsing Errors

<table>
<thead>
<tr>
<th>Name</th>
<th>Page</th>
<th>Error</th>
<th>Compiled As</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent PARTICIPANTS Record</td>
<td>12</td>
<td>Line 24 err=PL/SQL: ORA-00904: &quot;PARTICIPANTS&quot;.&quot;SUPPLIER_ID&quot;: invalid identifier line=6 err=PL/SQL: SQL Statement ignored</td>
<td></td>
</tr>
</tbody>
</table>

```sql
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
  "ACCP3"."PARTICIPANTS" "PARTICIPANTS"
WHERE
  "PARTICIPANTS"."PARTICIPANT_ID" = l_value) loop null; end loop;
end;
```

Line=26 err=PL/SQL: ORA-00904:

```sql
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"
FROM
  "PARTICIPANTS"
WHERE
  "PARTICIPANT_ID" = l_value) loop null; end loop;
end;
```
APEX Sets Values:

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

V$SQL

```sql
SELECT sql_text, action, module, program_id, program_line#
FROM v$sql
WHERE module LIKE '%APEX%'
```
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'
```
## Database Monitor → Top SQL

### Table: Top SQL

<table>
<thead>
<tr>
<th>Time in Seconds</th>
<th>Reads</th>
<th>Executions</th>
<th>Buffer Gets / Rows Processed</th>
<th>Buffer Gets / Executions</th>
<th>Module</th>
<th>SQL Text</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Elapsed</strong>: 01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>UPDATE NVW_FLOW_PREFERENCES SET ATTRIBUTE_VALUE = :B2 WHERE USER_ID = NVL(:B5, NVL(:B4, USER)) AND PREFERENCE_NAME = :B3 AND NVL(ATTRIBUTE_VALUE, 'x#&amp;x#') &lt;&gt; NVL(:B2, 'x#&amp;x#') AND SECURITY_GROUP_ID = :B1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>APEXAPPLICATION 1103</td>
<td></td>
</tr>
<tr>
<td><strong>Elapsed</strong>: 02</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SELECT ATTRIBUTE_VALUE FROM NVW_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', 1, 1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>APEXAPPLICATION 1103</td>
<td></td>
</tr>
<tr>
<td><strong>Elapsed</strong>: 01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SELECT CURRENT_LOG_NUMBER, CURRENT_LOG_TIMESTAMP FROM NVW_FLOW_ACTIVITY_LOG_NUMBER</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>APEXAPPLICATION 1103</td>
<td></td>
</tr>
<tr>
<td><strong>Elapsed</strong>: 04</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SELECT ID FROM NVW_FLOW_MENU_OPTIONS WHERE PAGE_ID = :B2 AND MENU_ID = :B1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>APEXAPPLICATION 1103</td>
<td></td>
</tr>
</tbody>
</table>
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/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
Firebug

Another Firefox Add-In

Download from

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.

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 Debugger

JavaScript Debug Interface
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
Debug Options …

What’s Wrong With What Code?…

New Conundrum …

HTML Web Service AJAX SQL JAVA
JavaScript XHTTP CSS F?P FCK
PL/SQL LDAP http &P1_ITEM.
The APEX OTN Forum -

SQL Developer - Home Page on OTN

Web Developer
http://chrispederick.com/work/web-developer/

Firebug
Share Your Knowledge!

Call for Articles/Reviewers

- ODTUG Journal
- IOUG SELECT Journal
Questions?

APEX Debug Options

Please fill out the evaluations!

Karen Cannell
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Thank You ~

APEX Debug Options

Please fill out the evaluations!

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