



Getting the Most Out of SQL Developer User-Defined Reports

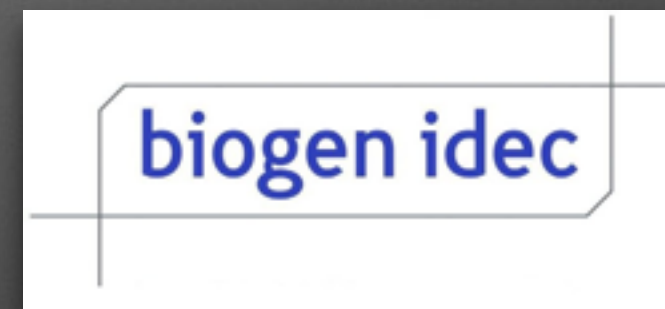
David Mann - Biogen Idec - ECOUG 2014

Topics

- Context
- Why use SQL Developer for reports?
- Canned Report Review
- Basic User Defined Reports
- Supplying Parameters to Reports
- Parent/Child & Drill Down
- Advanced - Charts, HTML, Command Line Reports
- Where do you go from here?

Bio

- Graphic Arts Background
- Development Background
- Lead Oracle DBA @
- Interests :
 - Tools, Performance,
Data Visualization



Context

- GUI Java Application
 - Available for Windows/Mac OS X/Linux
 - Free from Oracle
 - Connects to databases via JDBC
 - No OCI client required (usually)
 - TNS / LDAP / Custom connection parameters



**Why use SQL
Developer for reports?**



Ease of Use

- Ready to go infrastructure
 - Multiple OSes supported
 - Quick download and install
 - Just need a JVM + GUI

Features

- Feature Rich Admin and Query Tool
 - Source Code Control Integration
 - Unit testing
 - Data Modeling
 - DBA Module
- Vote for features
 - Its a democracy, get some you want, some you don't
 - Access to expertise

Reporting

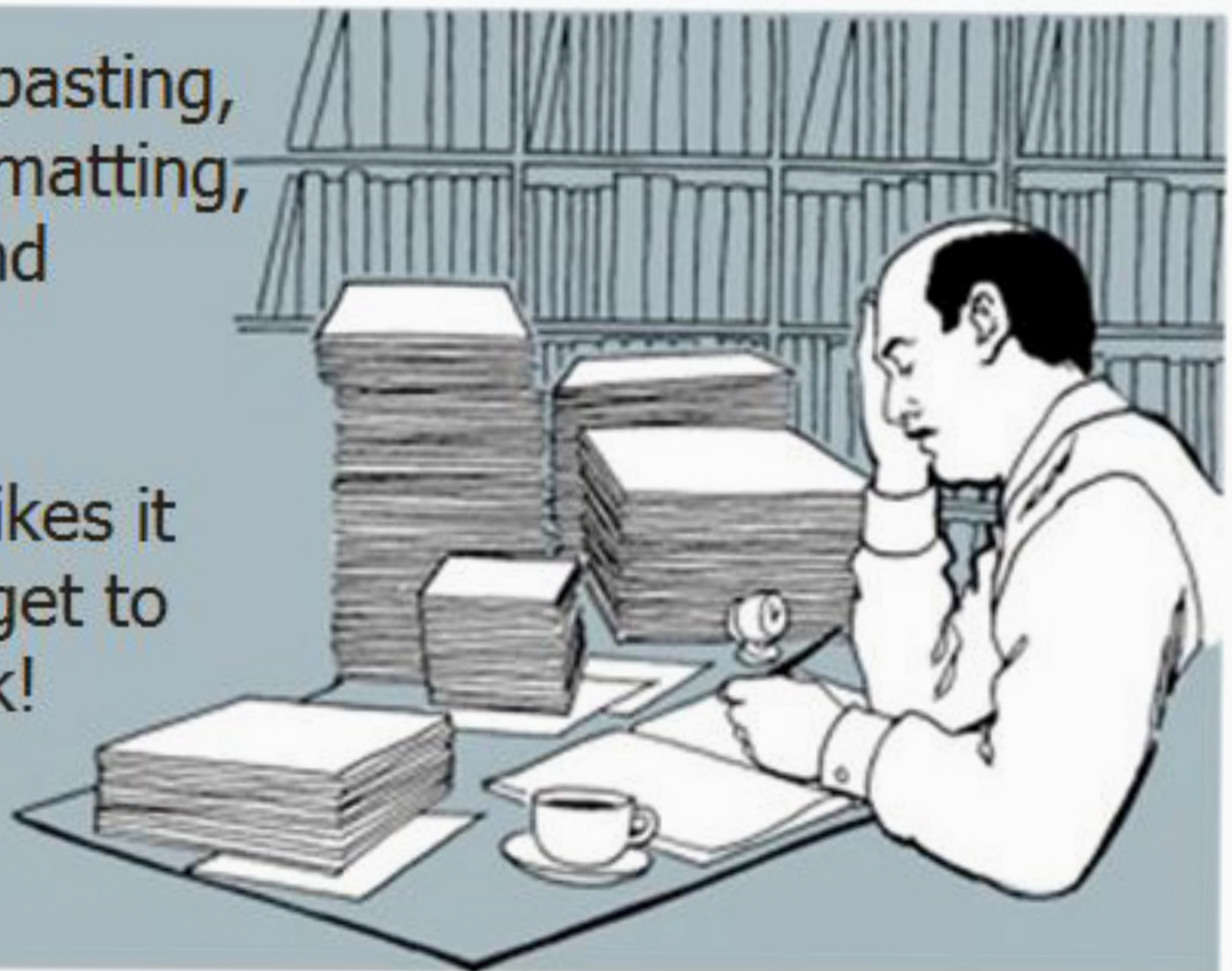
- Robust reporting feature set
 - Canned reports
 - User Defined Reports
 - HTML/PDF Output Options
 - Command Line Report Generation
- Extensible
 - Customizable / Extensions
- Portable report definitions
 - Sharing is caring

4.0 - Not Your Father's SQL Developer

- Faster report development round trips
 - Live Preview in report editor during design time
- 50+ Charting Options
 - Live preview also available for charts
- Comprehensive reports included out of the box
- Command Line Report Generation

I spent a week pasting,
formulating, formatting,
crosstabbing, and
charting...

...and the boss likes it
so much now I get to
do it every week!



Personal Reporting Process

- DBA 1.0?
- Get out of the query-> export -> Excel Graph rut
 - Too cumbersome to repeat reliably
 - Slow to repeat
 - Hard to share with others
 - Hard to motivate others to use your methods
- Put this power into user's hands with UDRs

Canned Reports

Canned Reports

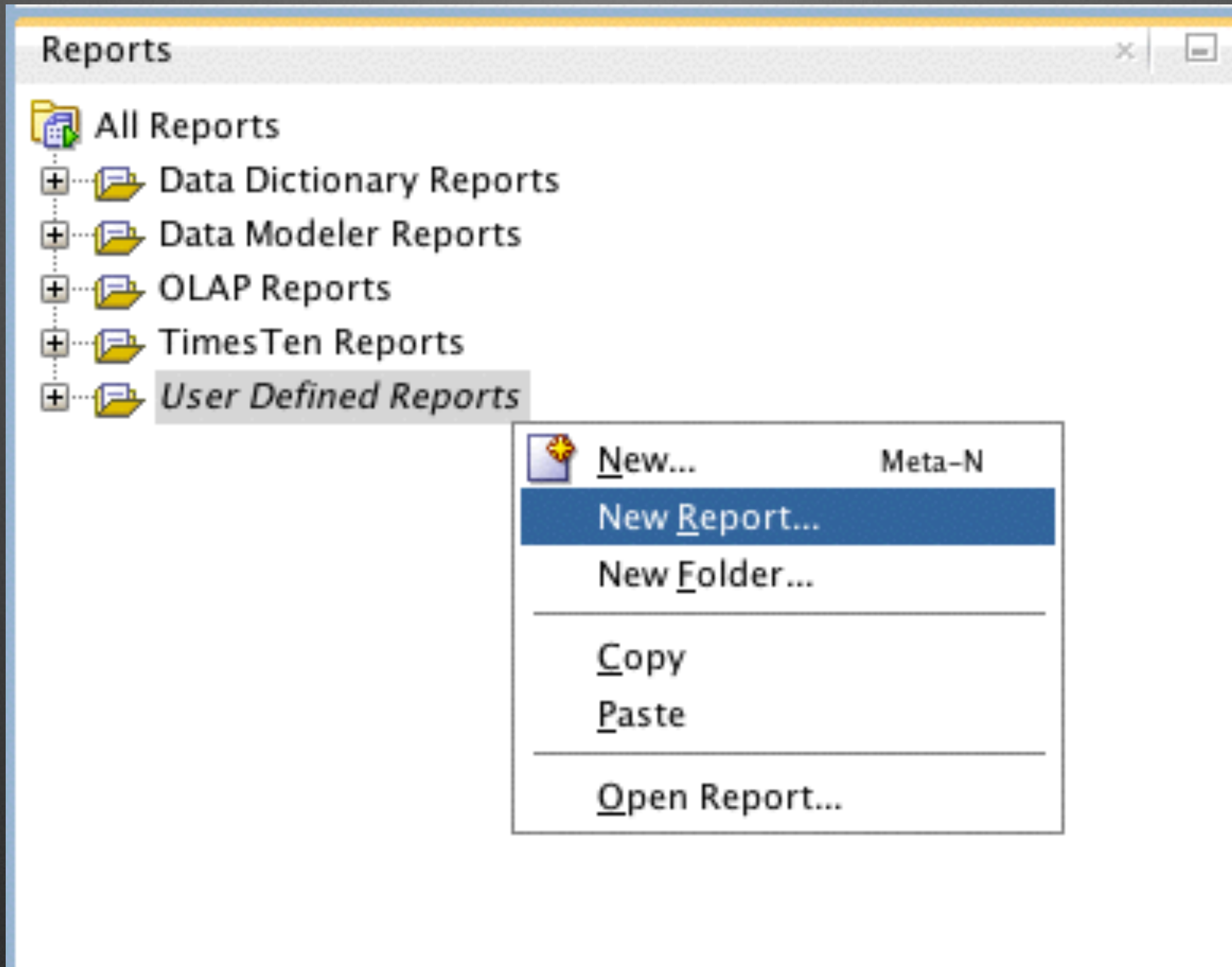
- Lots of useful reports included
 - Database Administration
 - Data Dictionary
 - Object Info
 - Application Express
 - Performance
 - + more

Other Canned Report Uses

- Good learning tool
- Copy + Modify
- Can be the target of your own Drill Down reports

Basic User Defined Reports

Create a Simple UDR



Specify Properties

The screenshot shows a 'Create Report' dialog box with a tree view on the left and a main configuration area on the right. The tree view includes 'Master Report' (selected), 'SQL Query', 'Child Reports', 'Binds', 'Drill Down', 'Property', and 'PDF'. The 'PDF' section is expanded, showing 'Binary Large Object', 'Cell Layout', 'Column Layout', 'Table Layout', 'Header and Footer', 'Security', and 'Page Layout'. The main area is titled 'Master Report' and has a checked 'Advanced' checkbox. It contains fields for 'Name', 'Style' (a dropdown menu with 'Table' selected and a list of options including 'Table', 'Chart', 'Gauge', 'Code', 'Script', and 'PL/SQL DBMS Output'), 'Description', and 'Tool Tip'. At the bottom are 'Help', 'Apply', and 'Cancel' buttons.

Create Report

Master Report ☒ Advanced

Name:

Style: **Table**

Description:

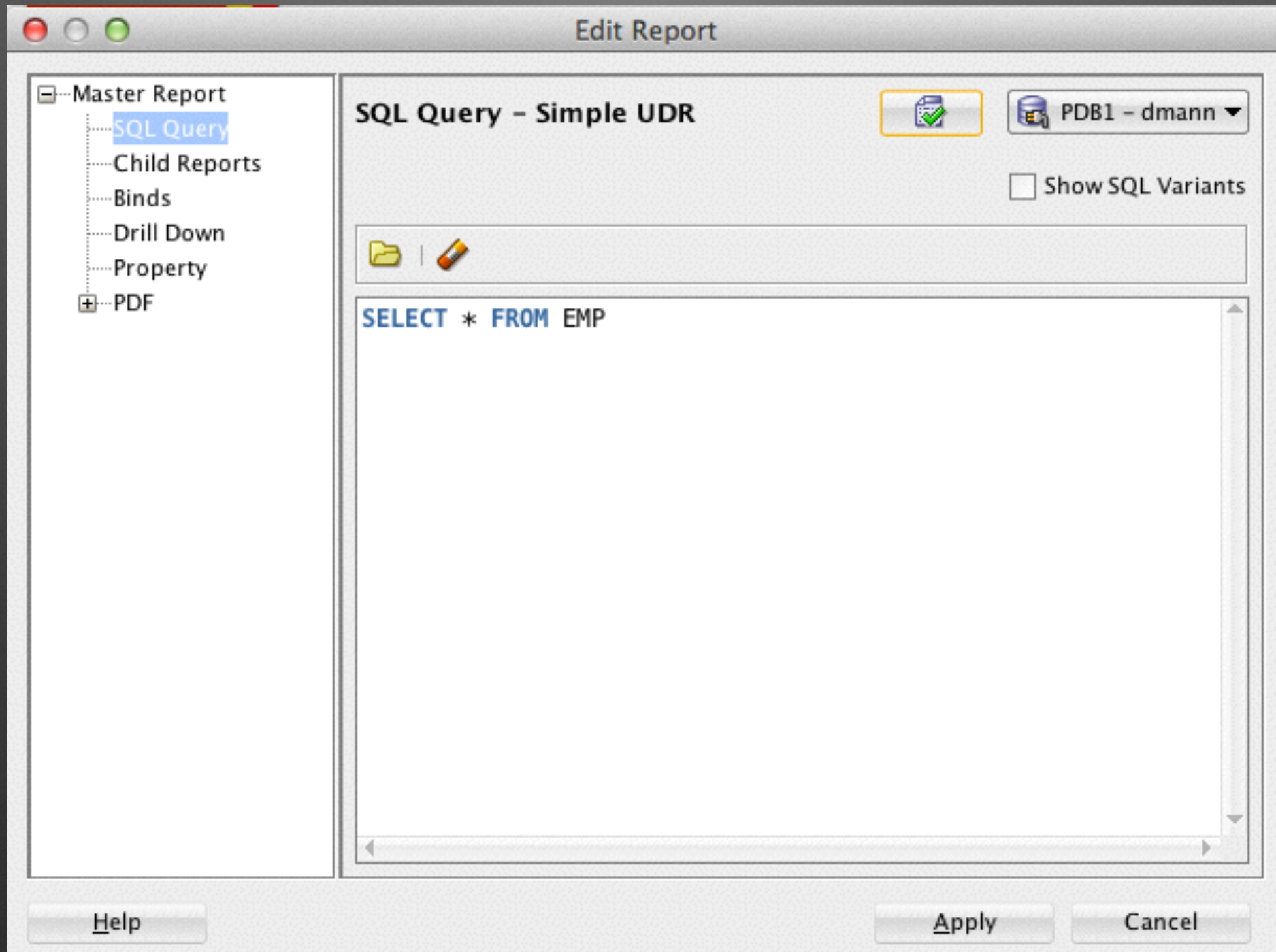
Tool Tip:

PDF

- Binary Large Object
- Cell Layout
- Column Layout
- Table Layout
- Header and Footer
- Security
- Page Layout

[Help](#) [Apply](#) [Cancel](#)

Set SQL Query



Run It






Simple UDR								
Refresh: 0								
	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7369	SMITH	CLERK	7902	17-DEC-80	800	(null)	20
2	7499	ALLEN	SALESMAN	7698	20-FEB-81	1600	300	30
3	7521	WARD	SALESMAN	7698	22-FEB-81	1250	500	30
4	7566	JONES	MANAGER	7839	02-APR-81	2975	(null)	20
5	7654	MARTIN	SALESMAN	7698	28-SEP-81	1250	1400	30
6	7698	BLAKE	MANAGER	7839	01-MAY-81	2850	(null)	30
7	7782	CLARK	MANAGER	7839	09-JUN-81	2450	(null)	10
8	7788	SCOTT	ANALYST	7566	19-APR-87	3000	(null)	20
9	7839	KING	PRESIDENT	(null)	17-NOV-81	5000	(null)	10
10	7844	TURNER	SALESMAN	7698	08-SEP-81	1500	0	30
11	7876	ADAMS	CLERK	7788	23-MAY-87	1100	(null)	20
12	7900	JAMES	CLERK	7698	03-DEC-81	950	(null)	30
13	7902	FORD	ANALYST	7566	03-DEC-81	3000	(null)	20
14	7934	MILLER	CLERK	7782	23-JAN-82	1300	(null)	10

Gauge Example

SQL Refresh: 0			
	ENAME	SAL	Salary Graph
1	KING	5000	
2	FORD	3000	
3	SCOTT	3000	
4	JONES	2975	
5	BLAKE	2850	
6	CLARK	2450	
7	ALLEN	1600	
8	TURNER	1500	
9	MILLER	1300	
10	WARD	1250	
11	MARTIN	1250	
12	ADAMS	1100	
13	JAMES	950	
14	SMITH	800	

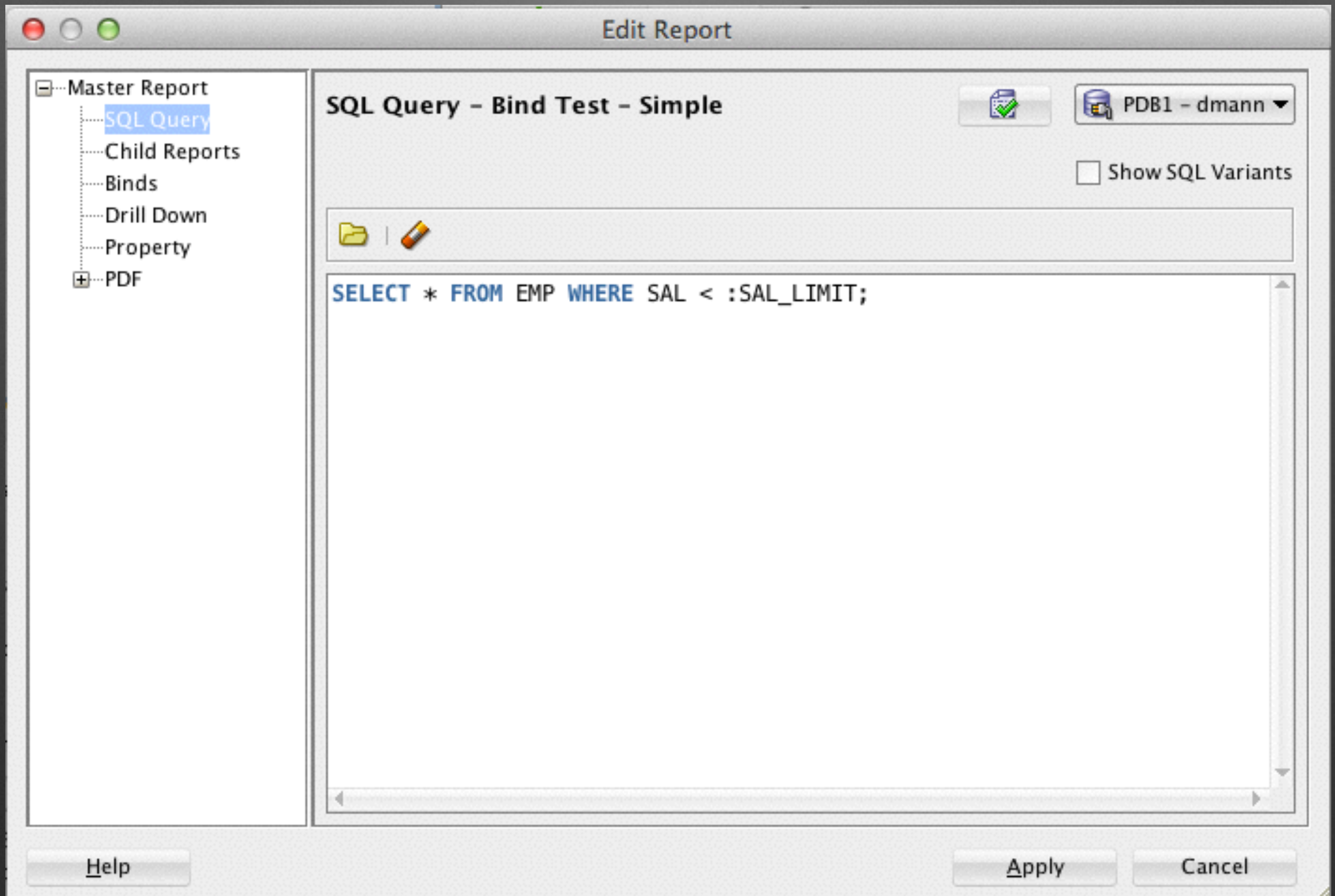
Building Gauges

- SQLDEV:GAUGE
- min:max:low thresh:upper threshold:value

	MY_GAUGE_____	CONFIG
1		0:100:33:66:50
2		0:100:80:90:50
3		0:100:100:100:50
4		0:100:0:100:50
5		0:100:0:0:50

Using Bind Variables

Filter with Binds



Bind Variable Details

The screenshot shows a software interface for editing a report. At the top, a window titled 'Edit Report' contains a table with bind variable details. Below this, a smaller window titled 'Enter Bind Values' is open, showing the configuration for the 'Salary Limit' variable. The 'Enter Bind Values' window includes a list of properties on the left, a 'Name' field, a 'Value' field, and a 'NULL' checkbox.

Name	Prompt	Default	ToolTip
SAL_LIMIT	Salary Limit	2500	SAL_LIMIT

Enter Bind Values

Property List:

- PDF
- Binary Large Obi
- Co
- Co
- Ta
- He
- Se
- Pa

Name: Salary Limit

☐ NULL

Value: 2500

Buttons: Help, Apply, Cancel

“All” Option

- Provide for optional use of Bind Variables

```
from sys.dba_tablespaces
where (:TABLESPACE_NAME is null or
       instr(lower(tablespace_name), lower(:TABLESPACE_NAME))
order by 1
```

```
from sys.dba_tablespaces
where CASE WHEN :TABLESPACE_NAME is null THEN 1
          WHEN (instr(lower(tablespace_name), lower(:TABLESPACE_NAME)) > 0) THEN 1
          ELSE 0
        END = 1
order by 1
```

Parent/Child Reports

- Consist of a pair of related queries
- Child query refreshed when Parent row clicked
- Related by bind variable

Parent/Child

PC-Parent									
Refresh: 0									
PDB1 - dmann									
	DEPTNO	DNAME	LOC						
1	10	ACCOUNTING	NEW YORK						
2	20	RESEARCH	DALLAS						
3	30	SALES	CHICAGO						
4	40	OPERATIONS	BOSTON						

EmpDeptDetail									
Refresh: 0									
	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO	
1	7782	CLARK	MANAGER	7839	09-JUN-81	2450	(null)	10	
2	7839	KING	PRESIDENT	(null)	17-NOV-81	5000	(null)	10	
3	7934	MILLER	CLERK	7782	23-JAN-82	1300	(null)	10	

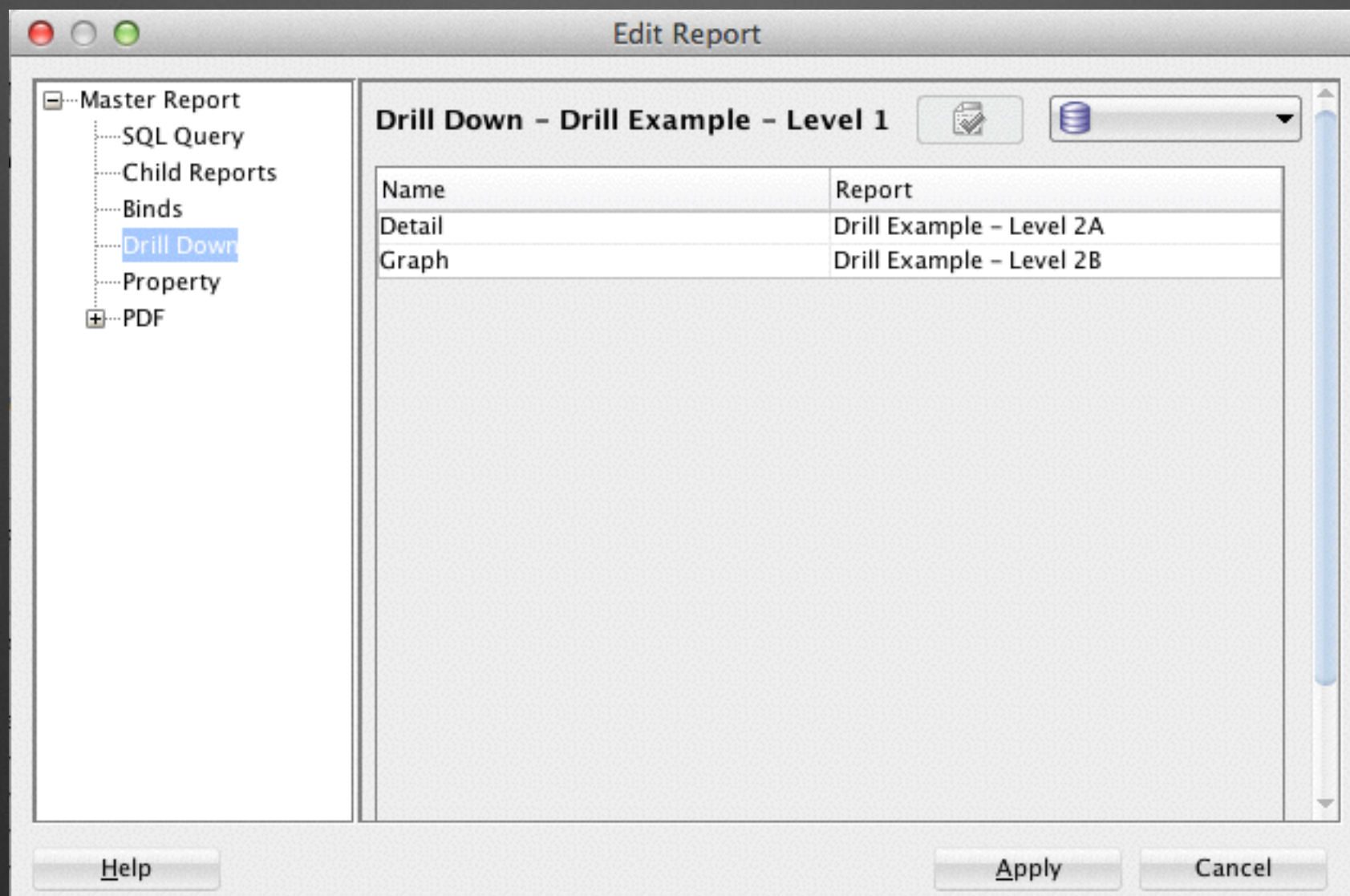
Drill Down Reports

Features

- Like Parent/Child but Child is hidden
- Multiple Children can be attached to each Parent
- Usage
 - Right click on Parent data element
 - Select drill down report name
- Helps navigate your data

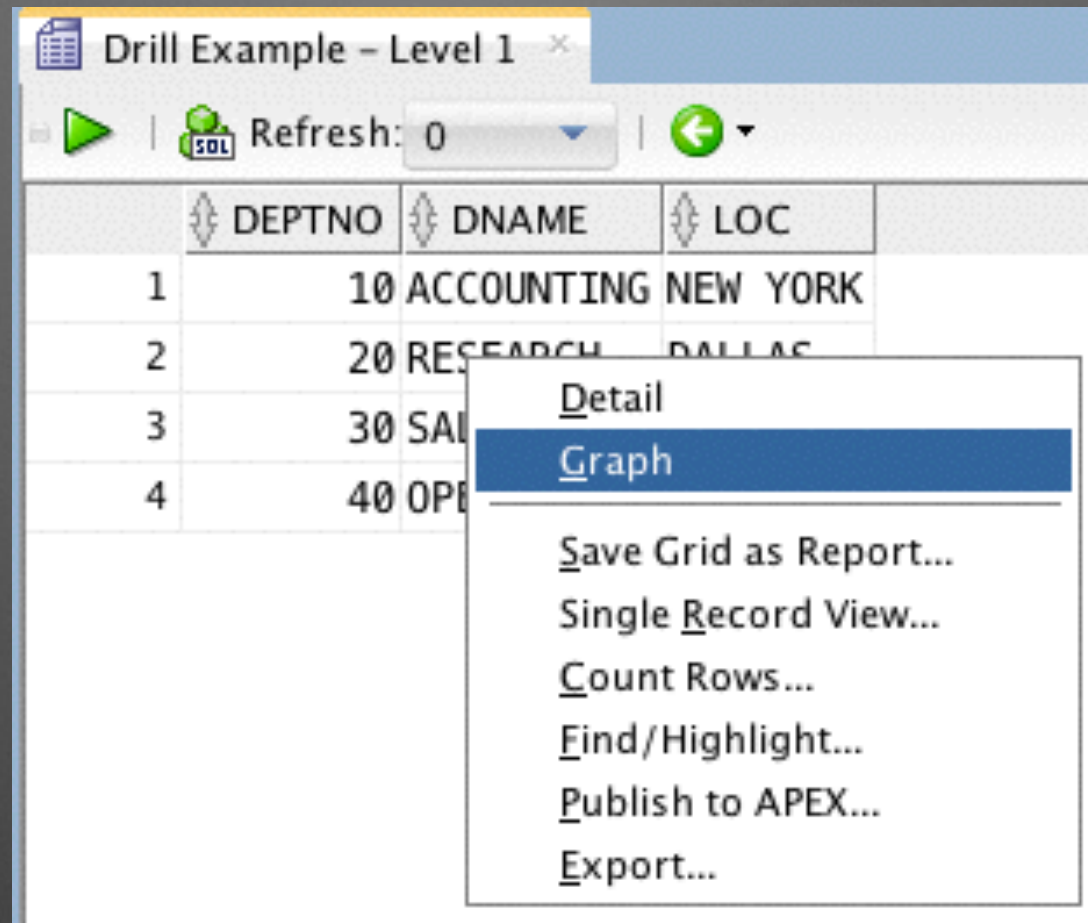
Creation

- Create target report
- Add to parent report*
- Drilled report has access to bind variables



Navigation

Forward:



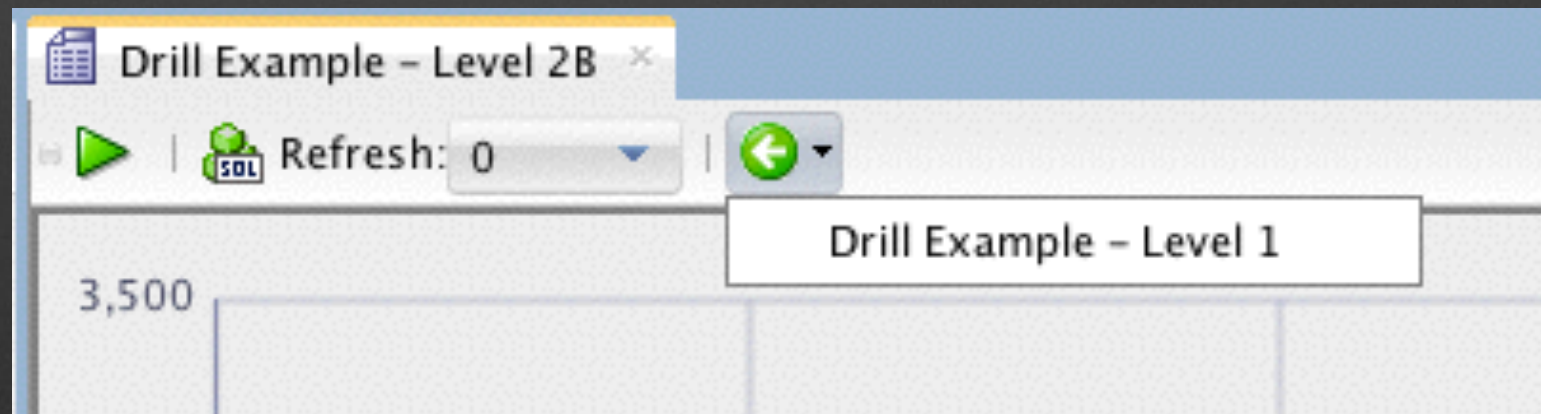
Drill Example - Level 1

Refresh: 0

	DEPTNO	DNAME	LOC
1	10	ACCOUNTING	NEW YORK
2	20	RESEARCH	DALLAS
3	30	SALES	
4	40	OPERATIONS	

- Detail
- Graph**
- Save Grid as Report...
- Single Record View...
- Count Rows...
- Find/Highlight...
- Publish to APEX...
- Export...

Back:



Drill Example - Level 2B

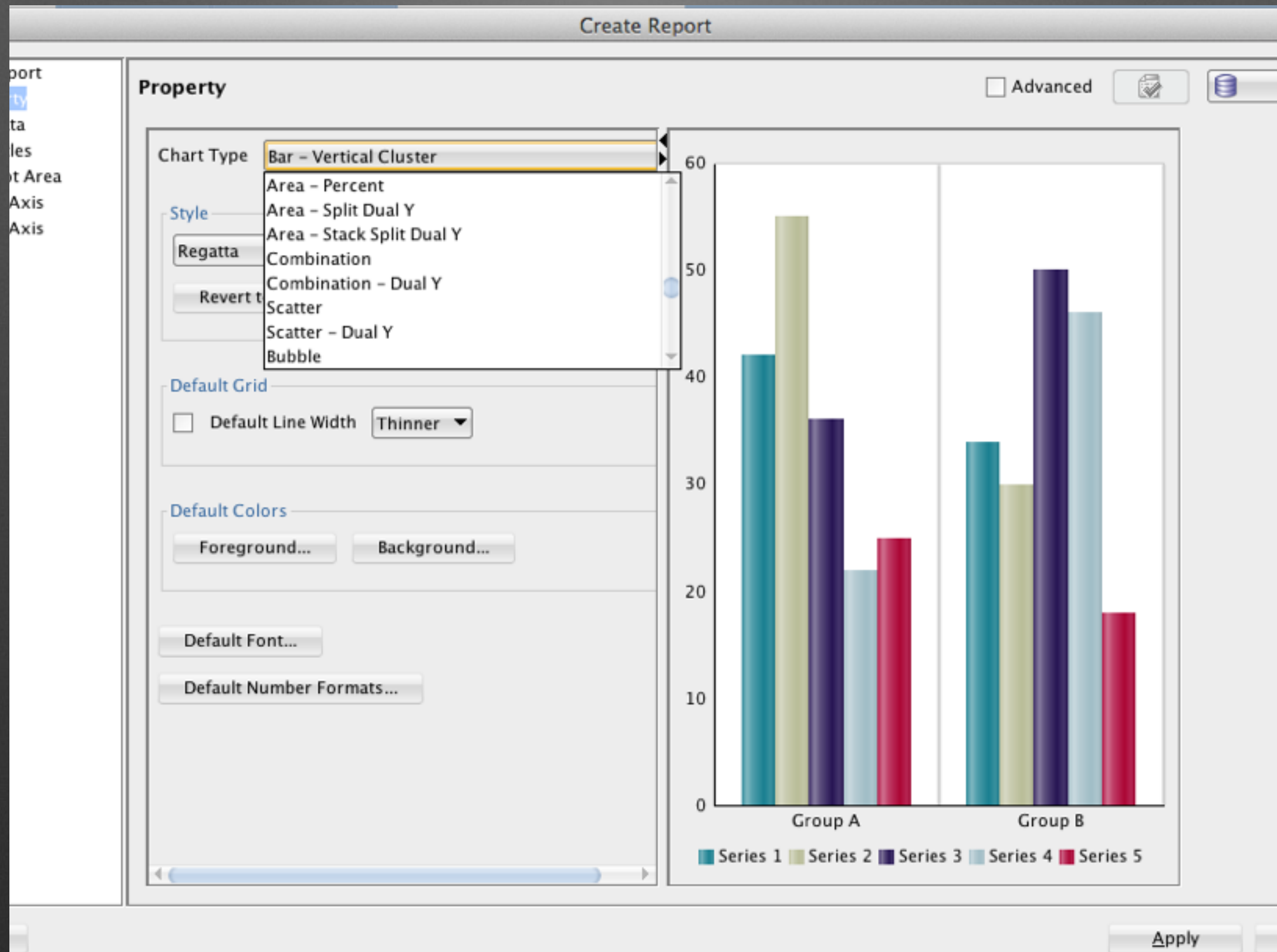
Refresh: 0

3,500

Drill Example - Level 1

Advanced : Charts

Charts



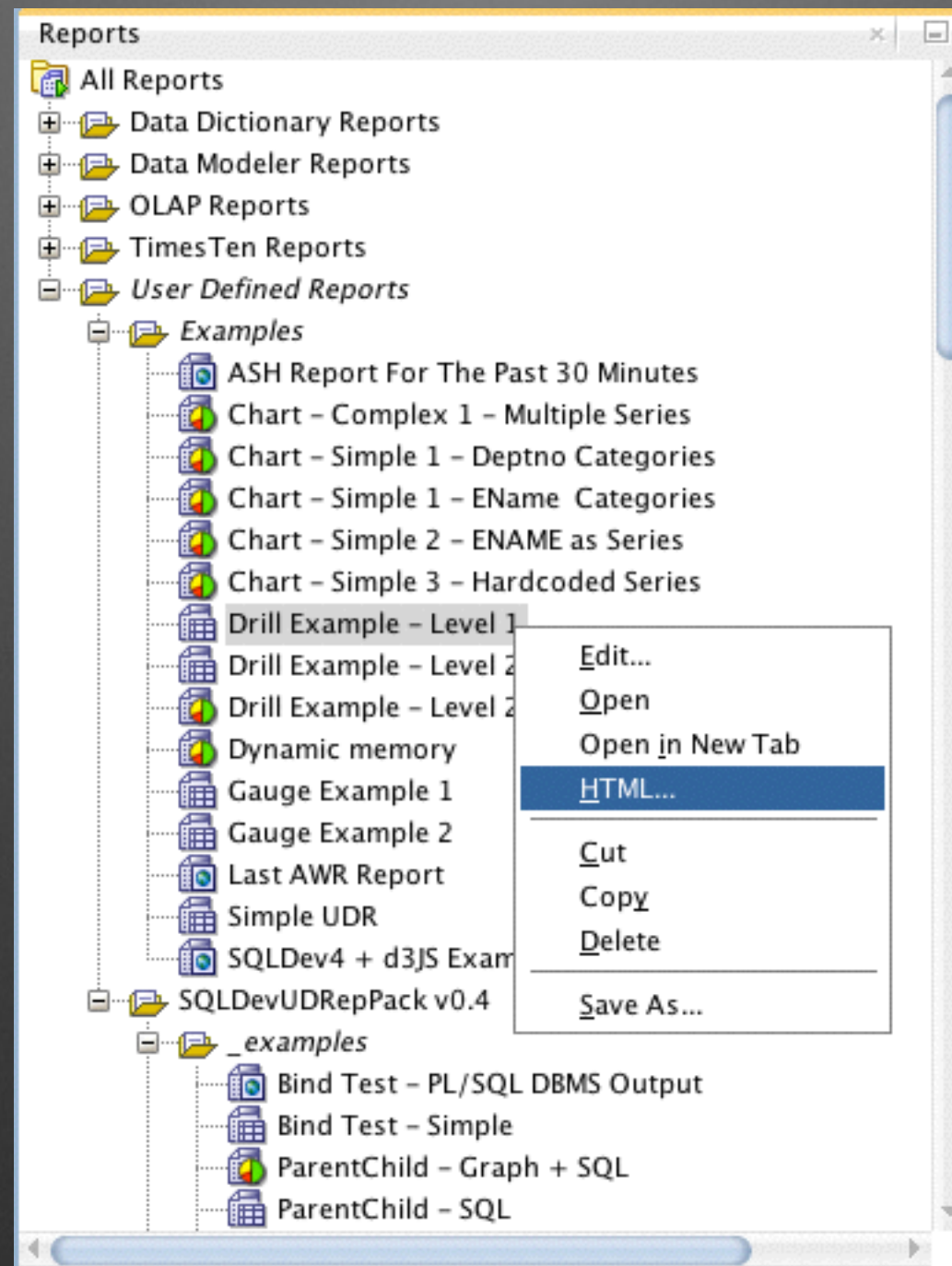
Charts

- Prepare data series
 - Position 1 : Category Group (Y Axis)
 - Position 2 : Series (Legend)
 - Position 3 : Data Value (X Axis)
- Choose best representation
- Customize styles
- Test it!

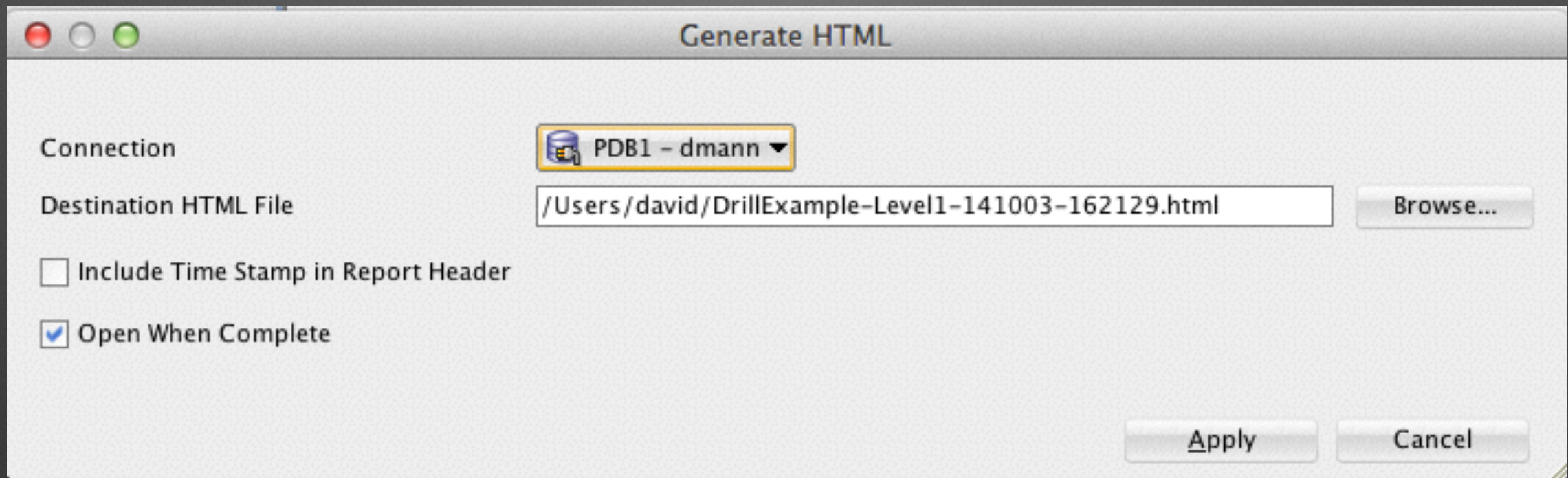
Chart Usage

- Combine Parent Summary chart with Child Detail report
- Can click on chart region to generate child report
- Best of both worlds - digest the summary but have access to detail

Save as HTML



Options



The image shows a 'Generate HTML' dialog box with a standard Mac OS X title bar (red, yellow, and green buttons). The dialog contains the following elements:

- Connection:** A dropdown menu with a database icon and the text 'PDB1 - dmann'.
- Destination HTML File:** A text field containing the path '/Users/david/DrillExample-Level1-141003-162129.html' and a 'Browse...' button to its right.
- Options:** Two checkboxes: 'Include Time Stamp in Report Header' (unchecked) and 'Open When Complete' (checked).
- Buttons:** 'Apply' and 'Cancel' buttons at the bottom right.

Table Report as HTML

Drill Example - Level 1

Refresh: 0

	DEPTNO	DNAME	LOC
1	10	ACCOUNTING	NEW YORK
2	20	RESEARCH	DALLAS
3	30	SALES	CHICAGO
4	40	OPERATIONS	BOSTON

DrillExample-Level1-141003-162029.html

file:///Users/david/DrillExample-Level

Reader

Apple - Su...ice Options Apple Yahoo! Google Maps

Drill Example - Level 1

DEPTNO	DNAME	LOC
10	ACCOUNTING	NEW YORK
20	RESEARCH	DALLAS
30	SALES	CHICAGO
40	OPERATIONS	BOSTON

Chart Rendered in SQL Dev

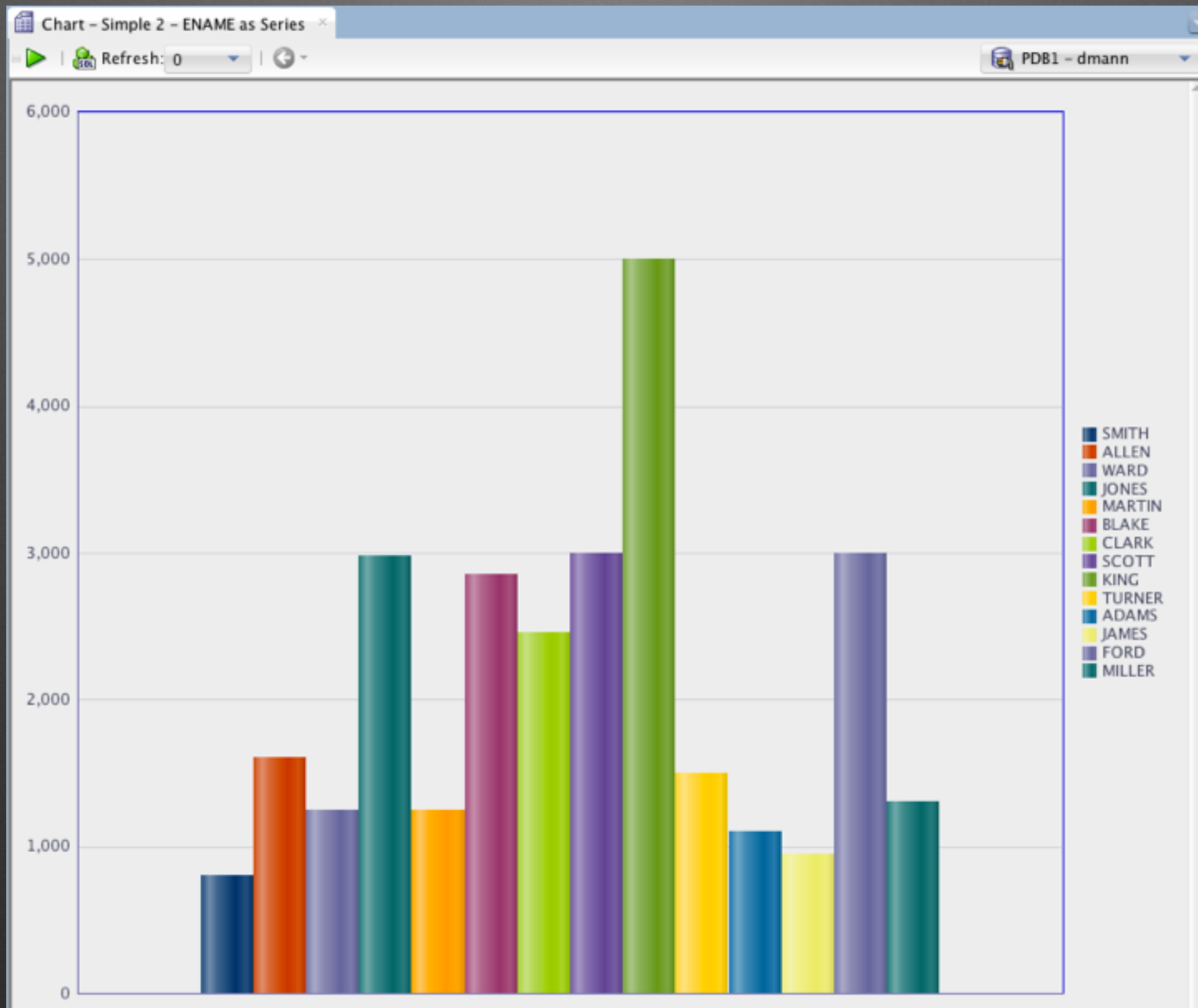
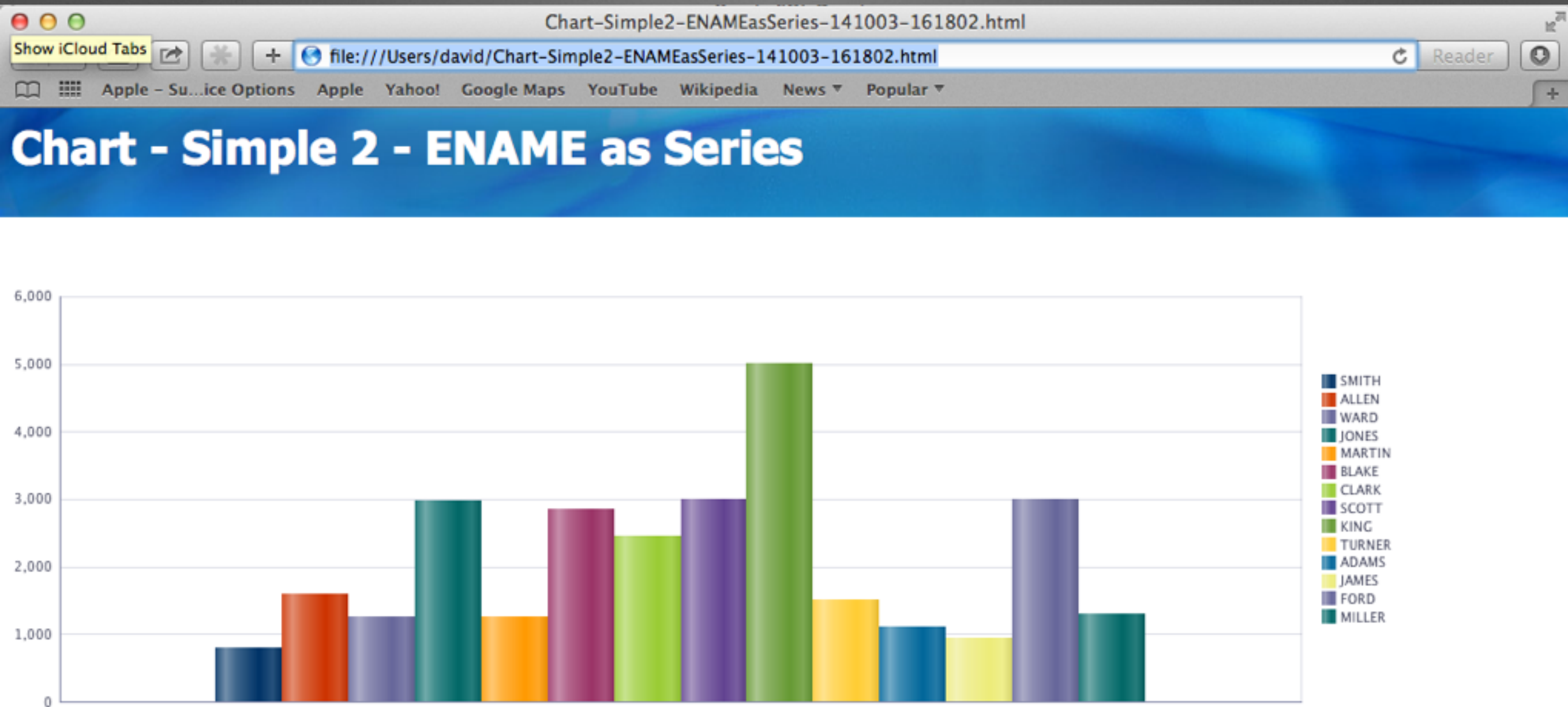


Chart as HTML



**Advanced :
Internal HTML Render
&
PL/SQL DBMS_OUTPUT**

HTML - Internal Render

- PL/SQL DBMS_OUTPUT or Table Cell
- Supports HTML subset
 - Supports inline CSS
- No:
 - Style sheets
 - Javascript

HTML Example 1

```
BEGIN
DBMS_OUTPUT.PUT_LINE( '<a NAME="TOP">' );

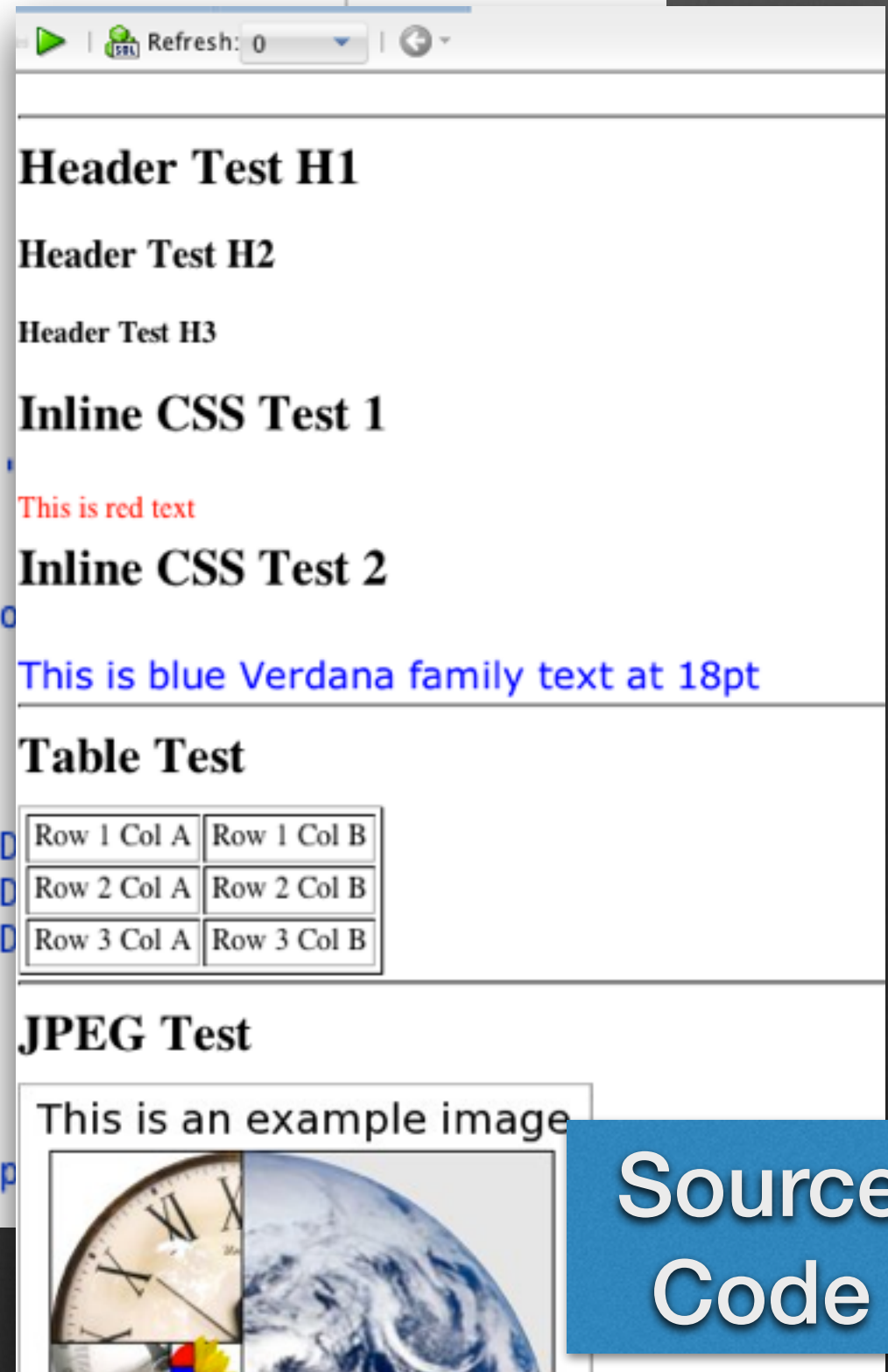
DBMS_OUTPUT.PUT_LINE( '<HR>' );
DBMS_OUTPUT.PUT_LINE( '<H1>Header Test H1</H1>' );
DBMS_OUTPUT.PUT_LINE( '<H2>Header Test H2</H2>' );
DBMS_OUTPUT.PUT_LINE( '<H3>Header Test H3</H3>' );

DBMS_OUTPUT.PUT_LINE( '<H1>Inline CSS Test 1</H1>' );
DBMS_OUTPUT.PUT_LINE( '<P style="color: red">This is red text</P>' );

DBMS_OUTPUT.PUT_LINE( '<H1>Inline CSS Test 2</H1>' );
DBMS_OUTPUT.PUT_LINE( '<P style="color: blue; font-size : 18pt; font-family: Verdana">This is blue Verdana family text at 18pt</P>' );

DBMS_OUTPUT.PUT_LINE( '<HR>' );
DBMS_OUTPUT.PUT_LINE( '<H1>Table Test</H1>' );
DBMS_OUTPUT.PUT_LINE( '<TABLE BORDER=1>' );
DBMS_OUTPUT.PUT_LINE( '<TR><TD>Row 1 Col A</TD><TD>Row 1 Col B</TD></TR>' );
DBMS_OUTPUT.PUT_LINE( '<TR><TD>Row 2 Col A</TD><TD>Row 2 Col B</TD></TR>' );
DBMS_OUTPUT.PUT_LINE( '<TR><TD>Row 3 Col A</TD><TD>Row 3 Col B</TD></TR>' );
DBMS_OUTPUT.PUT_LINE( '</TABLE>' );


DBMS_OUTPUT.PUT_LINE( '<HR>' );
DBMS_OUTPUT.PUT_LINE( '<H1>JPEG Test</H1>' );
DBMS_OUTPUT.PUT_LINE( '<IMG SRC="http://upload.wikimedia.org/wikipedia/commons/4/47/Example_image.jpg">' );
```



Source
Code

HTML Example 2

```
SELECT '<HTML><P style="color: red">This is red text with CSS styling</P></HTML>' as text from dual
union all
SELECT '<HTML><font color="red">This is red text with Font tag</font></HTML>' from dual
union all
SELECT '<HTML><P style="color: blue; font-size : 18pt; font-family: verdana;">' ||
      'This is blue Verdana family text at 18pt with CSS styling</P></HTML>' from dual
union all
SELECT '<HTML><PRE>This is preformatted text with PRE tag</PRE></HTML>' from dual
union all
SELECT '<HTML><IMG SRC="http://upload.wikimedia.org/wikipedia/en/a/a9/Example.jpg"' ||
      ' height=100></HTML>' FROM DUAL
union all
SELECT '<HTML><ul><li>Item 1<li>Item 2</ul></HTML>' FROM DUAL
```

	TEXT
1	This is red text with CSS styling
2	This is red text with Font tag
3	This is blue Verdana family text at 18pt with CSS styling
4	This is preformatted text with PRE tag
5	
6	<ul style="list-style-type: none">Item 1Item 2

Source
Code

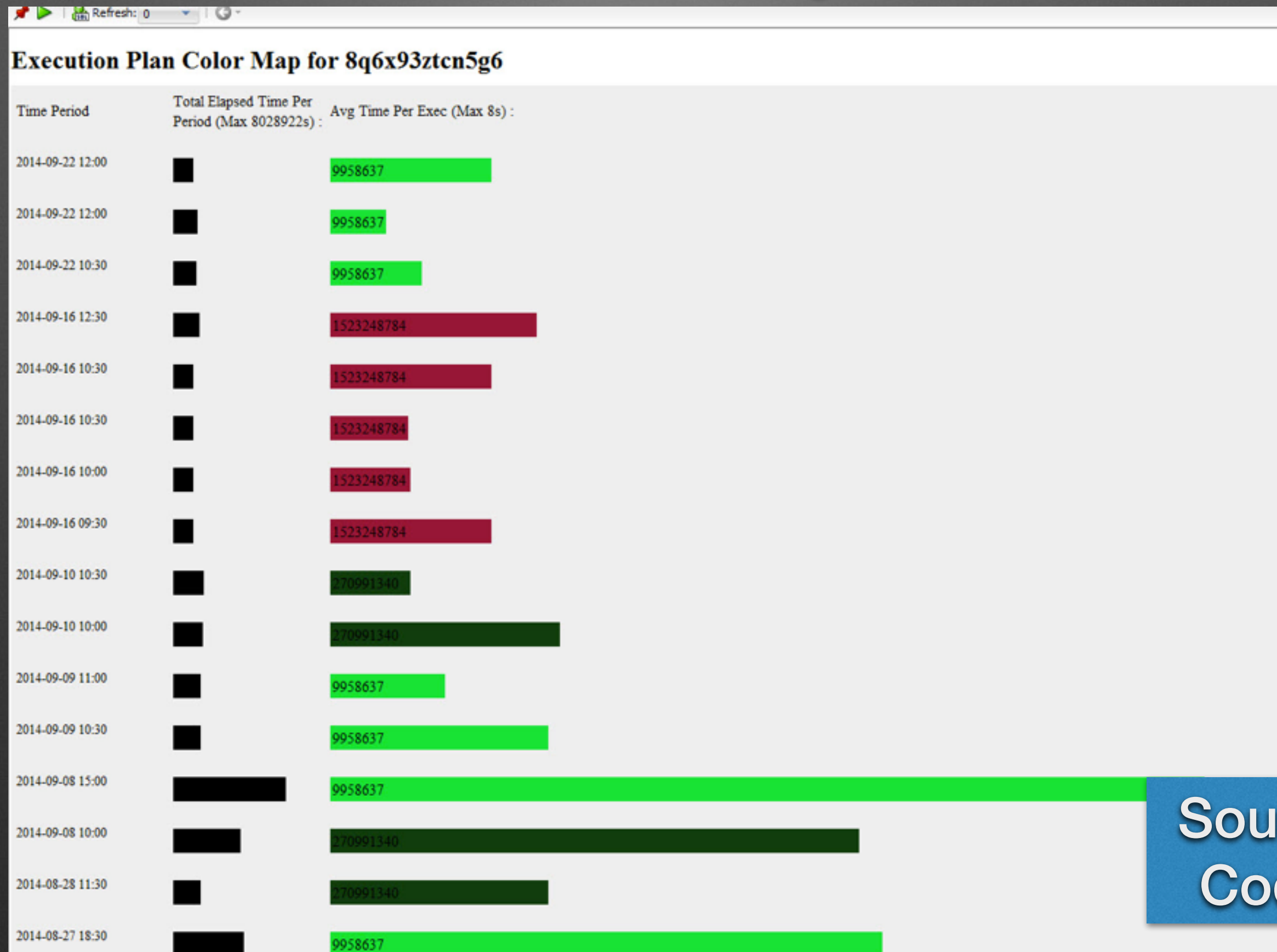
HTML Example 3

Archived Log Heat Map - ORCL - Past 31 days

Date / Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
24-JUL-2012	1	0	21	25	13	10	9	6	11	8	4	0	0	0	0	0	0	0	0	0	0	0	0	0
23-JUL-2012	0	1	20	22	12	9	8	7	6	14	7	2	1	0	2	3	3	1	0	9	1	5	1	0
22-JUL-2012	1	1	18	33	14	11	7	5	8	9	5	2	0	1	2	4	2	1	0	8	1	5	0	1
21-JUL-2012	1	0	21	25	13	11	9	6	8	6	13	3	1	0	2	4	2	0	1	8	0	5	1	0
20-JUL-2012	2	1	20	23	13	9	10	8	8	9	9	8	2	2	2	4	1	0	1	8	1	5	1	0
19-JUL-2012	0	1	22	20	15	10	9	8	11	7	6	10	3	1	1	1	4	2	1	8	1	6	0	14
18-JUL-2012	1	0	20	24	11	12	7	8	9	8	11	6	2	0	1	3	3	1	0	9	1	6	0	1
17-JUL-2012	13	12	23	27	11	10	8	7	9	9	12	10	6	1	2	3	3	0	1	9	1	6	1	0
16-JUL-2012	1	1	22	20	12	12	8	5	8	11	6	9	8	4	1	4	3	1	0	9	0	7	1	3
15-JUL-2012	1	0	19	20	13	10	8	6	6	12	5	2	1	1	1	4	2	1	0	8	1	5	1	0
14-JUL-2012	1	1	20	23	12	9	9	6	8	11	9	2	1	1	1	4	3	0	1	7	1	6	3	1
13-JUL-2012	1	0	16	16	13	11	7	8	9	8	11	4	1	3	7	2	3	2	0	8	1	6	1	0
12-JUL-2012	1	0	23	25	12	11	8	10	13	9	11	6	2	1	2	5	2	0	1	9	0	6	1	0
11-JUL-2012	1	1	24	23	12	11	9	5	2	4	5	2	2	1	3	4	0	1	1	9	0	7	1	0
10-JUL-2012	1	0	21	27	11	11	8	7	9	8	9	7	2	1	2	5	1	0	1	8	1	6	1	0

Source
Code

HTML Example 4



Source
Code

Advanced:
HTML External Render
PL/SQL DBMS_OUTPUT

HTML - External Render

- Many report types will save to local HTML file
- Formatting decisions made for you
- Not all features may translate

Advanced: Command Line Interface

Command Line

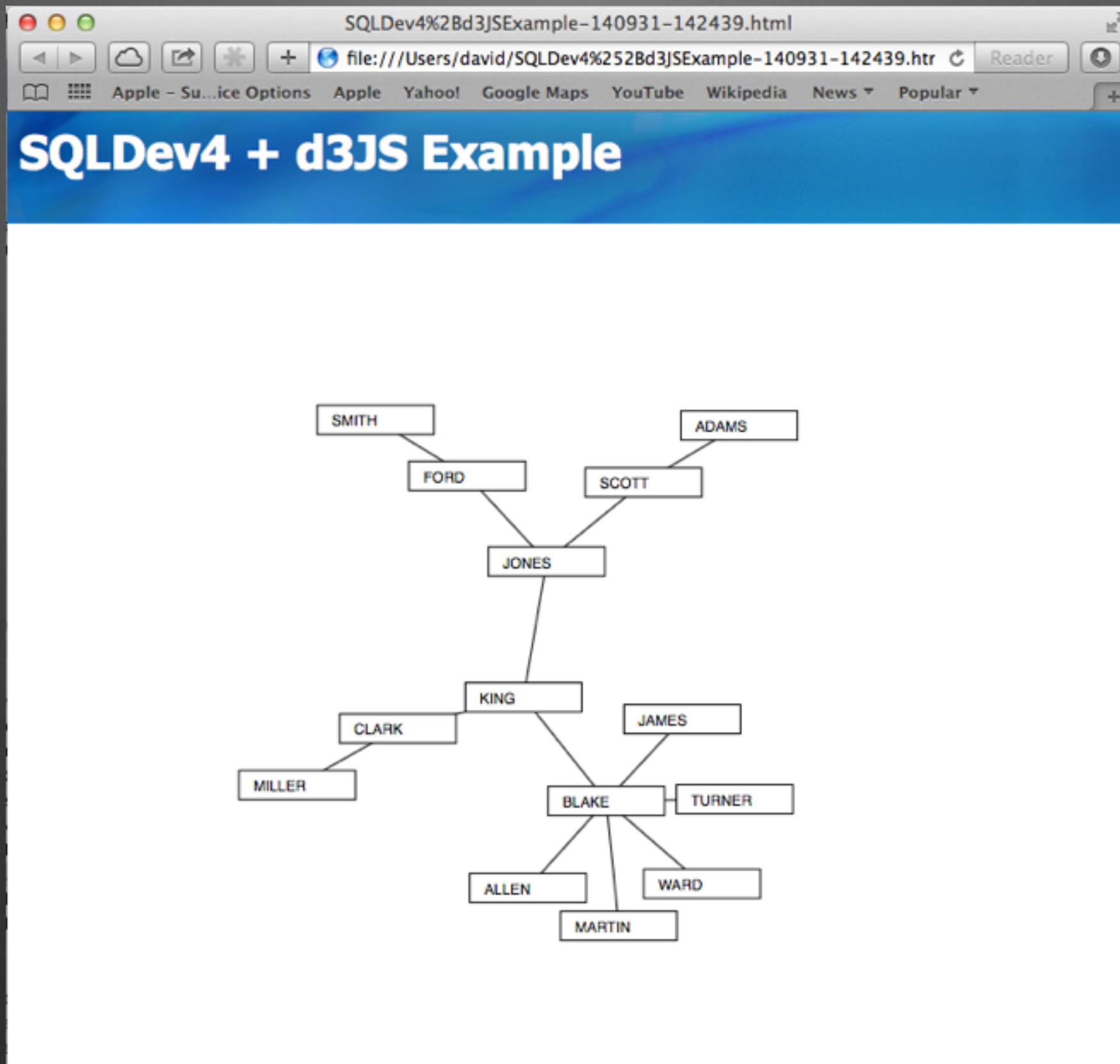
- Develop in SQL Developer, call from Command Line
- Leverages SQL Developer connection info
- Can supply Bind variables
- Con: Heavyweight JVM Startup

```
./sdcli reports generate \  
-report "User Defined Reports/My Report" \  
-db "PDB1 - dmann" \  
-file /tmp/test.html \  
-bind name=value
```

Putting It All Together

- Let's make the most complicated UDF we can
 - HTML Report
 - External render
 - Javascript referencing external libraries
 - Kick it off via the command line
 - Look at familiar data in a new way

Example Output



Source
Code

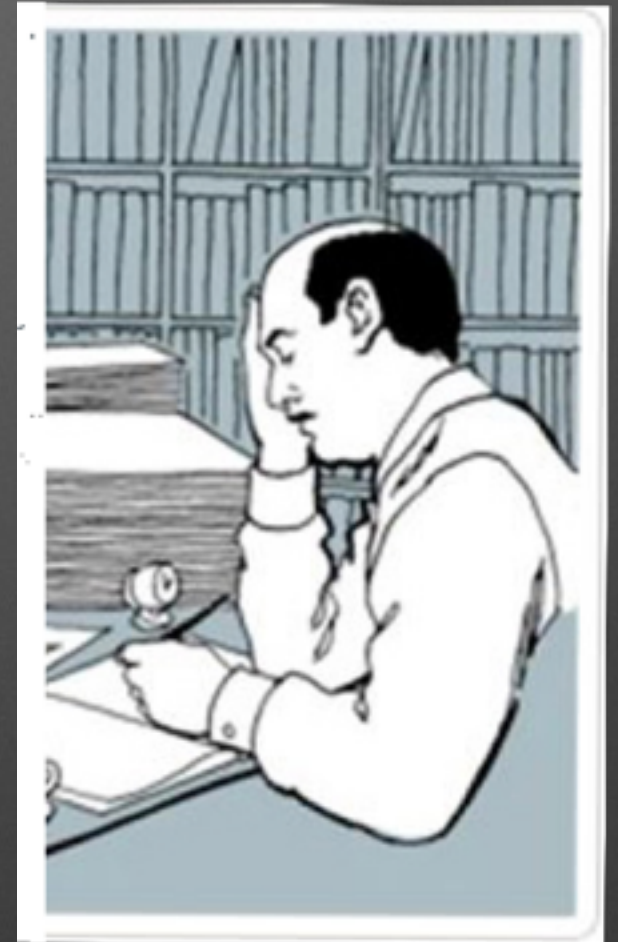
Behind the Scenes

- Check the XML
- Do you feel lucky?

```
<?xml version="1.0" encoding="UTF-8" ?>
<displays>
<display id="59c90032-0149-1000-8001-c0a858eeb059" ty
"requiredLic="diagnostics">
    <name><![CDATA[ASH Report For The Past 30 Min
    <description><![CDATA[]]></description>
    <tooltip><![CDATA[]]></tooltip>
    <drillclass><![CDATA[]]></drillclass>
```

Where Do You Go From Here?

- Start your own collection of UD Reports
- SQL Analytic Features
- Custom Actions
- What can you automate?
- SQL Developer Exchange, OTN
- <http://github.com/dmann99/SQLDevUDRepPack>
- “5 in 5” at <http://ba6.us>



Questions

Slides, code, links :

<http://ba6.us>

david@ba6.us

[@ba6dotus](#) 

<http://github.com/dmann99>



References

- <http://www.thatjeffsmith.com/archive/2014/04/how-to-add-custom-actions-to-your-user-reports/>
- <http://www.thatjeffsmith.com/archive/2012/07/customizing-monitor-sessions-in-oracle-sql-developer/>

Abstract

- SQL Developer has proved itself as one of the most innovative and useful tools available for Oracle users, DBAs, and developers. With the release of version 4.0 the included and custom report options have been greatly expanded. This session will review the different types of reports available in SQL developer and review the powerful Custom Reports features. Demos will include creating simple and complex user defined reports, leveraging the new graph types, as well as a discussion and demo of the new command line HTML reports generation features.