



SQL Developer Tips for Everyone



Presented by: John Jay King

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Session Objectives



- Use Oracle SQL Developer to create, modify, and test SQL
- Discover the power of SQL Developer in creating and debugging PL/SQL
- Learn how SQL Developer makes creating, altering, deleting database objects easier
- Become aware of DBA tooling and reporting built into SQL Developer
- Model data using SQL Developer Data Modeler

Who Am I?



- John King – Partner, King Training Resources
- Oracle Ace Director An orange Ace of Spades playing card icon.
- Member Oak Table Network The OakTable logo, which consists of the word "OakTable" in a serif font above a stylized brown wooden table icon.
- Providing training to Oracle and IT community for over 25 years – <http://www.kingtraining.com>
- “Techie” who knows Oracle, ADF, SQL, Java, and PL/SQL pretty well (along with many other topics)
- Member of AZORA, ODTUG, IOUG, and RMOUG



- Providing customized training solutions since 1988 in the US and internationally
- Oracle topics include: SQL, PL/SQL, Database, Cloud, APEX, ADF, MAF, Forms, Reports, Pro*C/Pro*COBOL
- Non-Oracle topics include: UX, Web Services, IoT, Cloud Foundry, REST, Blockchain, Java, JavaScript, HTML5, CSS, jQuery, COBOL, .NET, SQL Server, DB2, Business Analyst, and more
- Visit us at www.kingtraining.com for more information and free downloads of presentations and code
- Contact Peggy at 1.303.798.5727 to schedule training today (email: peggy@kingtraining.com)

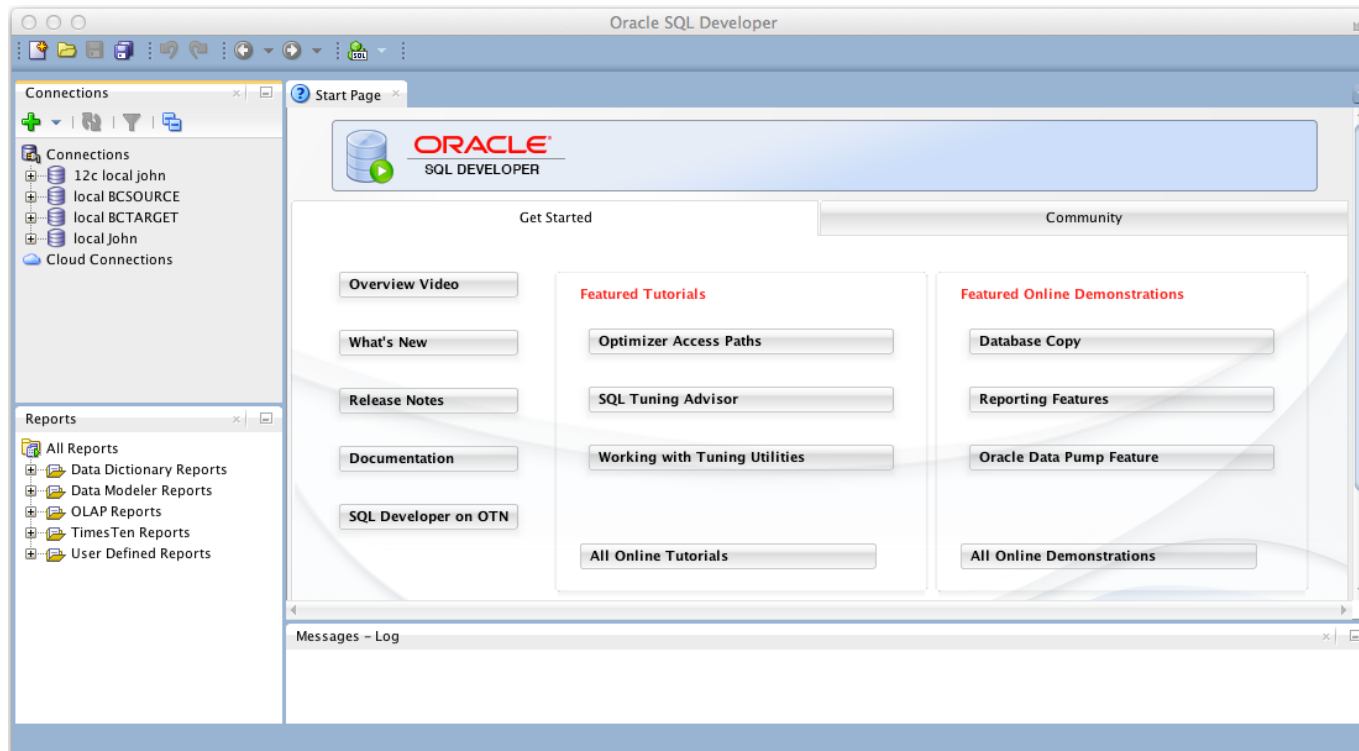
Arizona, USA



New SQL Developer



- Oracle SQL Developer 4.2 available; many new features & supports Oracle 12c
- Runs in Linux, Unix, MS Windows, and Mac OS x (requires Java SE JDK to run)



Getting SQL Developer



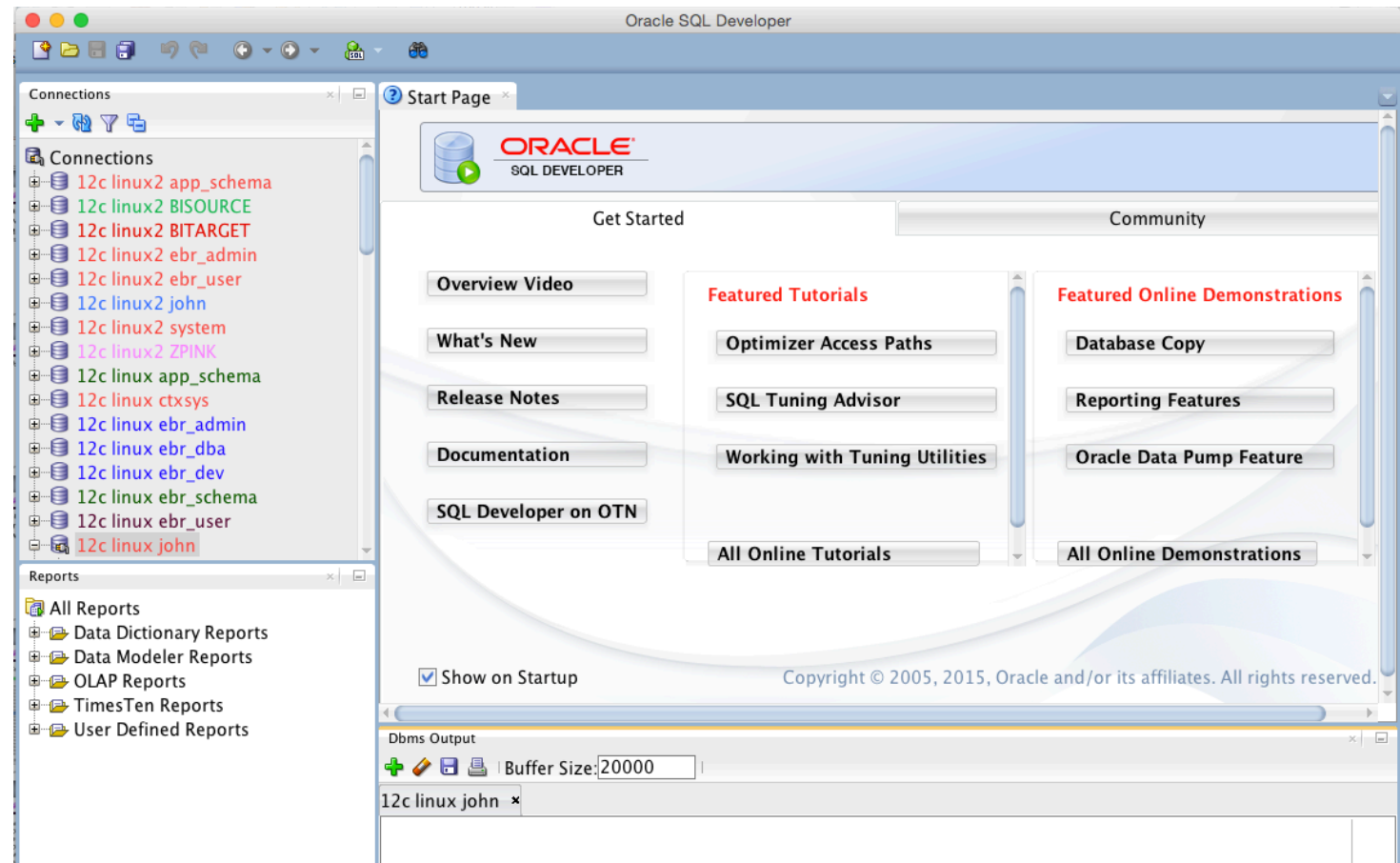
- Use Oracle.com “downloads” page

The screenshot shows the Oracle.com website's SQL Developer Downloads page. The top navigation bar includes the Oracle logo, a menu icon, a search bar, and links for Sign In and Country. The breadcrumb trail reads: Oracle Technology Network > Developer Tools > SQL Developer > Downloads. A left sidebar lists various Oracle products, with SQL Developer selected. The main content area has tabs for Overview, Downloads (active), Documentation, Community, and Learn More. Below the tabs is a section titled 'SQL Developer Downloads' with a database icon and a play button. It includes a 'License Agreement' section with a link to the OTN License Agreement for SQL Developer and radio buttons to 'Accept License Agreement' (selected) or 'Decline License Agreement'. Below this is the 'SQL Developer 4.2' section, stating 'Version 4.2.0.17.089.1709, Updated April 12, 2017' and providing links for Release Notes, Bugs Fixed, New Features, and Documentation. The download section lists three options: 'Windows 64-bit with JDK 8 included' (400 MB), 'Windows 32-bit/64-bit' (332 MB), and 'Mac OSX' (332 MB). Each option has a 'Download' link and a download icon.

SQL Developer Start Page



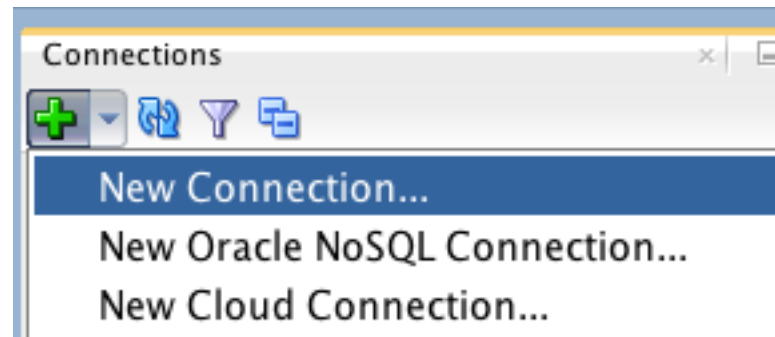
- “Start Page” shown by default; note Tutorials and other options



Create Connection(s)



- SQL Developer can connect to just about anything with a JDBC connect string (works best with Oracle though...)



Connection Parameters



- Connection info must be provided

New / Select Database Connection

Connection...	Connection...
12c linux a...	app_schem...
12c linux ct...	ctxsys@//1...
12c linux e...	ebr_admin...
12c linux e...	ebr_dba@/...
12c linux e...	ebr_dev@//...
12c linux e...	ebr_schem...
12c linux e...	ebr_user@/...
12c linux jo...	john@//19...
12c linux js...	jsonuser@/...
12c linux sys	sys@//192...
12c linux s...	sys@//192...
12c linux s...	system@//...
12c linux2 ...	app_schem...
12c linux2 ...	BISOURCE@...
12c linux2 ...	BITARGET@...
12c linux2 ...	ebr_admin...
12c linux2 ...	ebr_user@/...
12c linux2 j...	john@//19...
12c linux2 ...	svstem@//...

Connection Name: 12c linux john

Username: john

Password:

☒ Save Password

Oracle

Connection Type: Basic Role: default

Hostname: 192.168.0.61

Port: 1539

☐ SID

☒ Service name: pdb1.localdomain

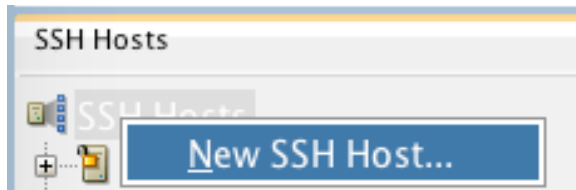
☐ OS Authentication ☐ Kerberos Authentication

Status :

Connecting Via SSH, 1



- To connect to a database via SSH (e.g. DBaaS instance) you first define the SSH Host
- From SSH View (View->SSH from the SQL Developer menu)
 - Right-click and choose “New SSH Host”



Connecting Via SSH, 2



- Use information from instance to define a new SSH Host
 - Name: your choice
 - Host: IP address
 - Port: 22
 - Username: oracle
 - Check “Use key file” and browse to the private key file matching the database public key file
 - Check “Add a Local Port Forward” and pick name, host, and port
 - Click “OK” when done

New SSH Host

Name mydbaas2

Host 129.144.15.167 Port 22

Username oracle

☒ Use key file

/Users/john/mydbaas2 Browse...

☒ Add a Local Port Forward

Name sedemo1

Host localhost Port 1521

☒ Automatically assign local port

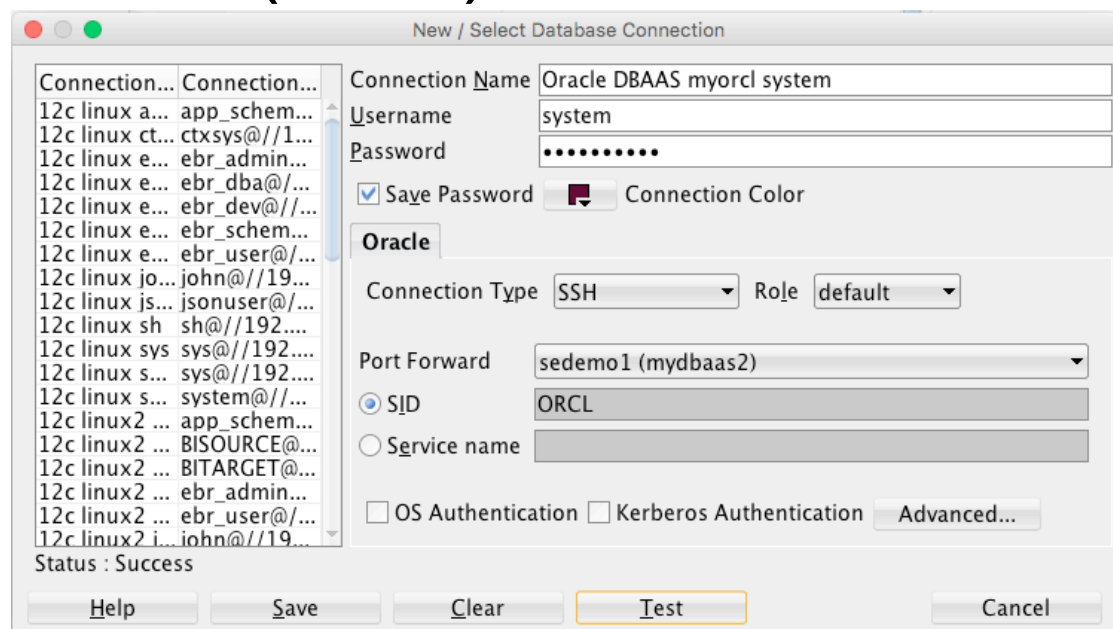
☐ Use specific local port 0

Help OK Cancel

Connecting Via SSH, 3




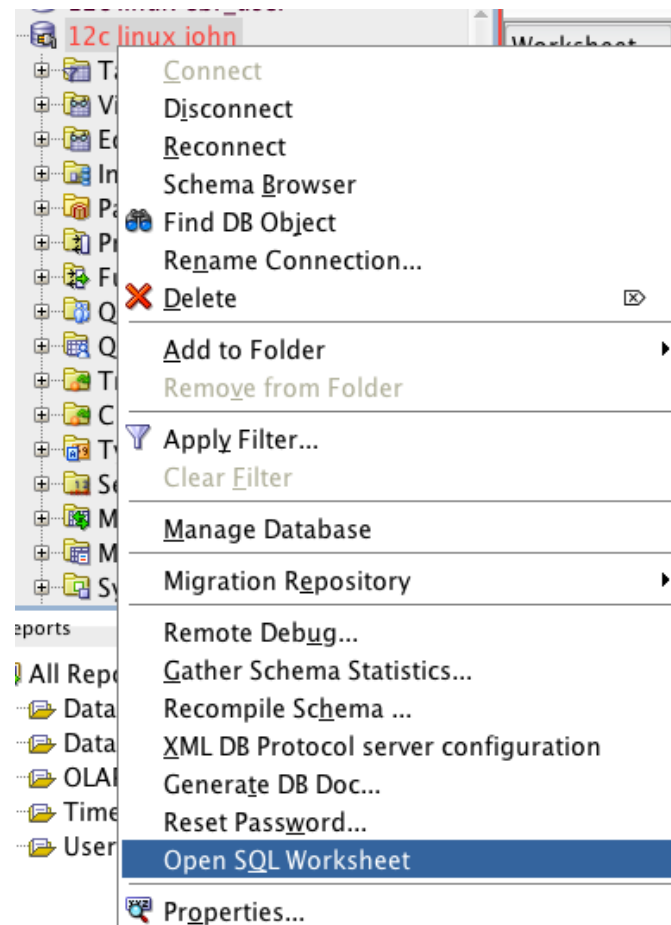
- Create connection to the instance (CDB): specify a username and password; choose Connection Type “SSH” and specify the Port Forward name from the previous step; use the SID (CDB) or Service Name (PDB)



Running SQL



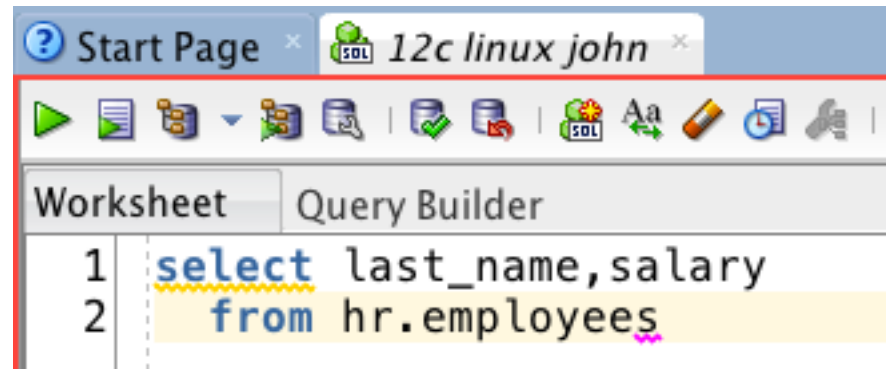
- Click on connection  to open initial worksheet; right-click and “Open SQL Worksheet” for more worksheets





Write Your Own SQL



- You may enter SQL as desired, SQL Developer has many code-assist features



- Testing may be done in a few ways
 -  Run line(s); runs selected line(s)
 -  Run script(s); runs selected line(s) as a script – most SQL*Plus commands work here!

Query Builder



- Instead of writing/modifying SQL, use the Query Builder for graphic manipulation

Worksheet

Query Builder

Main

employees (hr)

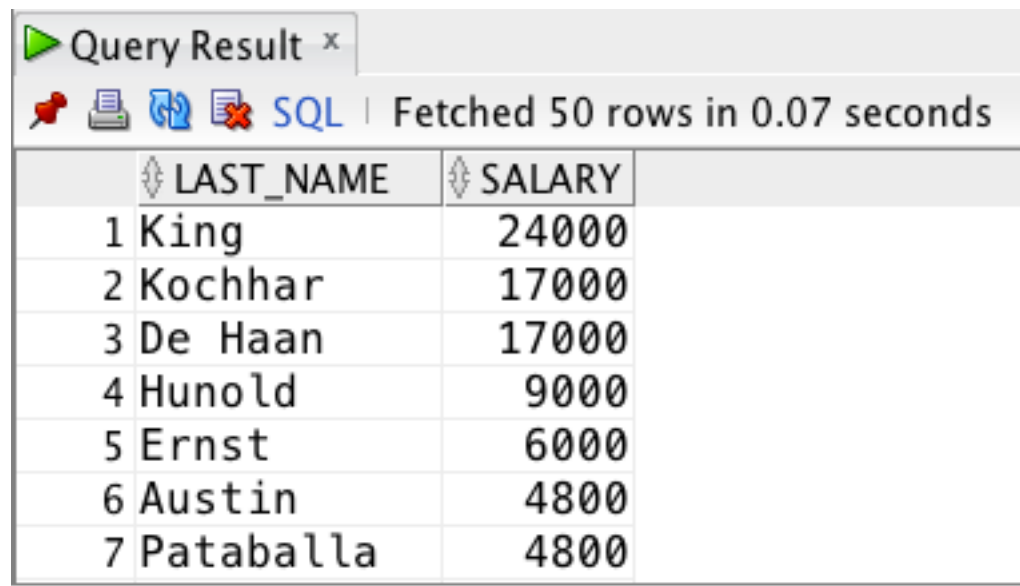
☐ *
☐ EMPLOYEE_ID
☐ FIRST_NAME
☒ LAST_NAME
☐ EMAIL
☐ PHONE_NUMBER
☐ HIRE_DATE
☐ JOB_ID
☒ SALARY
☐ COMMISSION_PCT
☐ MANAGER_ID
☐ DEPARTMENT_ID

Out...	Expression	Aggregate	Alias	Sort Type	Sort Order	<input type="checkbox"/> Groupi...	Criteria	Or
<input checked="" type="checkbox"/>	hr.employees.LAST_NAME					<input type="checkbox"/>		
<input checked="" type="checkbox"/>	hr.employees.SALARY					<input type="checkbox"/>		
<input type="checkbox"/>						<input type="checkbox"/>		

Results from Run Line



- Run Line results in a formatted output window

A screenshot of a "Query Result" window from a database application. The window has a title bar with a green play button icon and the text "Query Result x". Below the title bar is a toolbar with icons for a pin, a printer, a refresh, and a close button, followed by the text "SQL | Fetched 50 rows in 0.07 seconds". The main area of the window displays a table with two columns: "LAST_NAME" and "SALARY". The table contains seven rows of data, each with a row number in the first column.

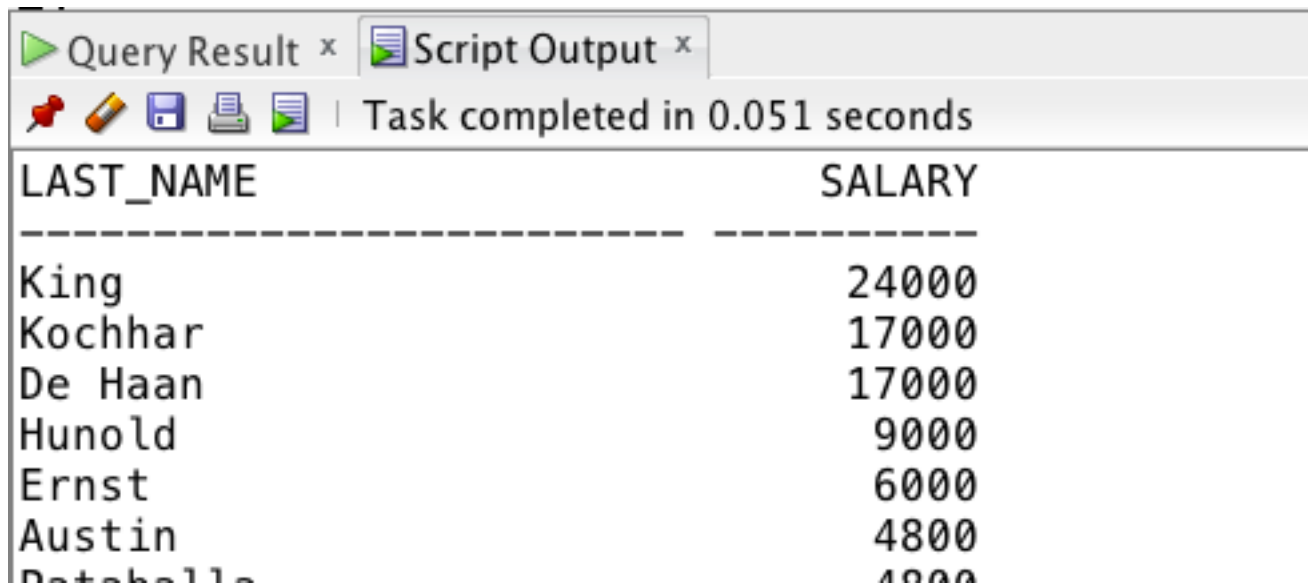
	LAST_NAME	SALARY
1	King	24000
2	Kochhar	17000
3	De Haan	17000
4	Hunold	9000
5	Ernst	6000
6	Austin	4800
7	Pataballa	4800

- Number of rows fetched is preference, number displayed only shows rows currently scrolled to
- Results may be copied or exported elsewhere

Result from Run Script



- Run Script results in output that looks like that from SQL*Plus (formatting too)

A screenshot of a SQL*Plus window showing the output of a script. The window has two tabs: "Query Result x" and "Script Output x". The "Script Output x" tab is active. Below the tabs, there are icons for a red pin, a pencil, a save icon, a print icon, and a green play button. To the right of these icons, it says "Task completed in 0.051 seconds". Below this, there is a table with two columns: "LAST_NAME" and "SALARY". The table has a header row with dashed lines under the column names, and several data rows. The data rows show the last names of employees and their corresponding salaries.

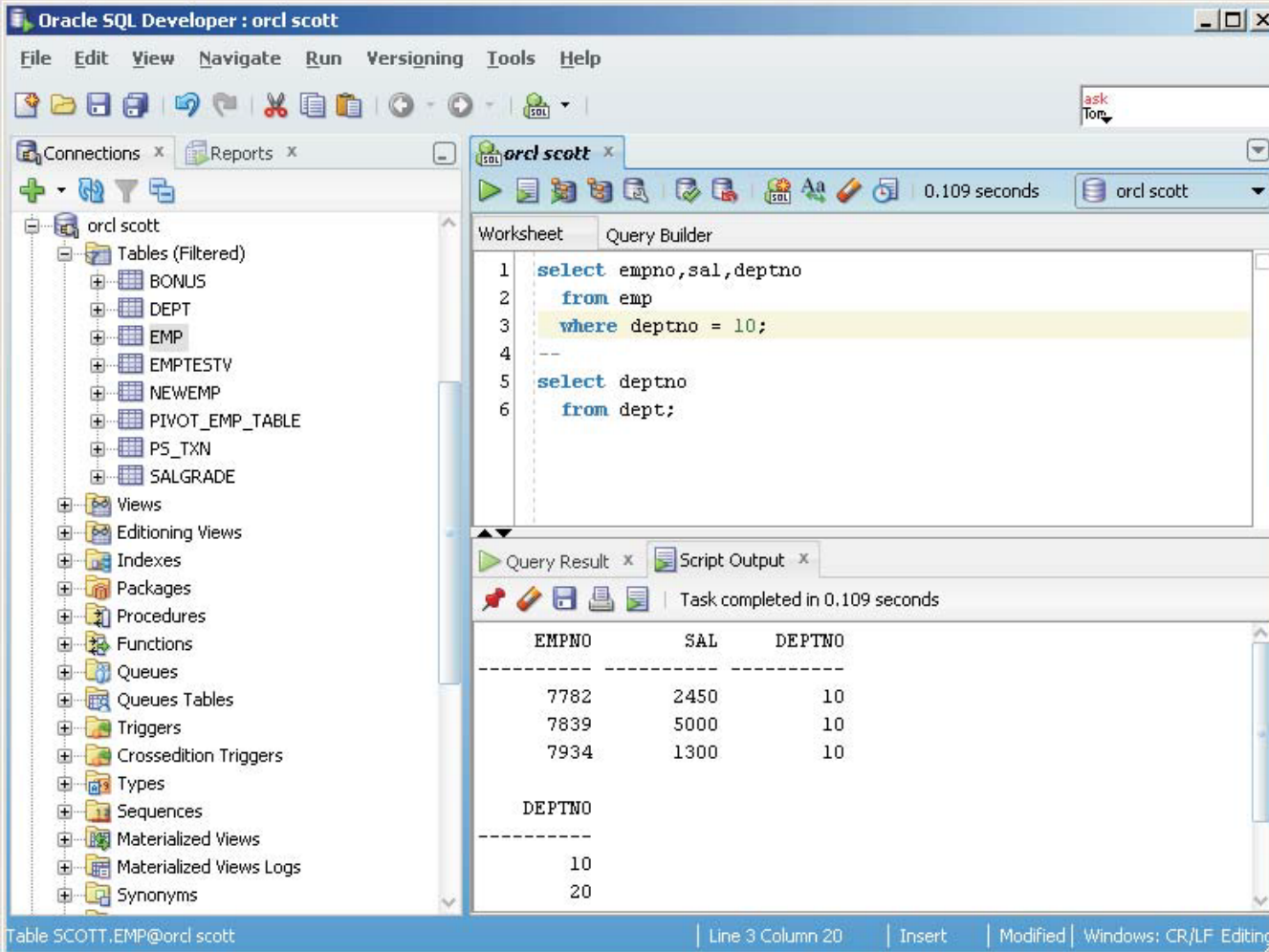
LAST_NAME	SALARY
King	24000
Kochhar	17000
De Haan	17000
Hunold	9000
Ernst	6000
Austin	4800
Datob...	...

– SET ECHO ON to include SQL with output

Multiple Command Scripts



- Run multiple PL/SQL, SQL, SQL*Plus scripts; delimit with semi-colons & “Run Script” 



Oracle SQL Developer : orcl scott

File Edit View Navigate Run Versioning Tools Help

Connections x Reports x

orcl scott

Tables (Filtered)

- BONUS
- DEPT
- EMP
- EMPTESTV
- NEWEMP
- PIVOT_EMP_TABLE
- PS_TXN
- SALGRADE

Views

Editing Views

Indexes

Packages

Procedures

Functions

Queues

Queues Tables

Triggers

Crossedition Triggers

Types

Sequences

Materialized Views

Materialized Views Logs

Synonyms

Worksheet Query Builder

```
1 select empno,sal,deptno
2   from emp
3  where deptno = 10;
4
5 --
6 select deptno
   from dept;
```

Query Result x Script Output x

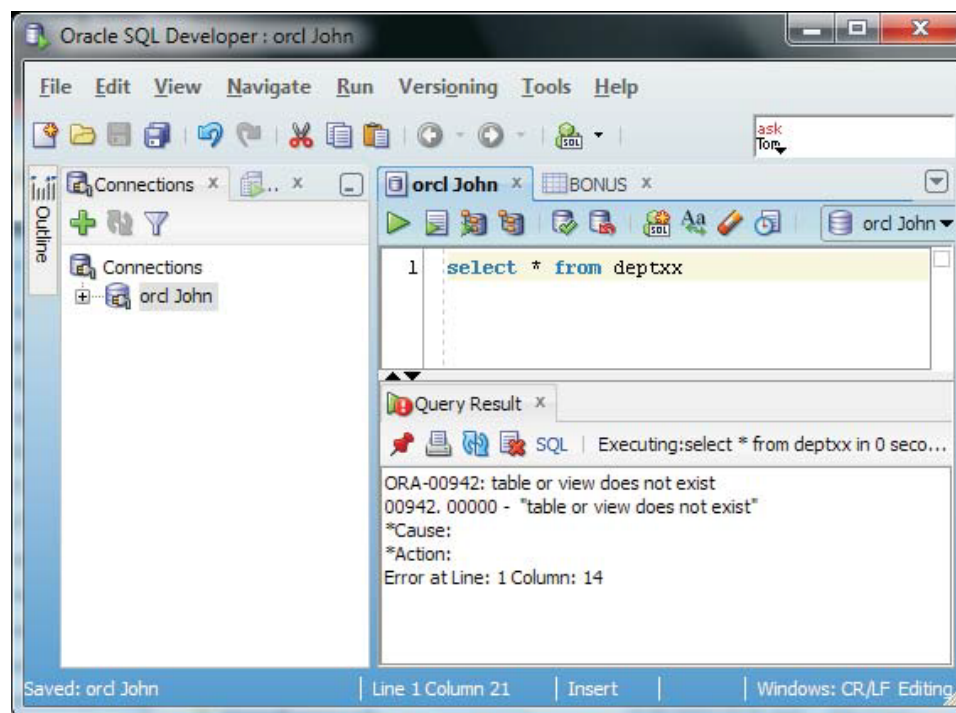
Task completed in 0.109 seconds

EMPNO	SAL	DEPTNO
7782	2450	10
7839	5000	10
7934	1300	10
DEPTNO		
10		
20		

Table SCOTT.EMP@orcl scott | Line 3 Column 20 | Insert | Modified | Windows: CR/LF Editing



- SQL Developer shows errors when needed

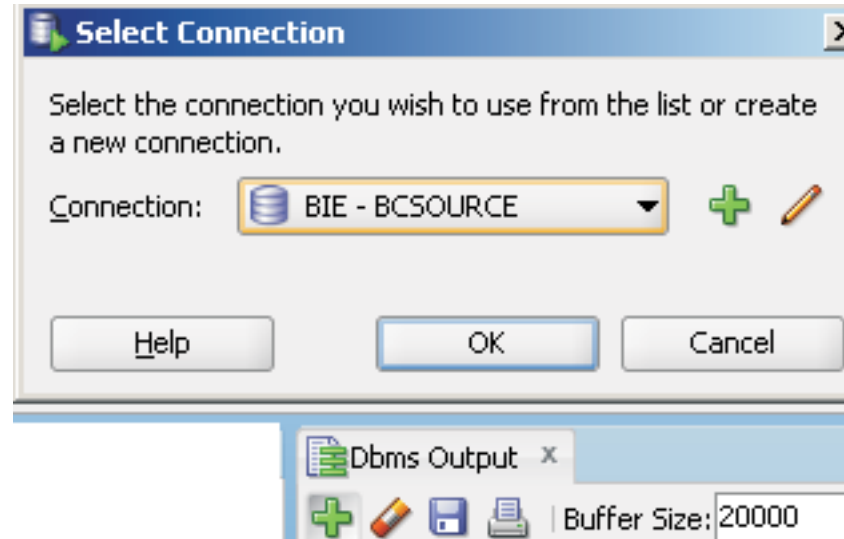


- Error messages include line number and column
- Display line numbers; right-click in gutter then “Toggle Line Numbers” or set in preferences

Seeing DBMS_OUTPUT

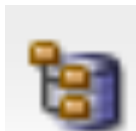


- Many PL/SQL scripts use DBMS_OUTPUT as a debug aid; turn on using View->DBMS_OUTPUT then choose user





- Click the “Explain” icon to get SQL plan



0.009 seconds virtual box john

Worksheet Query Builder

```

1 SELECT last_name,first_name,department_name
2 FROM hr.employees emp join hr.departments dept
3   on emp.department_id = dept.department_id
4 WHERE dept.department_id IN (10,20,30,50,100,200)
5 ORDER BY last_name
  
```

Explain Plan x

SQL | 0.009 seconds

OPERATION	OBJECT_NAME	OPTIONS	CARDINALITY	COST
SELECT STATEMENT			60	5
SORT		ORDER BY	60	5
HASH JOIN			60	4
Access Predicates				
EMP.DEPARTMENT_ID=DEPT.DEPARTMENT_ID				
NESTED LOOPS			60	4
NESTED LOOPS			60	4
STATISTICS COLLECTOR				
INLIST ITERATOR				
TABLE ACCESS	HR.DEPARTMENTS	BY INDEX ROWID	6	2



- Click “AutoTrace” icon to show trace data



0.071 seconds virtual box john

Worksheet Query Builder

```

1 SELECT last_name,first_name,department_name
2 FROM hr.employees emp join hr.departments dept
3   on emp.department_id = dept.department_id
4 WHERE dept.department_id IN (10,20,30,50,100,200)
5 ORDER BY last_name
  
```

Explain Plan x Autotrace x

SQL HotSpot | 0.071 seconds

OPERATION	OBJECT_NAME	OPTIONS	CARDINALITY	COST	LAST_CR_BUFFER_GETS	LAST_ELAPSED_TIME
SELECT STATEMENT				5	11	265
SORT		ORDER BY	60	5	11	265
HASH JOIN			60	4	11	208
Access Predicates						
EMP.DEPARTMENT_ID=DEPT.DEPARTMENT_ID						
NESTED LOOPS			60	4	11	181
NESTED LOOPS			60	4	7	119
STATISTICS COLLECTOR					4	57
INLIST ITERATOR					4	38
TABLE ACCESS	HR_DEPARTMENTS	BY INDEX	6	2	4	21

AutoTrace Testing



- Use the AutoTrace context menu to experiment with alternate plans via hints

OPERATION	OBJECT_NAME	OPTIONS
SELECT STATEMENT		
SORT		ORDER BY
HASH JOIN		
Access Predicates		
EMP.DEPARTMENT_ID=DEPT.DEPARTMENT_ID		
NESTED LOOPS		
TABLE ACCESS	HR.EMPLOYEES	FULL

Other XM
IGNOR
OPTIM

Expand predicates&projection

Expand All

Collapse predicates&projection

Collapse older siblings

Export HTML

/*+ INDEX(EMP@SEL\$1 EMP_EMAIL_UK) */

/*+ INDEX(EMP@SEL\$1 EMP_EMP_ID_PK) */

/*+ INDEX(EMP@SEL\$1 EMP_DEPARTMENT_IX) */

/*+ INDEX(EMP@SEL\$1 EMP_JOB_IX) */

/*+ INDEX(EMP@SEL\$1 EMP_MANAGER_IX) */

/*+ INDEX(EMP@SEL\$1 EMP_NAME_IX) */

/*+ FULL(@SEL\$1 EMP@SEL\$1)*/

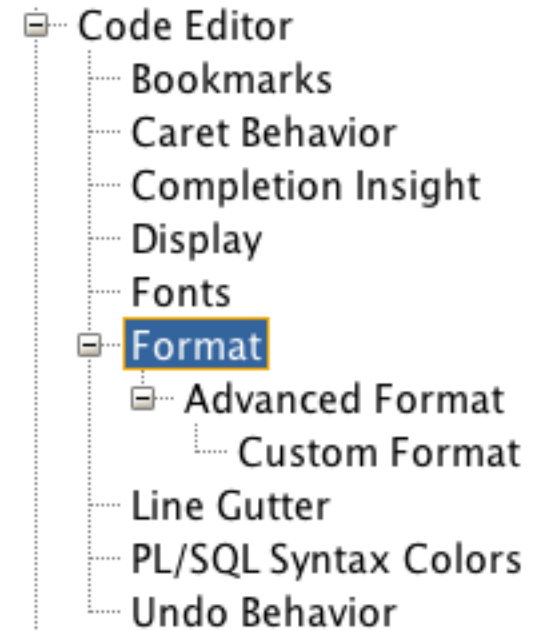
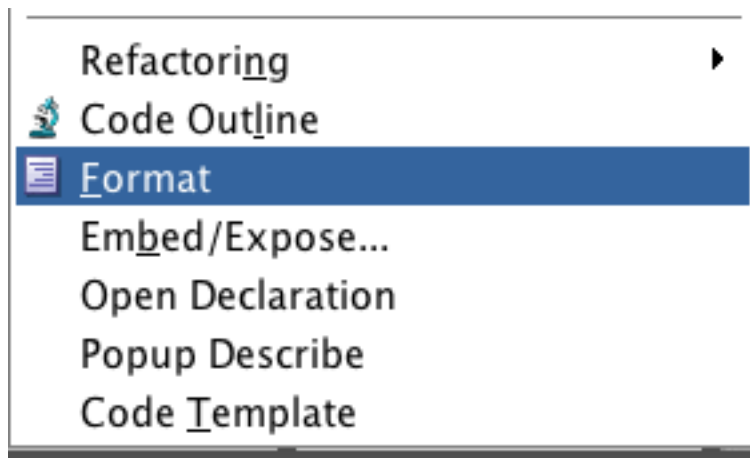
Dbms Output

+ | Buf

Formatting

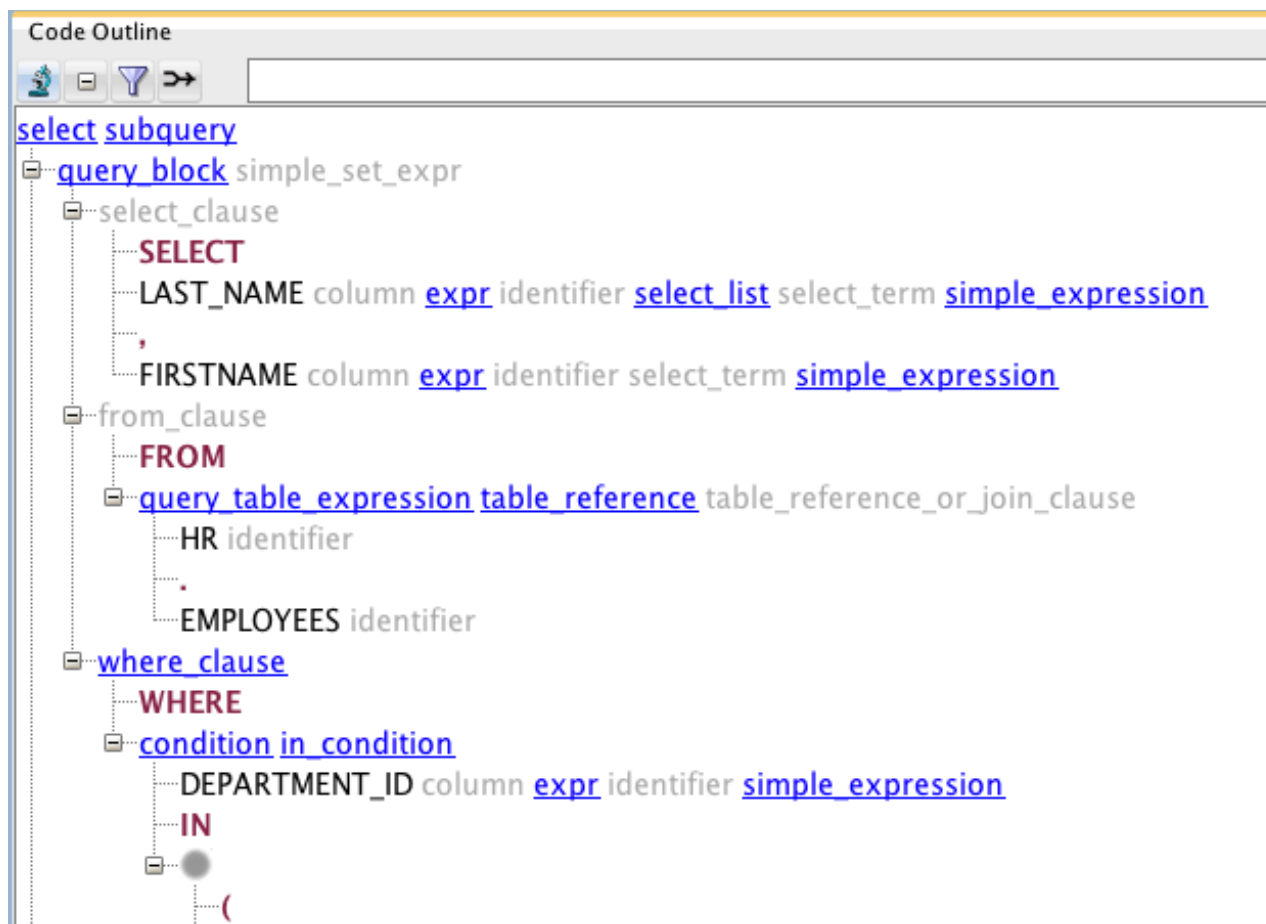


- Formatting is managed in preferences
- Right click in the SQL Worksheet and choose option “Format”





- Choose “Code Outline” from the context window to see what the parser sees

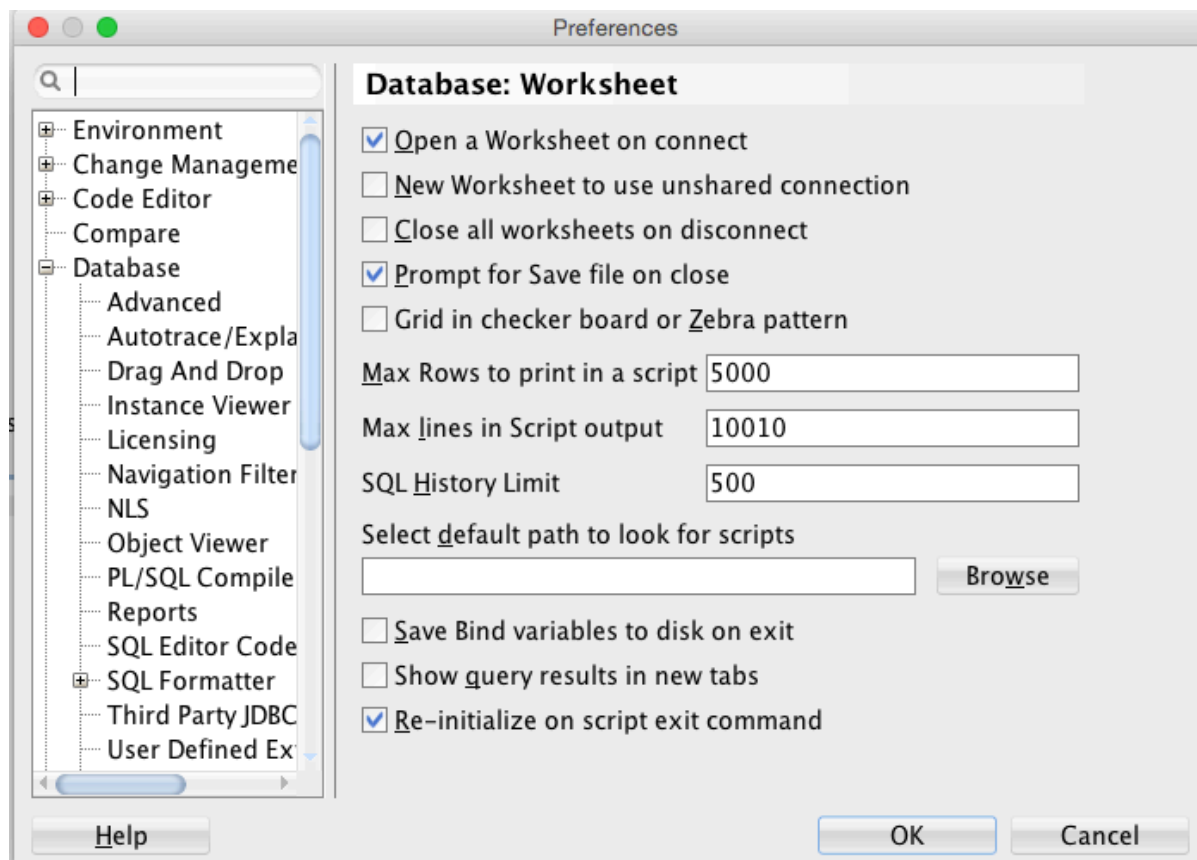




- SQL Developer has many preference options



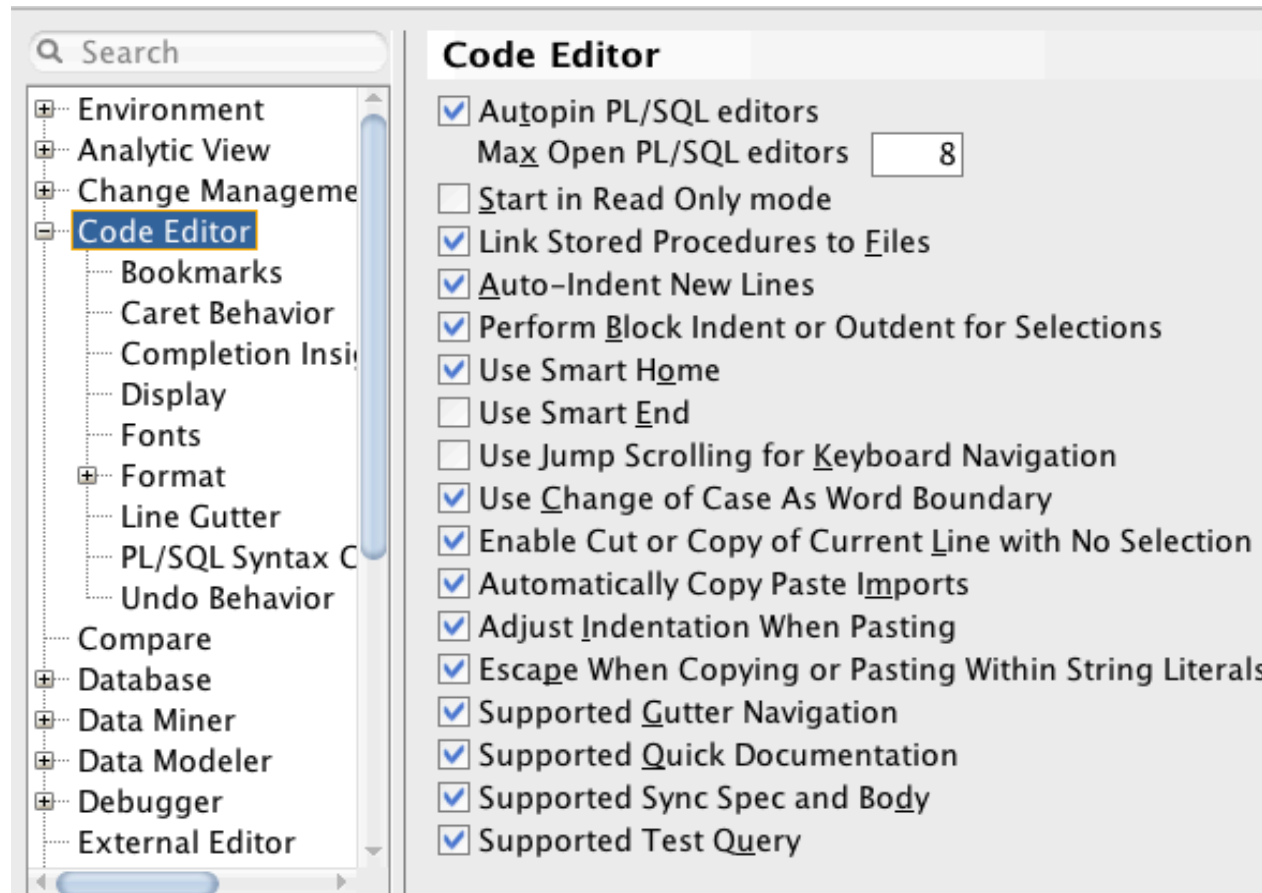
- Font
- History
- Colors
- Code-Assist
- More...



Controlling Auto-Editing



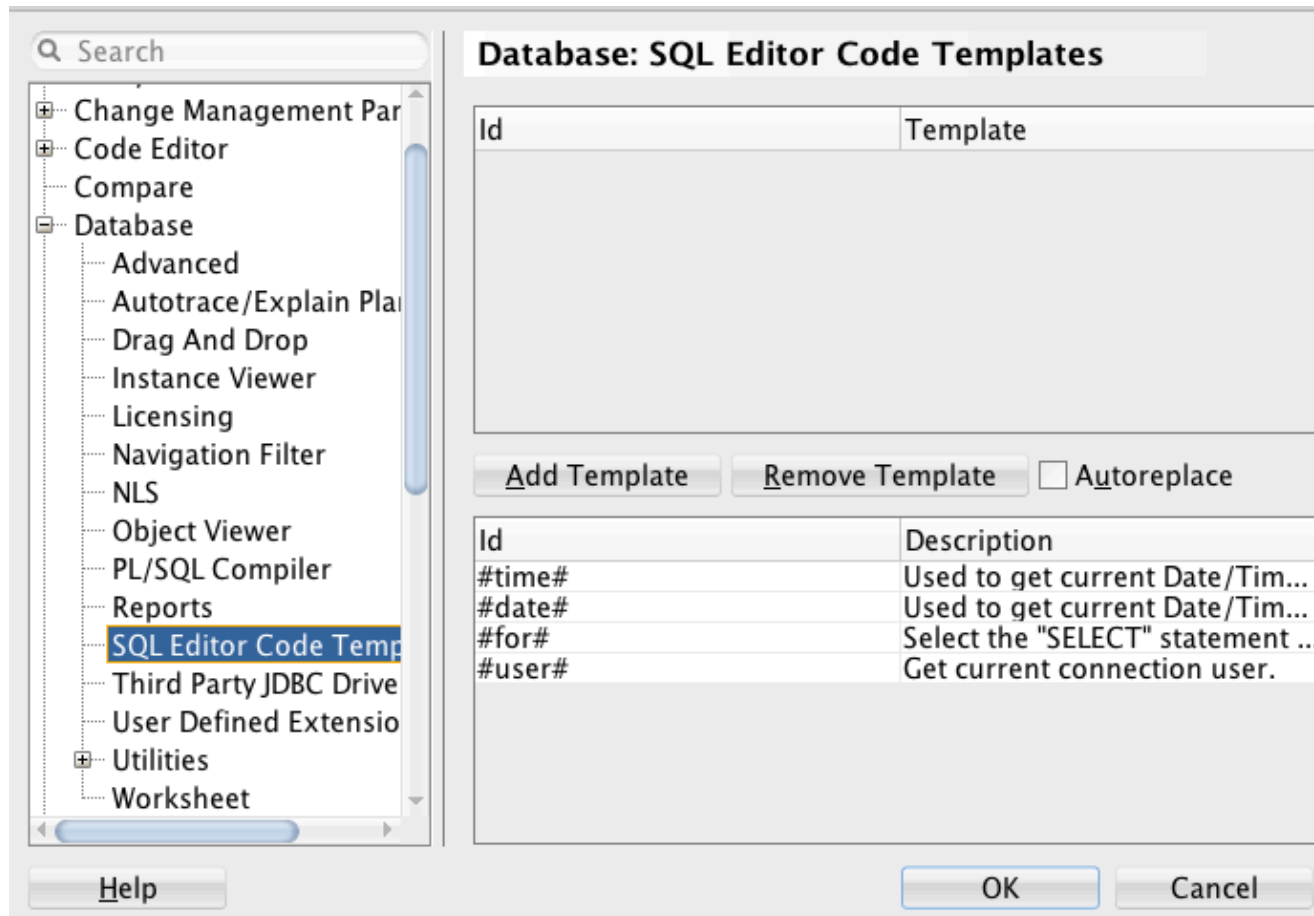
- Use the preferences panel to manage the “automatic” editing SQL Developer features



Code Templates



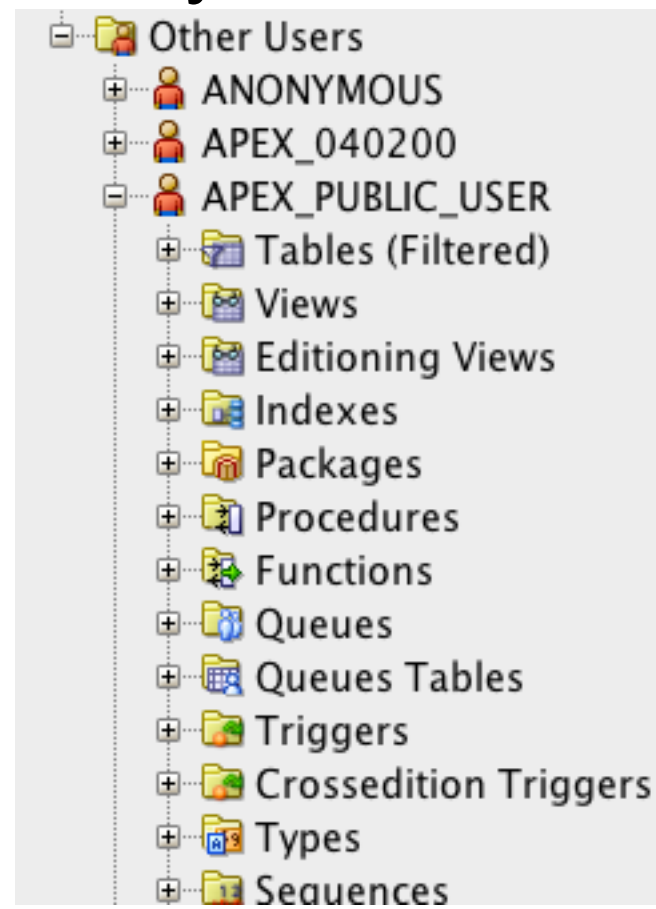
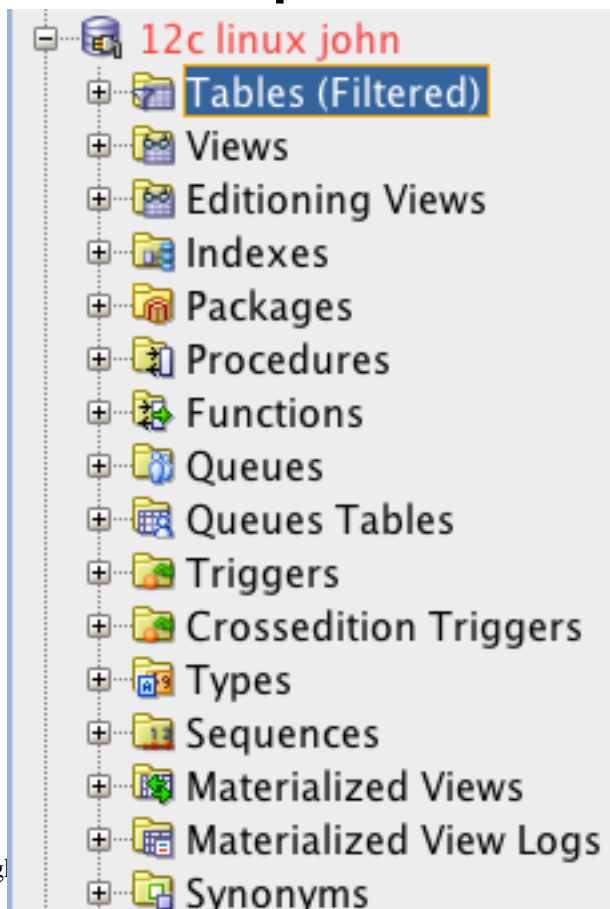
- Use Preferences to use existing code templates and to create custom templates



Object Display/Manipulation



- Use the Object navigator to view objects belonging to the current connection's id or others – preferences may be used to limit



Object Manipulation



- The object display has many options including:
 - Right click to generate DDL for objects via the context menu
 - Double-click to work with a specific object
 - Drag and drop objects between connections, even remote connections

Table Display



- View/Modify database objects easily

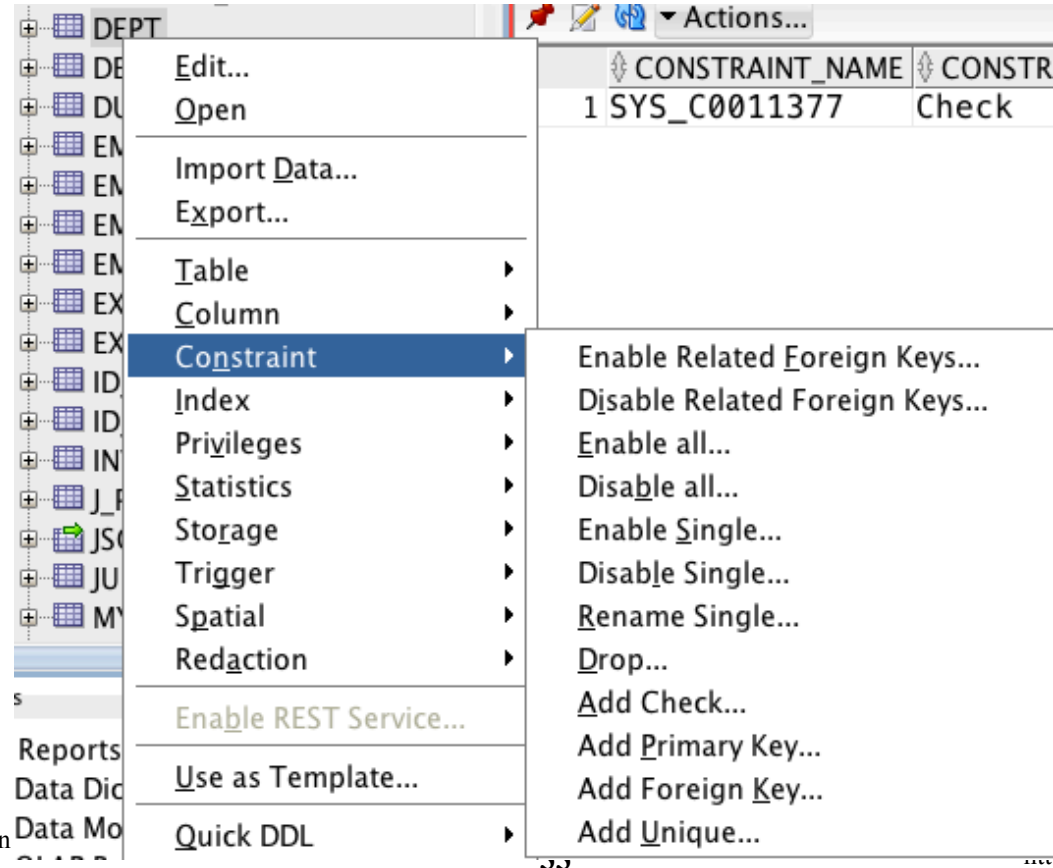
	COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
1	EMPNO	NUMBER(4,0)	No	"JOHN"."ISEQ\$\$_96764".nextval	1	(null)
2	ENAME	VARCHAR2(10 BYTE)	Yes	(null)	2	(null)
3	JOB	VARCHAR2(9 BYTE)	Yes	(null)	3	(null)
4	MGR	NUMBER(4,0)	Yes	(null)	4	(null)
5	HIREDATE	DATE	Yes	(null)	5	(null)
6	SAL	NUMBER(7,2)	Yes	(null)	6	(null)
7	COMM	NUMBER(7,2)	Yes	(null)	7	(null)
8	DEPTNO	NUMBER(2,0)	Yes	(null)	8	(null)

- ALL_ system catalog information available in a few simple tabs (Columns, Data, Constraints, etc.); click SQL to create/see DDL for object

Create/Alter/Drop Objects



- From the Object Navigator display objects may be created, altered, and dropped; data may also be imported/exported



Drag & Drop Object



- Objects may be dragged and dropped from one connection to another
 - Tables, Indexes, and triggers
 - From SQL Server to Oracle (but not the other way)

Create PL/SQL



- Right-click on Procedures, Functions, Packages to build new PL/SQL object
 - Provide name and (optionally) parameters

Schema:

Name:

☐ Add New Source In Lowercase

Parameters:

Name	Mode	No Copy	Data Type	Default Value
INVAL1	IN	<input type="checkbox"/>	NUMBER	
INVAL2	IN	<input type="checkbox"/>	NUMBER	
OUTVAL	OUT	<input type="checkbox"/>	<div> <div>VARCHAR2</div> <div> VARCHAR2 NUMBER DATE CLOB BLOB </div> </div>	

Modify & Test PL/SQL



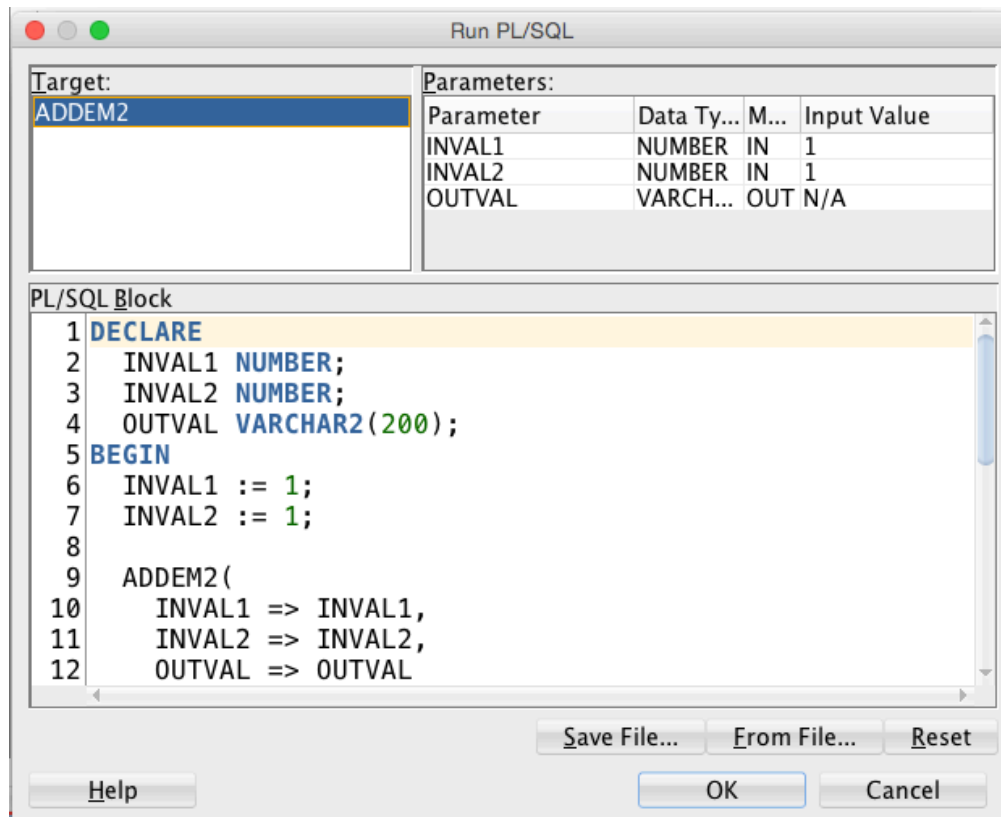
- Type code then use provided icons to Compile, Run, Debug, or Profile (respectively)

```
1 CREATE OR REPLACE PROCEDURE ADDEM2
2 (
3   INVAL1 IN NUMBER
4   , INVAL2 IN NUMBER
5   , OUTVAL OUT VARCHAR2
6 ) AS
7 BEGIN
8   outval := inval1 + inval2;
9 END ADDEM2;|
```

Tool Provides Test Scripts



- When you click “Run” or “Debug” SQL Developer will provide a test script

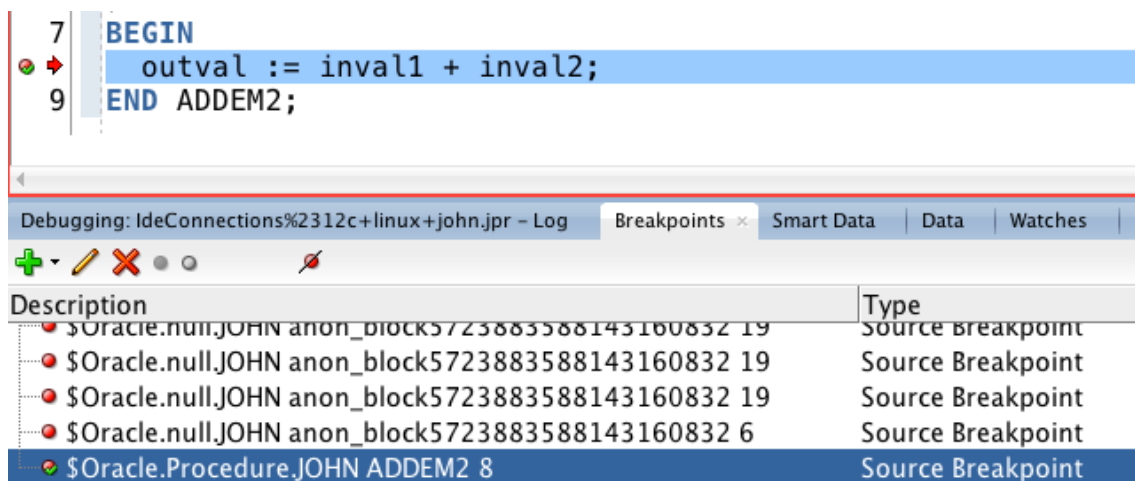


– Set variables as needed and click “OK” to run

Debugging PL/SQL



- SQL Developer's PL/SQL debugger allows all of the things you expect in a debugger

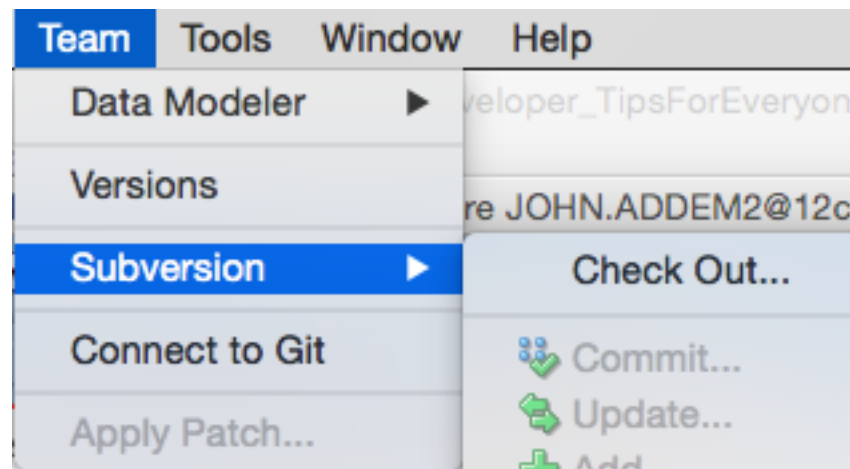


- Setting/removing breakpoints
- Conditional breakpointing
- Stop/Resume execution
- Modify and “Watch” variables
- more...

Versioning



- SQL Developer is prepared to help you in versioning and continuous integration
- Subversion and Git capabilities are built in



Other Programming Aids



- In addition to Subversion and/or Git; SQL Developer also supports:
 - Maven
 - Hudson
 - Unit Testing

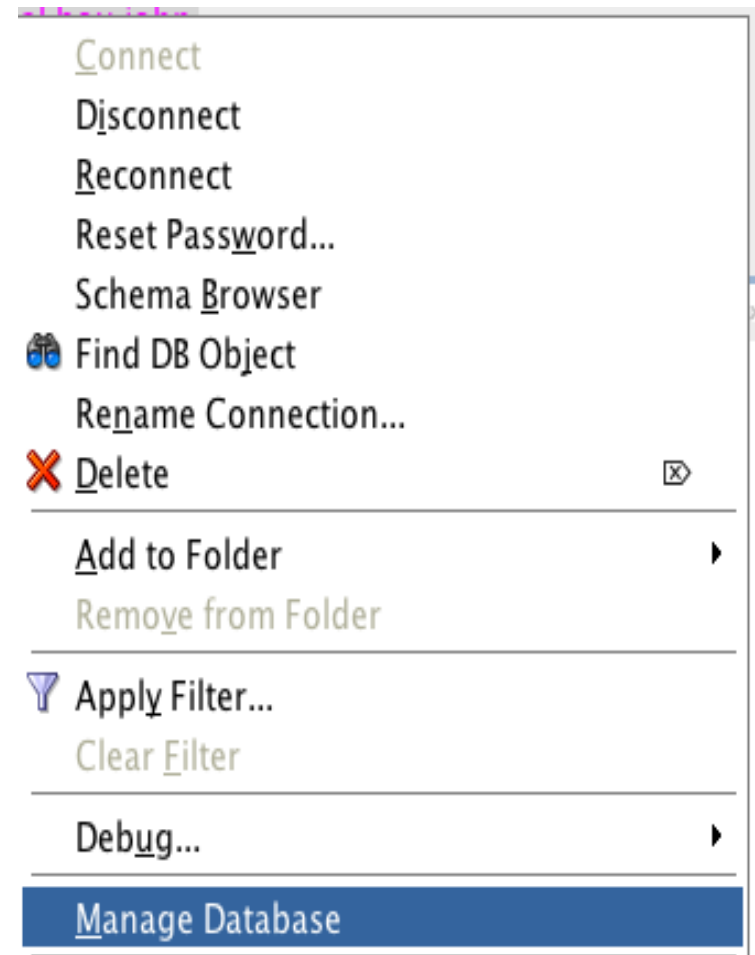


- SQL Developer has many features designed to help DBAs get their jobs done
 - Manage Database and other tools provide DBA features
 - DBA View includes many DBA features
- SQL Developer will display a caution pop-up before allowing use of features requiring additional licensing
- This is not a replacement for Enterprise Manager but may allow you to perform many similar functions simply & quickly

Manage Database, 1



- Use the connection context-menu option “Manage Database”



Manage Database, 2

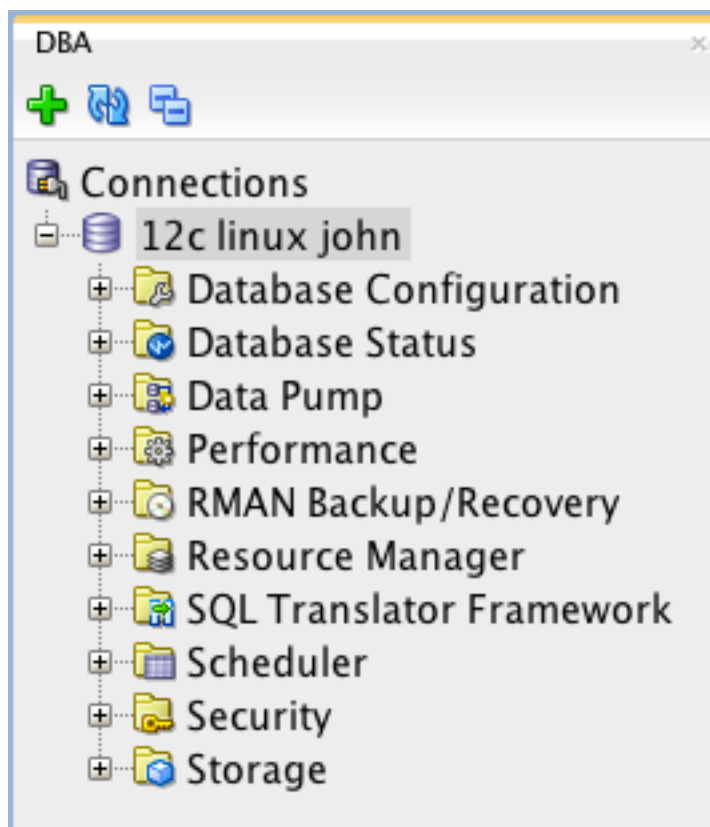


- The “Manage Database” display provides lots of useful high-level data

		Target	Current				
Maximum System Global Area (SGA) Size		0	800				
Program Global Area (PGA) Aggregate Target		200	4				
Current Configuration: (SGA + PGA)		200	804	<div>Refresh</div>			
	TABLESPACE_NAME	PERCENT_USED	PCT_USED	ALLOCATED	USED	FREE	DATAFILES
1	SYSTEM	<div></div>	99.93	350	349.75	0.25	1
2	SYSAUX	<div></div>	95.1	1170	1112.63	57.38	1
3	USERS	<div></div>	95.1	1038.75	987.88	50.88	1
4	APEX_1991375173370654	<div></div>	83.47	7.56	6.31	1.25	1
5	APEX_1993195660370985	<div></div>	39.02	2.56	1	1.56	1
6	UNDOTBS1	<div></div>	9.63	460	44.31	415.69	1
7	TEMP	<div></div>	0	64	0	64	1



- Use View->DBA from the menu to display

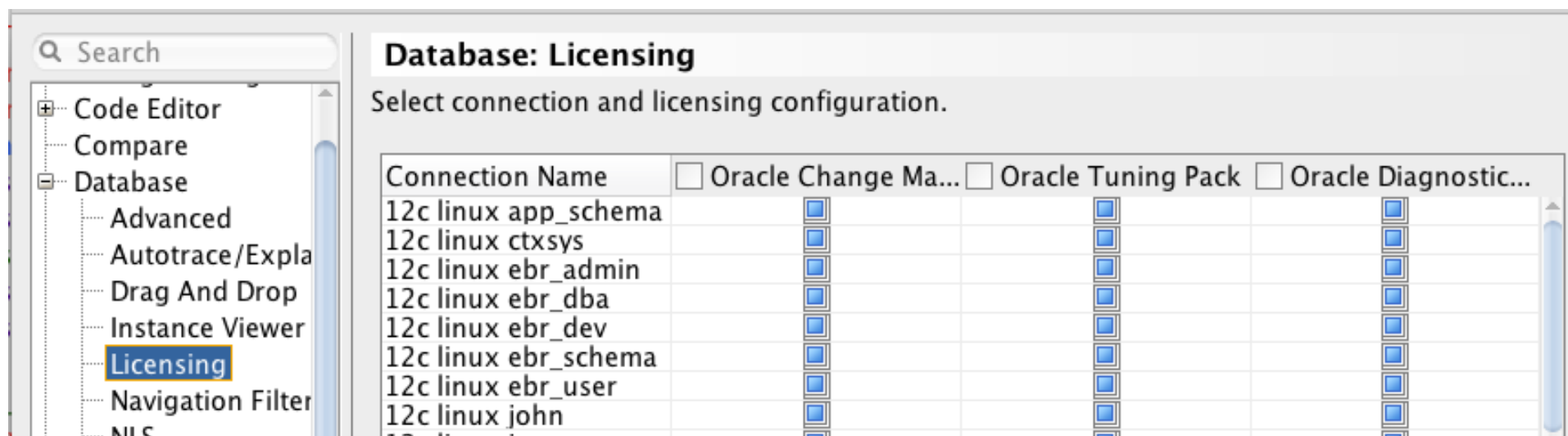


- Be sure NOT to use features unless you have licenses (may limit in preferences)

Database Preferences



- Use Preferences->Database->Licensing page to control use of licensed features (use only features your organization has licensed)



Database Status



- From the DBA view Select Database Status-> Status to see non-graphic display

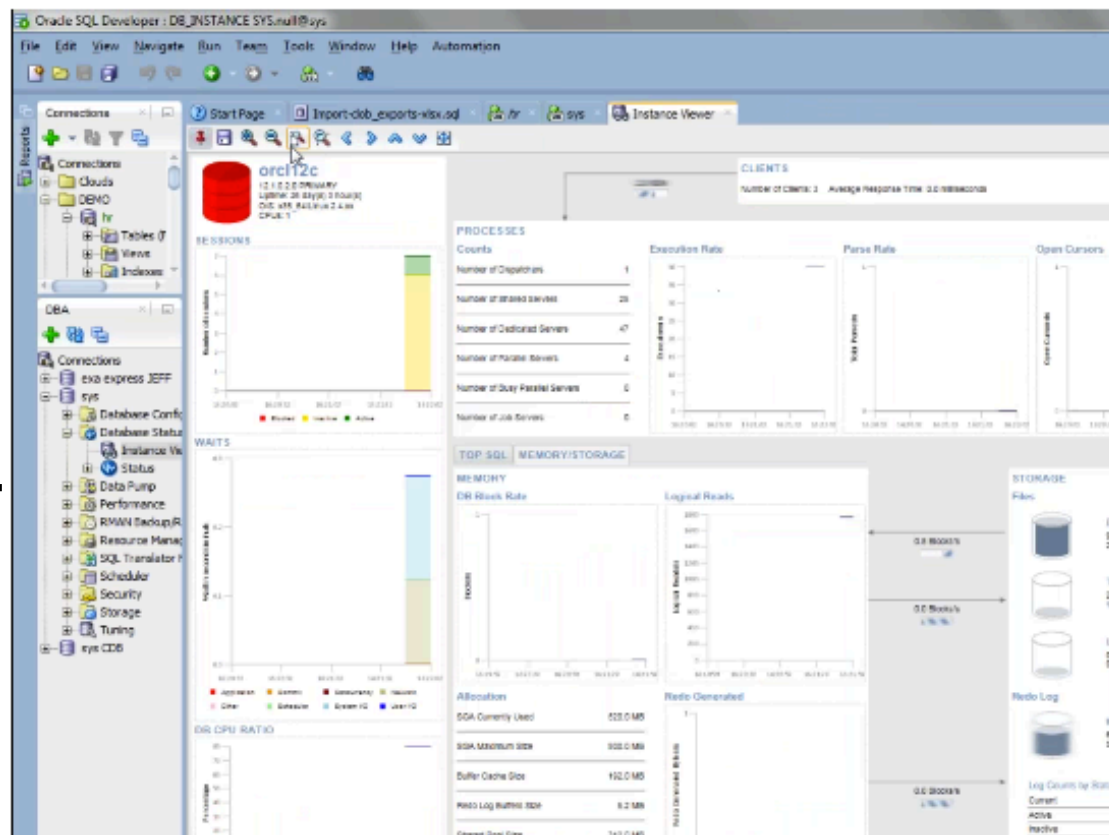
The screenshot shows the Oracle Enterprise Manager interface. On the left, the 'Connections' pane lists several database instances, including 'virtual box john'. The 'DBA' tab is selected. In the main pane, the 'Status' view is active for the 'orcl12c' instance. The 'Database Status' tab is selected, showing the instance is 'OPEN' and has been up since 'JUN 13, 2017 05:05:06 AM'. The 'Instance Name' is 'orcl12c'.

	Current Status	Up Since	Instance Name	Da
1	OPEN	JUN 13, 2017 05:05:06 AM	orcl12c	12

DBA Instance Viewer



- From the DBA view Select Database Status-> Instance Viewer to see a graph of instance health, including Top SQL



– Click on graphics to see specific details

Instance Top SQL



- Double click on instance graph's Top SQL to see Top SQL; click on an individual SQL to get its details

TOP SQL		MEMORY/STORAGE			
#	SQL	CPU Secs.	Disk Reads	Buffer Gets	Execution
1	select /*+ rule */ bucket, endpoint, col#, epvalue, epvalue_row, ep_repeat_count from histgm\$...	21.2 s	17.3K	1.1M	313.9K
2	select /*+ rule */ bucket_cnt, row_cnt, cache_cnt, null_cnt, timestamp#, sample_size, minimum, ...	13 s	5.2K	1.4M	40...
3	select owner#, name, namespace, remoteowner, linkname, p_timestamp, p_obj#, nvl(property, 0), su...	8.6 s	7.4K	774K	36.8K
4	select name, intcol#, segcol#, type#, length, nvl(precision#, 0), decode(type#, 2, nvl(scale, -127)/MAX...	8 s	1.5K	216.7K	53.5K
5	select policy#, action# from aud_object_opts where object# = :1 and type = 2	7 s	438	699.9K	69.2K
6	SELECT /*+ DB_SVC /*+ dynamic_sampling(0) no_sql_tune no_monitoring optimizer_features...	3.9 s	0	691.1K	813
7	select local_tran_id, global_tran_id, global_oracle_id, global_foreign_id, state, status, hour...	3.7 s	224	72.1K	567
8	select order#, columns, types from access\$ where d_obj#=:1	3.4 s	4.5K	486.4K	37.3K
9	SELECT /*+ DB_SVC /*+ dynamic_sampling(0) no_sql_tune no_monitoring optimizer_features...	3 s	0	82.4K	243

Top SQL Details



```

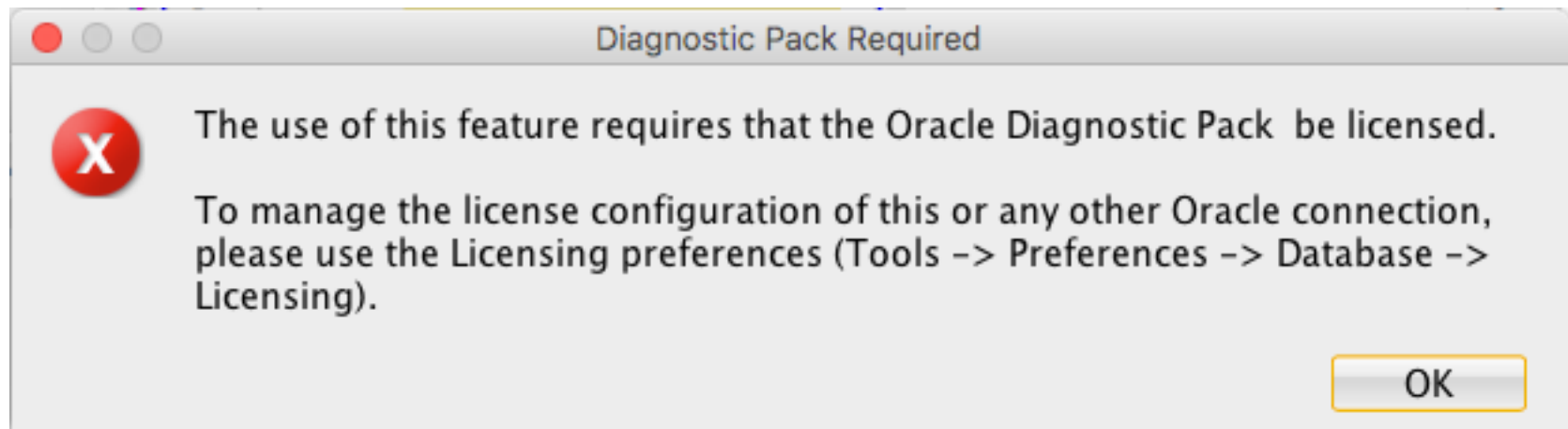
1 select /*+ rule */ bucket, endpoint, col#, epval
2 select i.obi#,i.ts#,i.file#,i.block#,i.intcols,i
3 select a.tablespace name as tab
4 select STAT 1.value as STAT 1 ,STAT 779.value as
5 select /*+ rule */ bucket cnt, row cnt, cache cn
6 select t.ts#,t.file#,t.block#,nvl(t.bobi#,0),nvl
7 select name,intcol#,seqcol#,type#,length,nvl(pre
8 select owner#,name,namespace,remoteowner,linknam
9 select obi#,type#,ctime,mtime,stime, status, dat
10 select STAT 6.value as STAT 6 ,STAT 7.value as S
11 select policy#, action# from aud object opt$ whe
12 select name,online$,contents$,undofile#,undobloc
13 select order#,columns,types from access$ where d
14 select col#, grantee#, privilege#,max(mod(nvl(op
15 select name,password,datats#,temptsts#,type#,defro
16 select /* Q0SD */ /*+ index(do) */ dir cnt from
17 select user#,password,datats#,temptsts#,type#,defr
18 select a.owner#, a.name, a.namespace, a.remoteowner

```

Licensing Warning



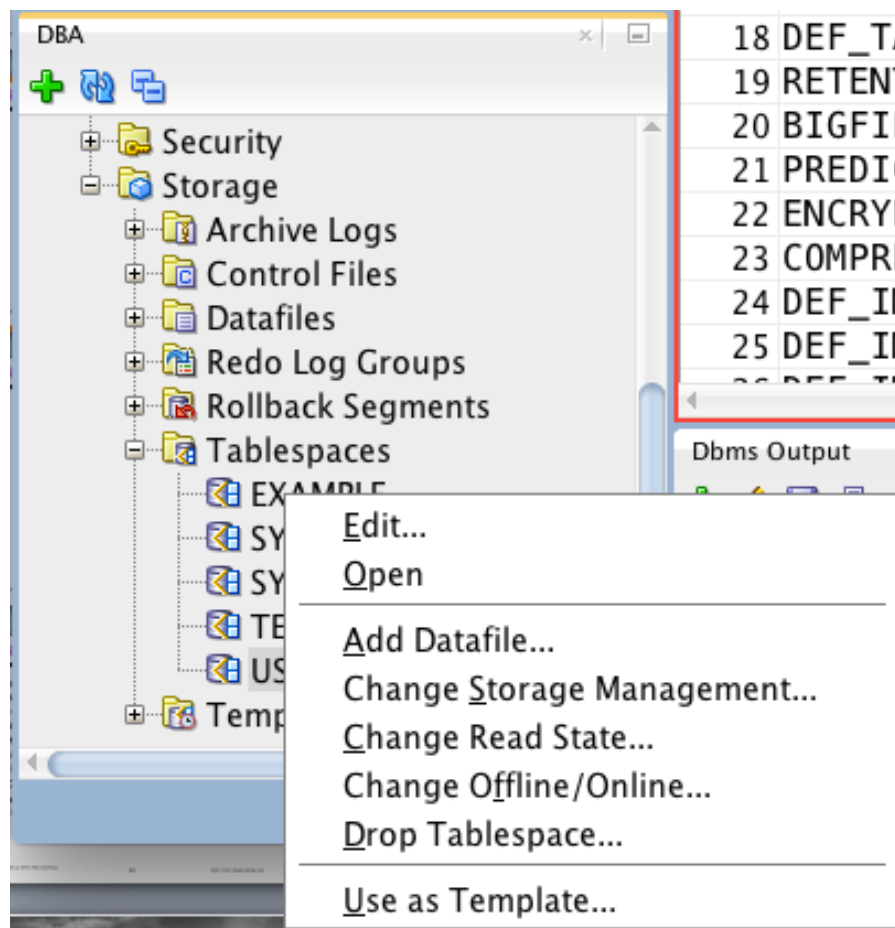
- Attempting to use features requiring special licensing will display a warning



DBA Tasks



- Many DBA tasks may be performed including Tablespace maintenance



Database Configuration



- Use DBA View to view/change configuration

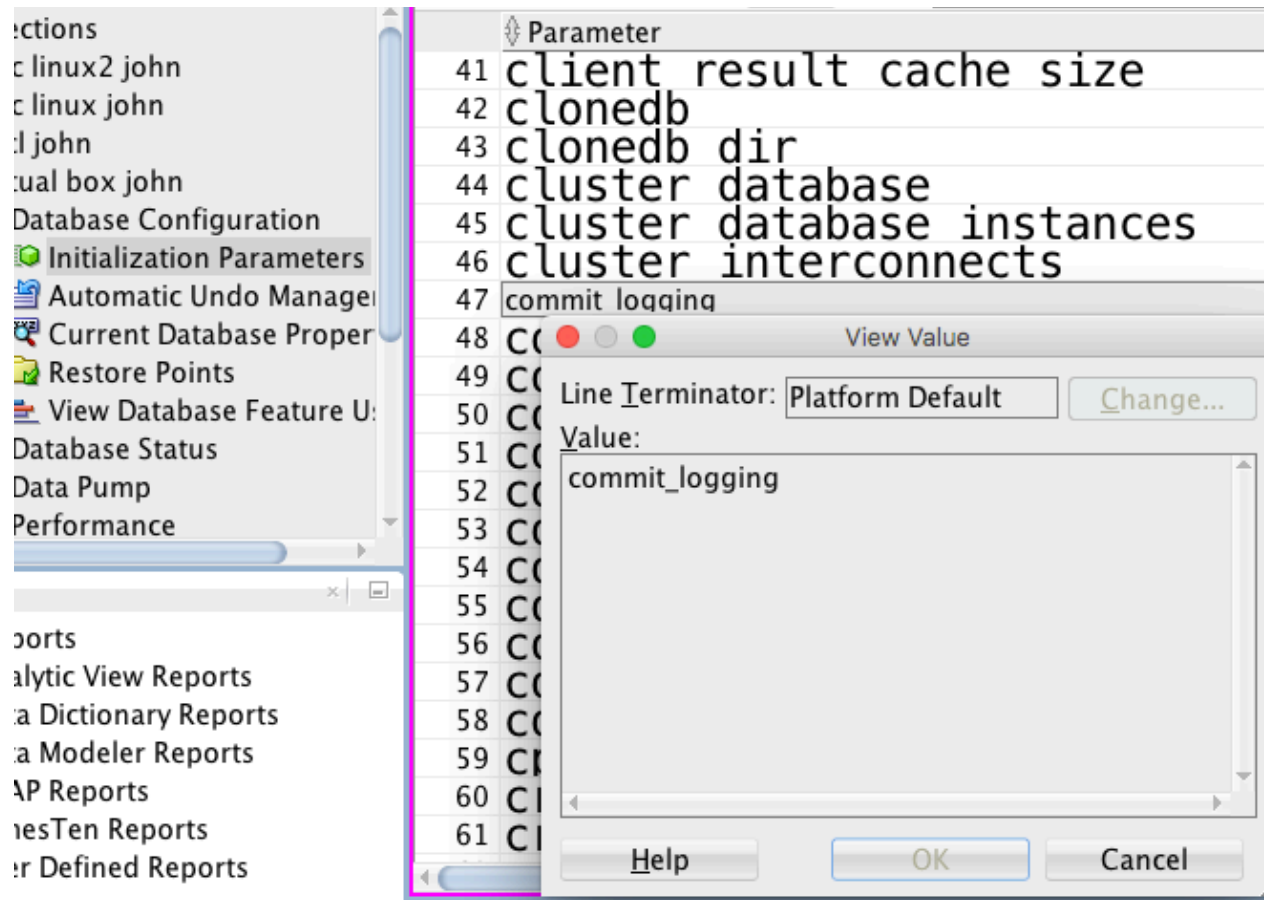
The screenshot shows the Oracle Enterprise Manager interface. On the left, the 'Connections' pane lists several connections, with 'virtual box john' selected. Under this connection, the 'Database Configuration' folder is expanded, showing 'Initialization Parameters' as the active view. The main pane displays a table of parameters and their values.

Parameter	Value
1 DBFIPS 140	FALSE
2 07 DICTIONARY ACCESSIBILITY	FALSE
3 ash size	25165824
4 active instance count	(null)
5 allow global dblinks	FALSE
6 allow group access to sga	FALSE
7 approx for aggregation	FALSE
8 approx for count distinct	FALSE
9 approx for percentile	none
10 aq tm processes	1
11 archive lag target	0
12 asm diskgroups	(null)
13 asm diskstring	(null)

Configuration Changes



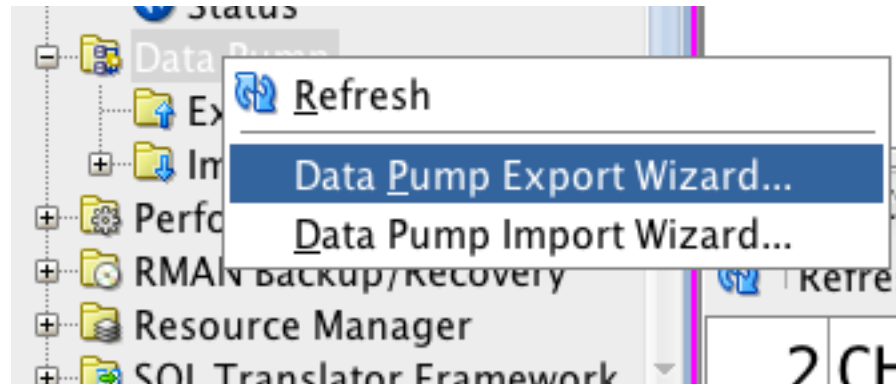
- Double-click an option, then click the “pencil” icon to change a parameter



Data Pump



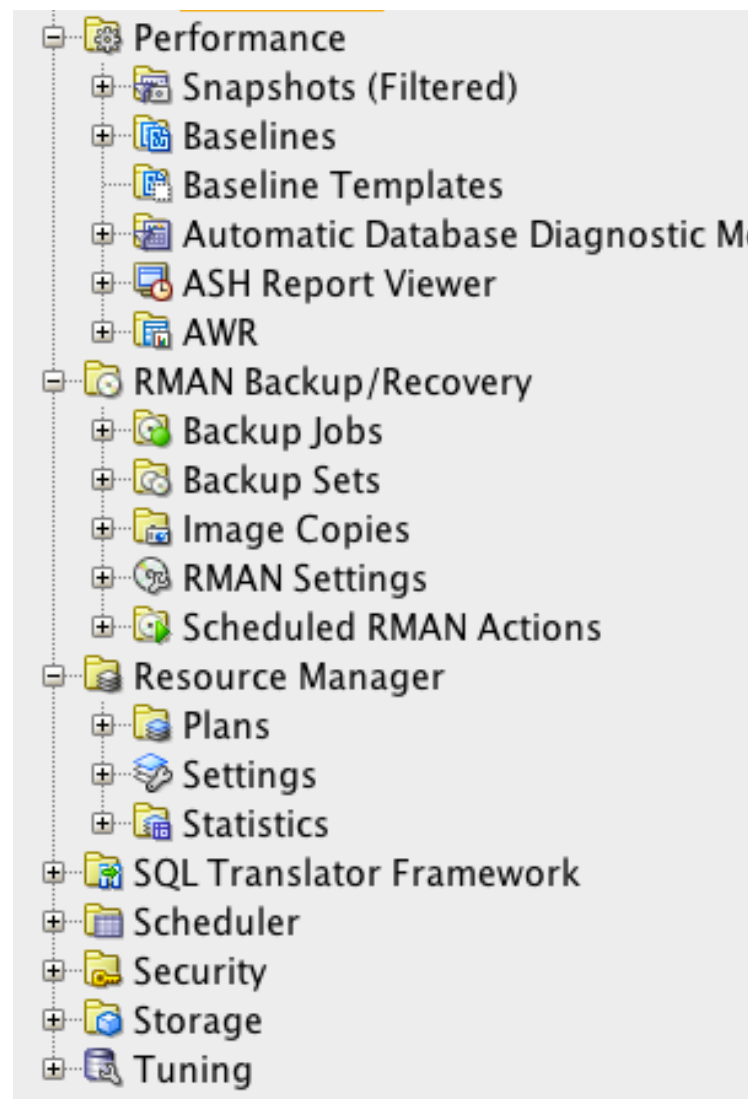
- Data Pump may be managed as well



Other DBA View Options



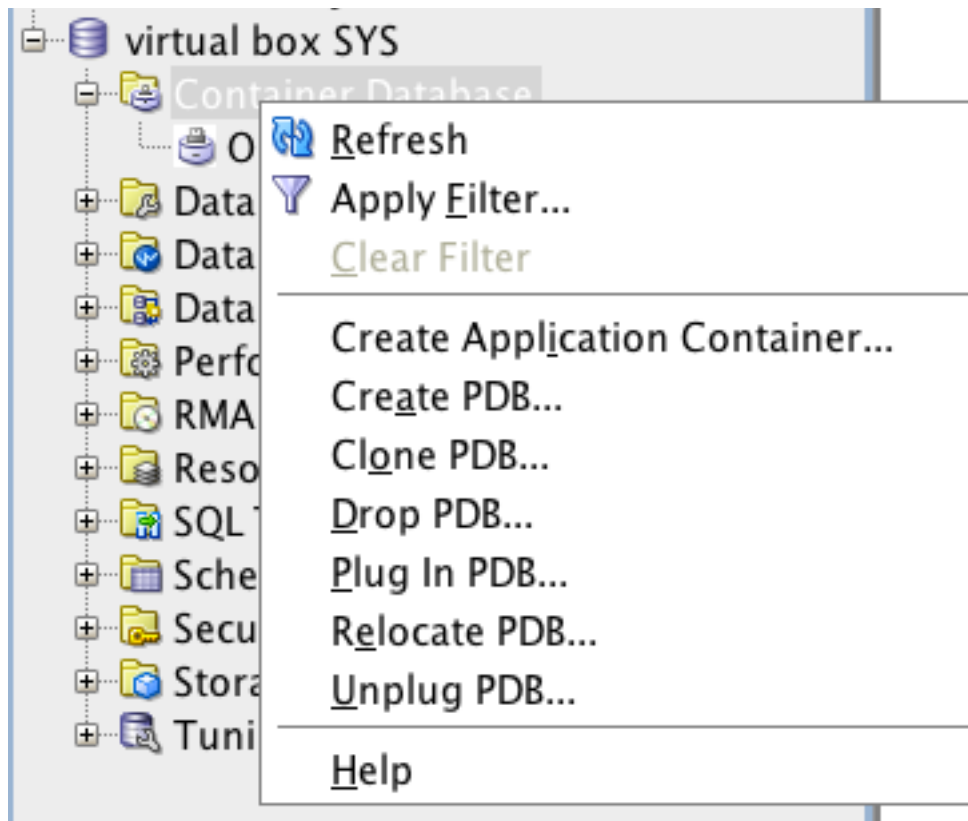
- The DBA offers many other options, some require licensing some do not



12c Multi-Tenant Features

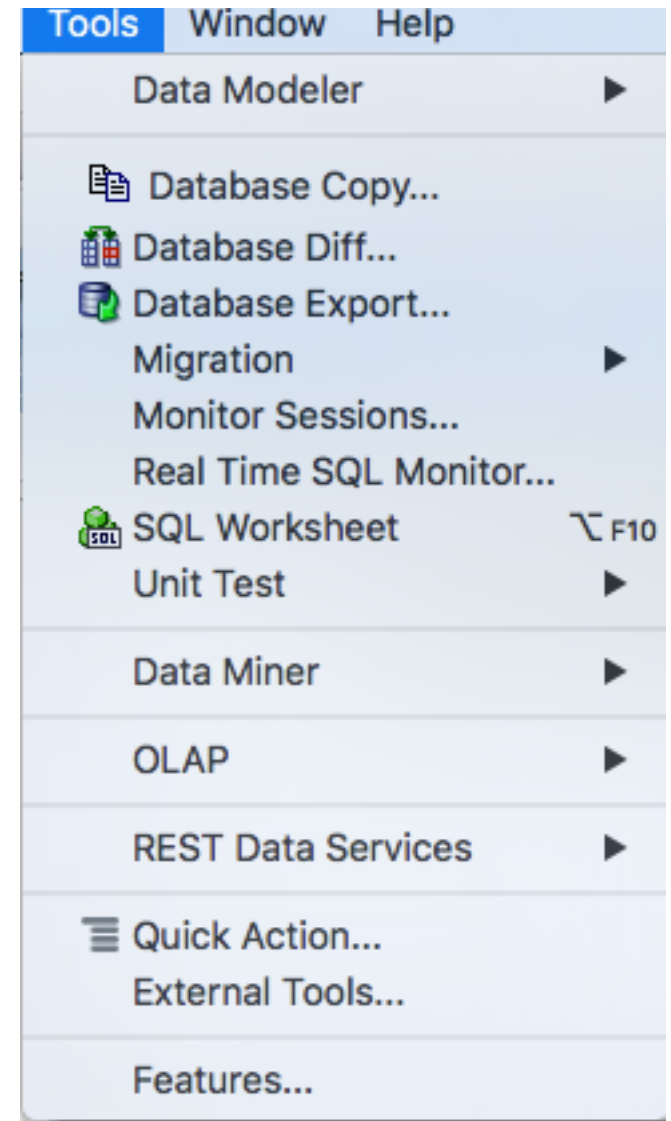


- The DBA View connection context menu offers some multi-tenant features





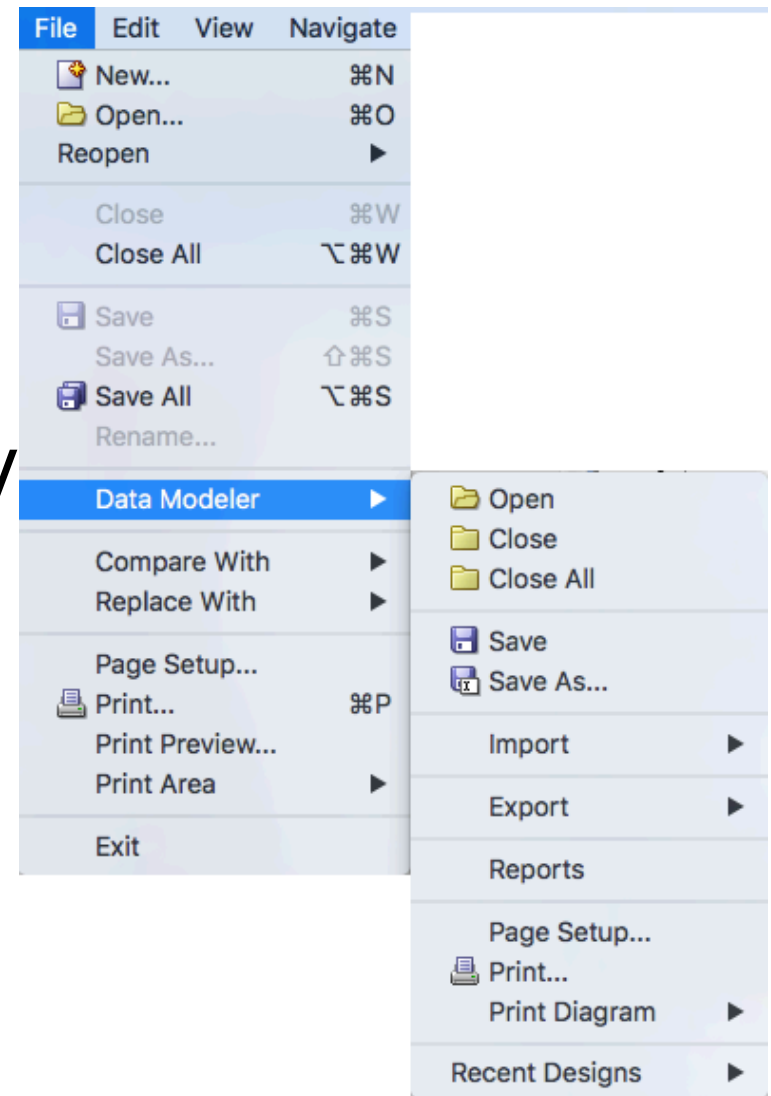
- The SQL Developer “Tools” menu offers DBA features
 - Database Copy
 - Database Diff
 - Database Export
 - Migration
 - Monitor Sessions
 - Real Time SQL Monitor
 - REST Data Services



Data Modeling



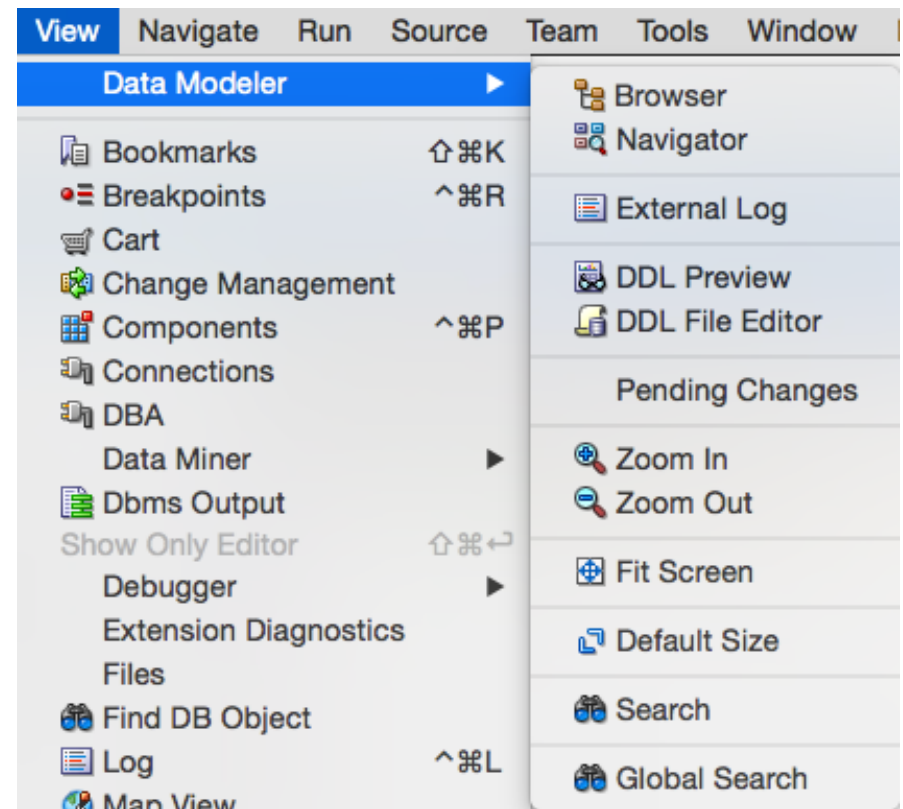
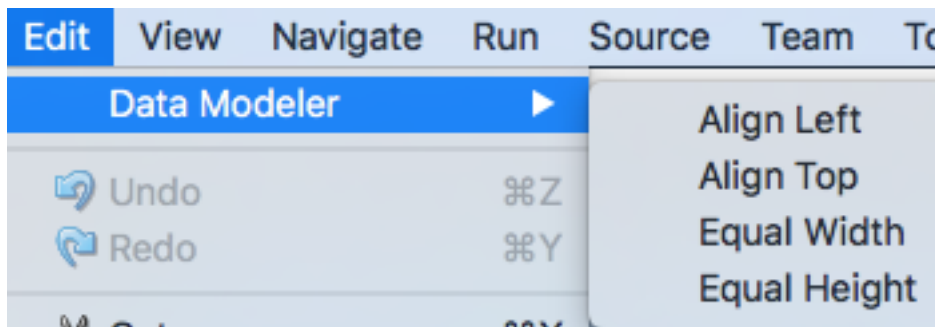
- SQL Developer has excellent Data Modeling built right in; or, you can also download/install Data Modeling separately
- File->Data Modeler
 - > Export
 - > Data Dictionary



Data Modeling Support



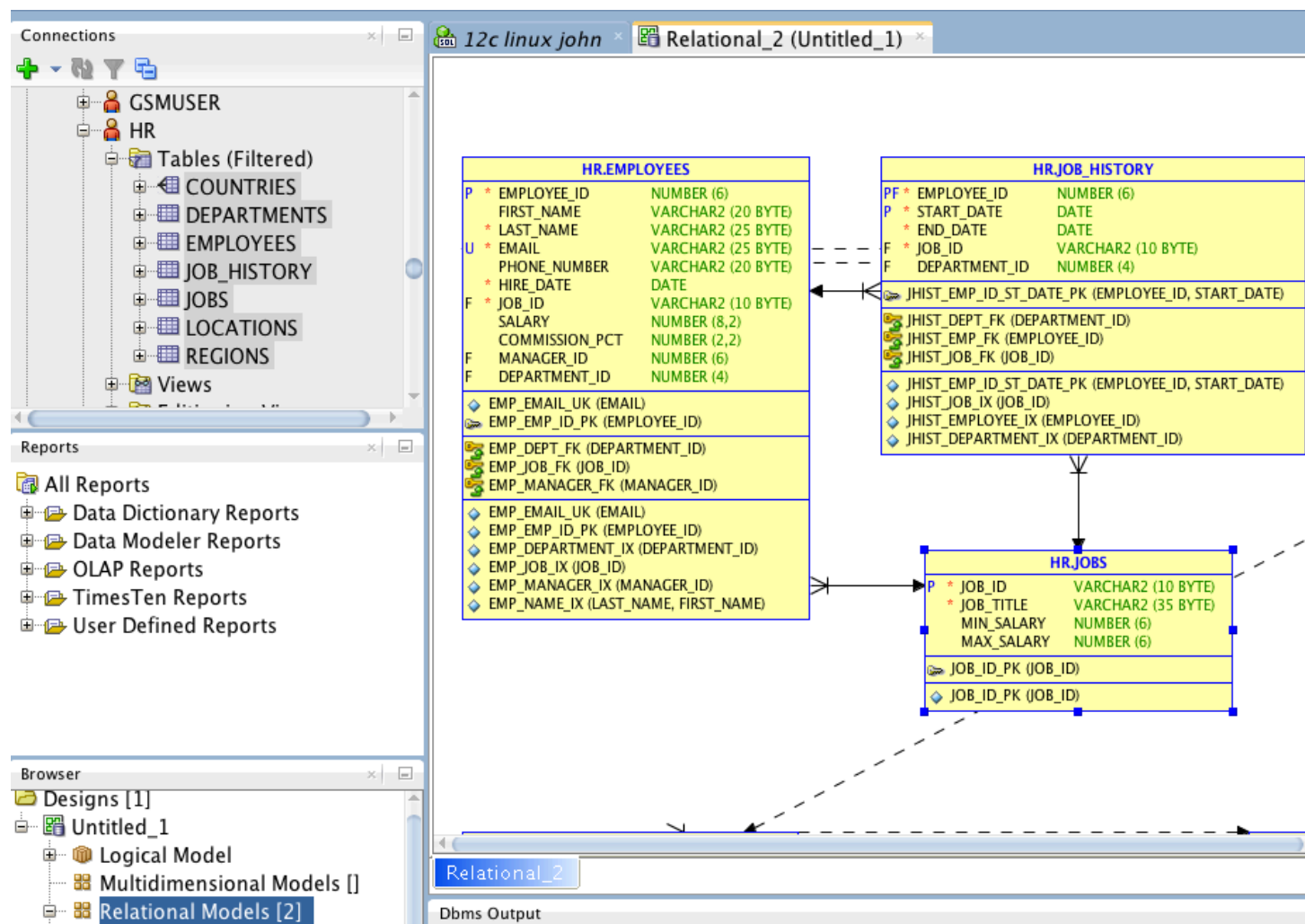
- Both Edit and View menus provide support





Model Existing

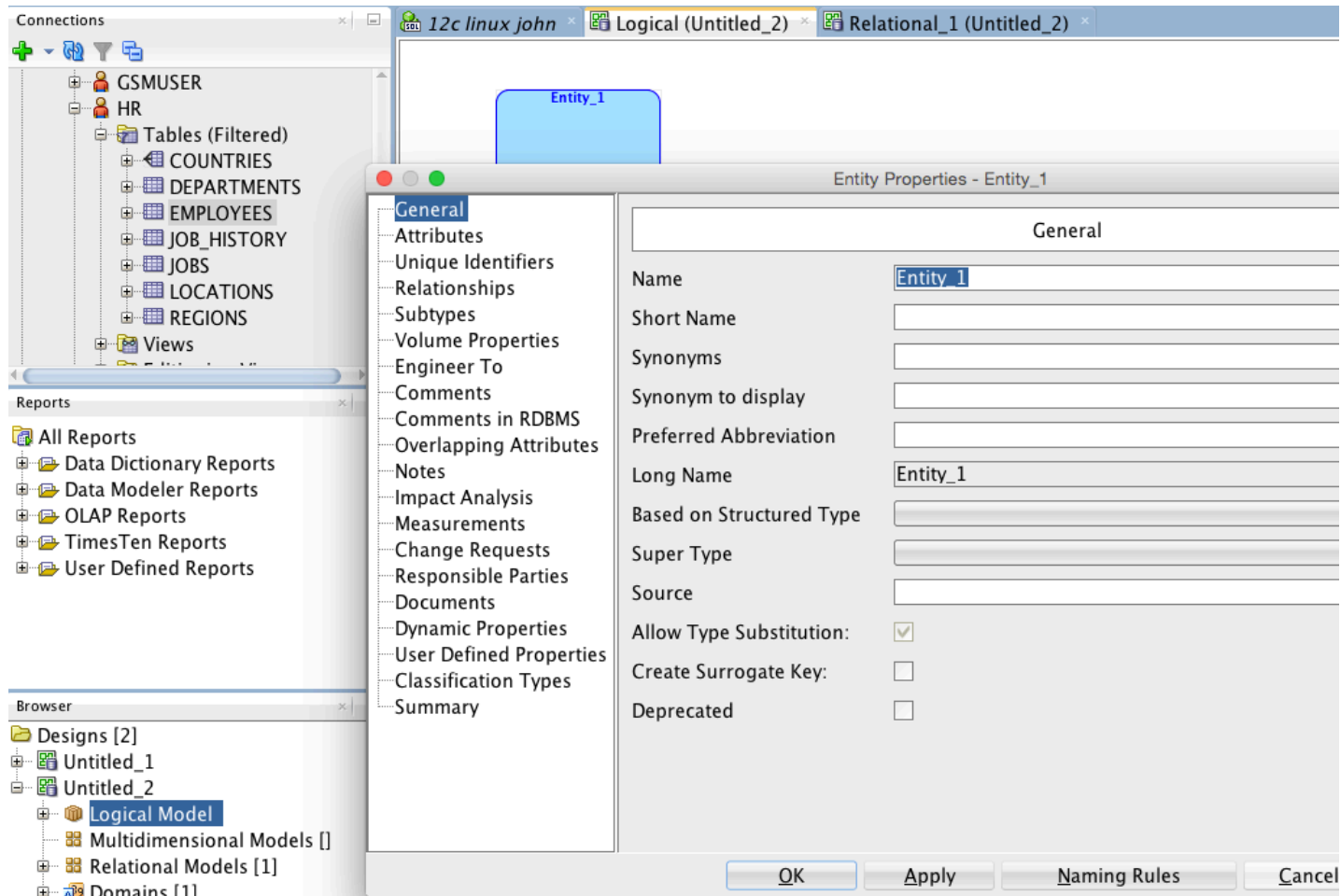
- Drag & Drop existing tables into model



Data Model From Scratch



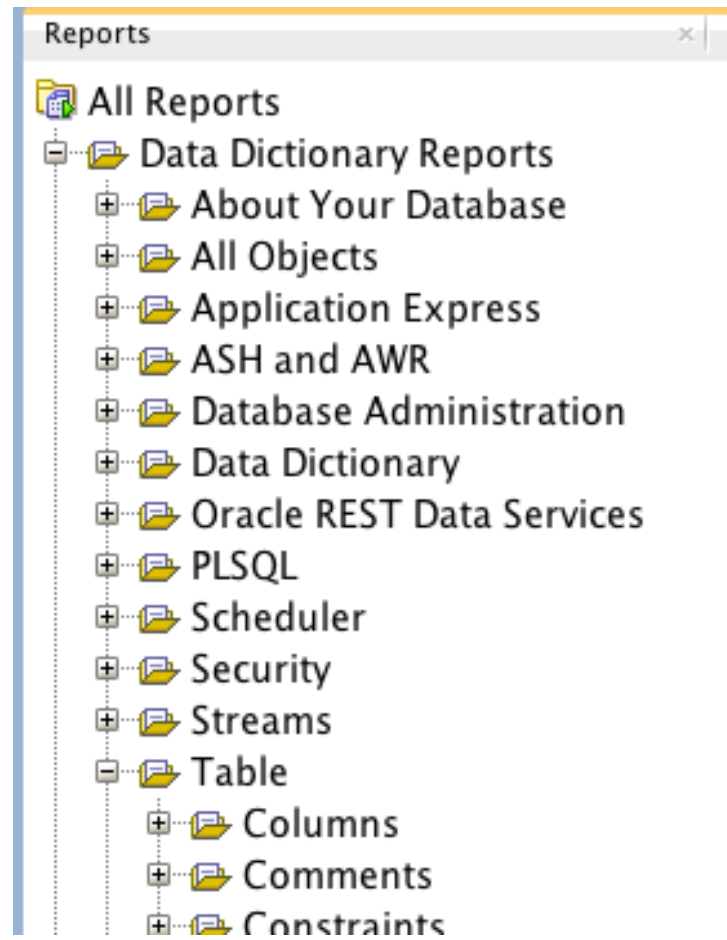
- Data Modeler lets you start from scratch



Built-In Reports



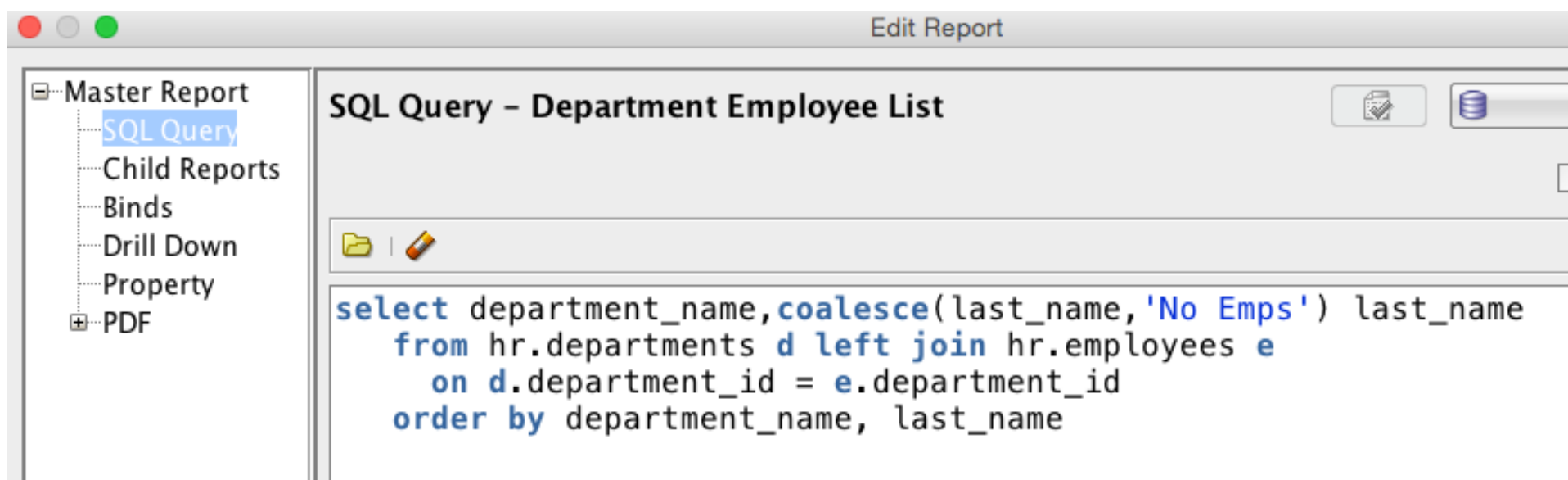
- SQL Developer has many built-in reports to reduce your repetitive effort



User-Defined Reports



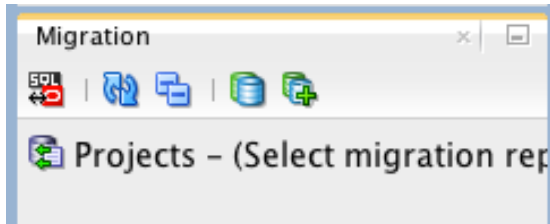
- You can create your own reports based upon your own SQL (may include bind vars)



Migration Tools



- SQL Developer provides migration tools from “other” database tools to Oracle



- Migration paths built-in include:
 - Microsoft SQL Server (and TSQL!)
 - Teradata
 - MySQL
 - IBM DB2
 - Microsoft Access

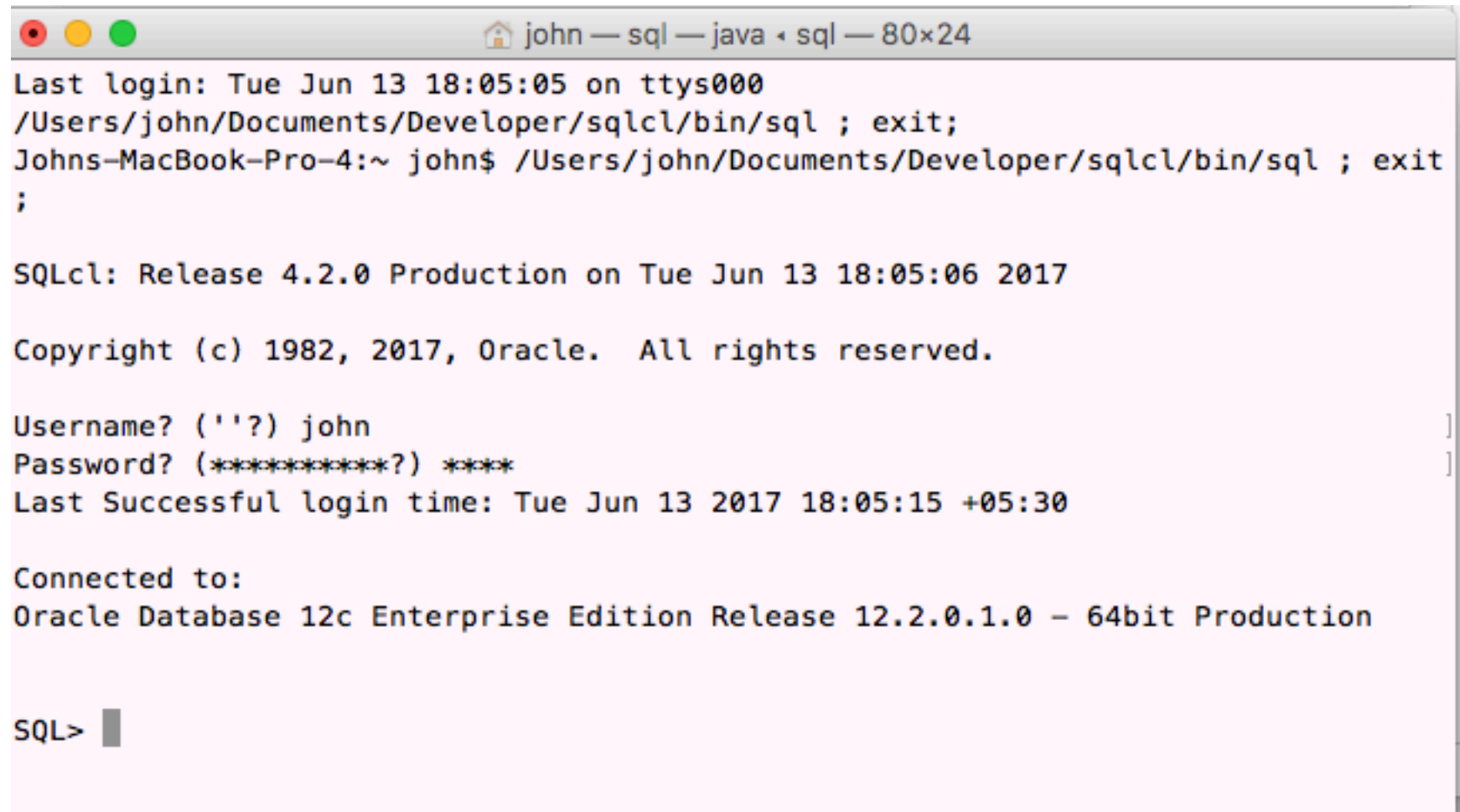


- Now for something really different...
 - Oracle now provides the Oracle SQL Developer Command Line interface (SQLcl)
 - Today downloaded separately, part of “normal” install soon
 - Requires pre-installed Java 8 (or higher) JRE
 - Allows all SQL*Plus commands plus more without requiring Oracle client

SQLcl Looks like SQL*Plus



- SQLcl is a Java app; no Oracle client needed

A screenshot of a macOS terminal window titled "john — sql — java — 80x24". The terminal shows the execution of the "sql" command from the path "/Users/john/Documents/Developer/sqlcl/bin/". It displays the SQLcl version (4.2.0), copyright information, and a successful login for the user "john" to an Oracle Database 12c Enterprise Edition. The prompt "SQL>" is visible at the bottom.

```
john — sql — java — 80x24
Last login: Tue Jun 13 18:05:05 on ttys000
/Users/john/Documents/Developer/sqlcl/bin/sql ; exit;
Johns-MacBook-Pro-4:~ john$ /Users/john/Documents/Developer/sqlcl/bin/sql ; exit
;

SQLcl: Release 4.2.0 Production on Tue Jun 13 18:05:06 2017

Copyright (c) 1982, 2017, Oracle. All rights reserved.

Username? (''?) john
Password? (*****?) ****
Last Successful login time: Tue Jun 13 2017 18:05:15 +05:30

Connected to:
Oracle Database 12c Enterprise Edition Release 12.2.0.1.0 - 64bit Production

SQL>
```

SQLcl Improves SQL*Plus



- The team that created SQLcl created a newer, better SQL*Plus with JavaScript
 - Many new commands
 - Improved Editing
 - Code completion
 - More...

SQLcl New Commands



- Help lists original SQL*Plus commands plus new SQLcl commands (underlined)

```
[SQL> help
For help on a topic type help <topic>
List of Help topics available:
/
APEX
BTITLE
COMPUTE
DEFINE
EXECUTE
HISTORY
LOAD
PRINT
RESERVED_WORDS
SET
SSHTUNNEL
TNSPING
WHICH
@
APPEND
CD
CONNECT
DEL
EXIT
HOST
NET
PROMPT
REST
SHOW
START
TTITLE
XQUERY
@@
ARCHIVE_LOG
CHANGE
COPY
DESCRIBE
FIND
INFORMATION
OERR
QUIT
RUN
SHUTDOWN
STARTUP
UNDEFINE
ACCEPT
BREAK
CLEAR
CTAS
DISCONNECT
FORMAT
INPUT
PASSWORD
REMARK
SAVE
SODA
STORE
VARIABLE
```

Coming Soon...



- Sometime soon SQL Developer will be available as a browser-based application
 - No software required on client machine other than the browser
 - Full SQL Developer functionality (at least that's the plan)
 - Improved graphics with HTML5

Wrapping it all Up



- Oracle's SQL Developer tool is an excellent GUI for writing and managing SQL and PL/SQL
- SQL Developer's PL/SQL Debugger provides the type of support expected of world-class IDEs
- SQL Developer also provides Data Modeling and DBA support
- Did I mention that SQL Modeler is FREE???
- Download from Oracle's OTN:
<http://www.oracle.com/technetwork/indexes/downloads/index.html#tools>

RMOUG Training Days 2018

February 20-22, 2018 (Tuesday-Thursday)

Westin Hotel

10600 Westminster Blvd

Westminster, CO 80020



Tracks

- Application Development
- Business Intelligence
- Database Administration
- DBA Deep Dive
- Database Tools of the Trade
- Hyperion
- Middleware
- Professional Empowerment

PHOTO CREDIT: Mike Landrum, SQL Developer and the "Data Tsunami" from i-Behavior

www.rmoug.org





collaborate.ioug.org

ODTUG
Kscope



Kscope 2018 in Orlando!



SQL Developer Tips for Everyone

To contact the author:

John King

King Training Resources

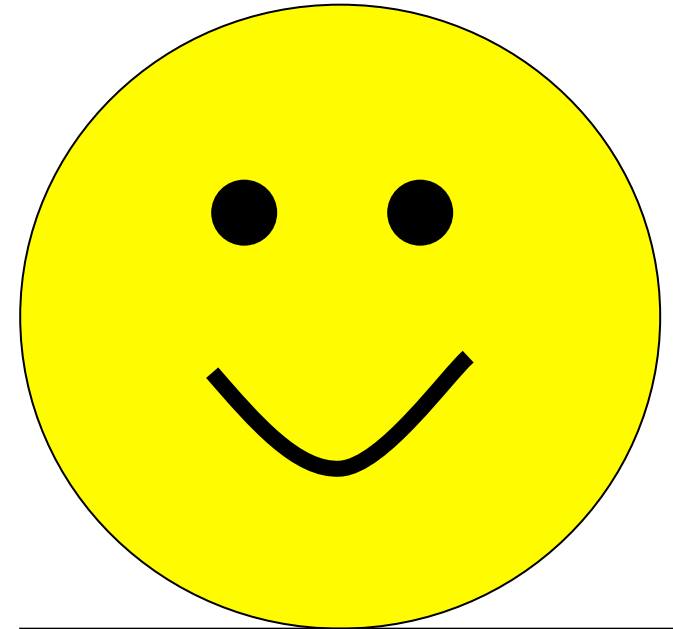
P. O. Box 1780

Scottsdale, AZ 85252 USA

1.800.252.0652 - 1.303.798.5727

Email: john@kingtraining.com

Twitter: royaltwit



Thanks for your attention!

Today's slides and examples are on the web:
<http://www.kingtraining.com>

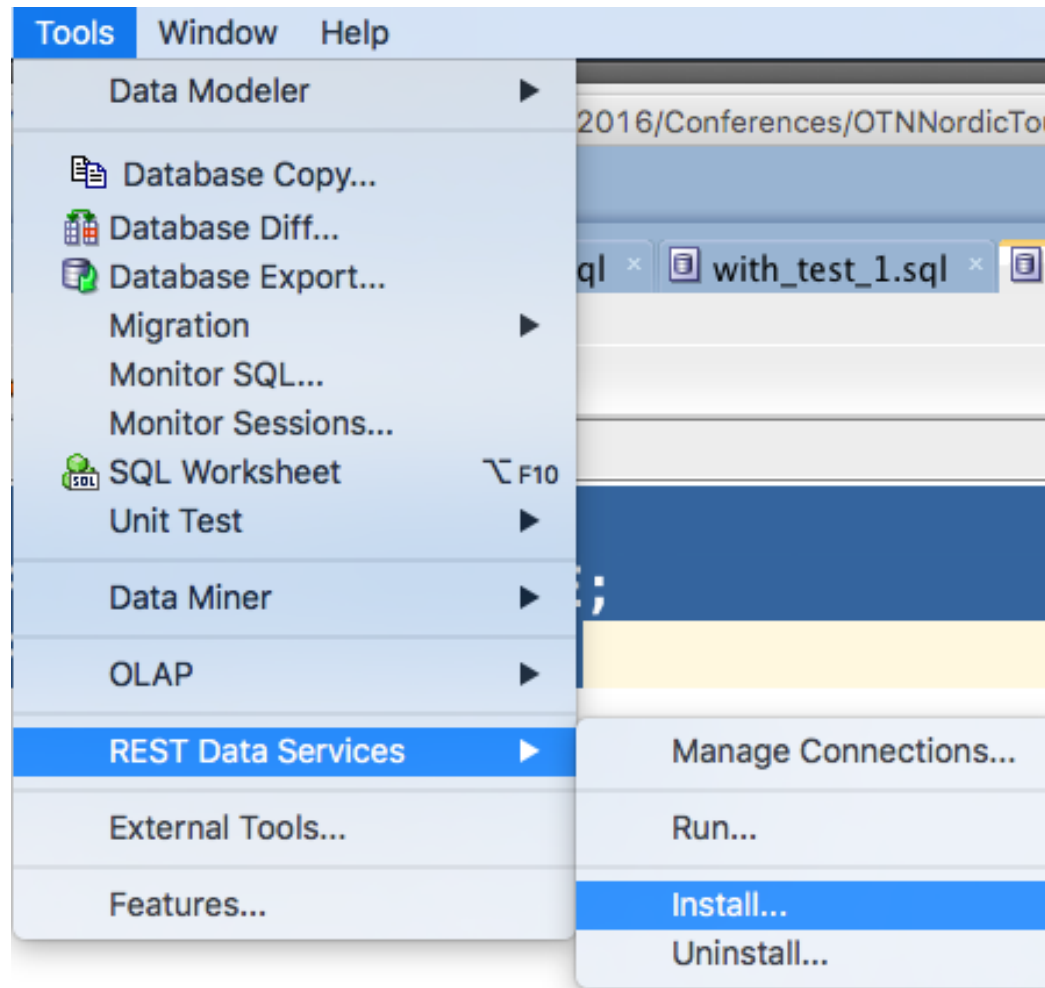


- End

ORDS Installation



- Installation is easy with SQL Developer



ORDS Setup Steps



ORDS File Location

Select the Oracle REST Data Services file (ords.war) that you will use for the installation.

☒ Use Oracle REST Data Services that is included with SQL Developer

☐ Use Oracle REST Data Services that is at location:

[ORDS File...](#)

Configuration Files Location

Specify the location for your Oracle REST Data Services configuration files.

Location: [Browse...](#)

Reset configuration files location using value from ords.war file [Reset](#)

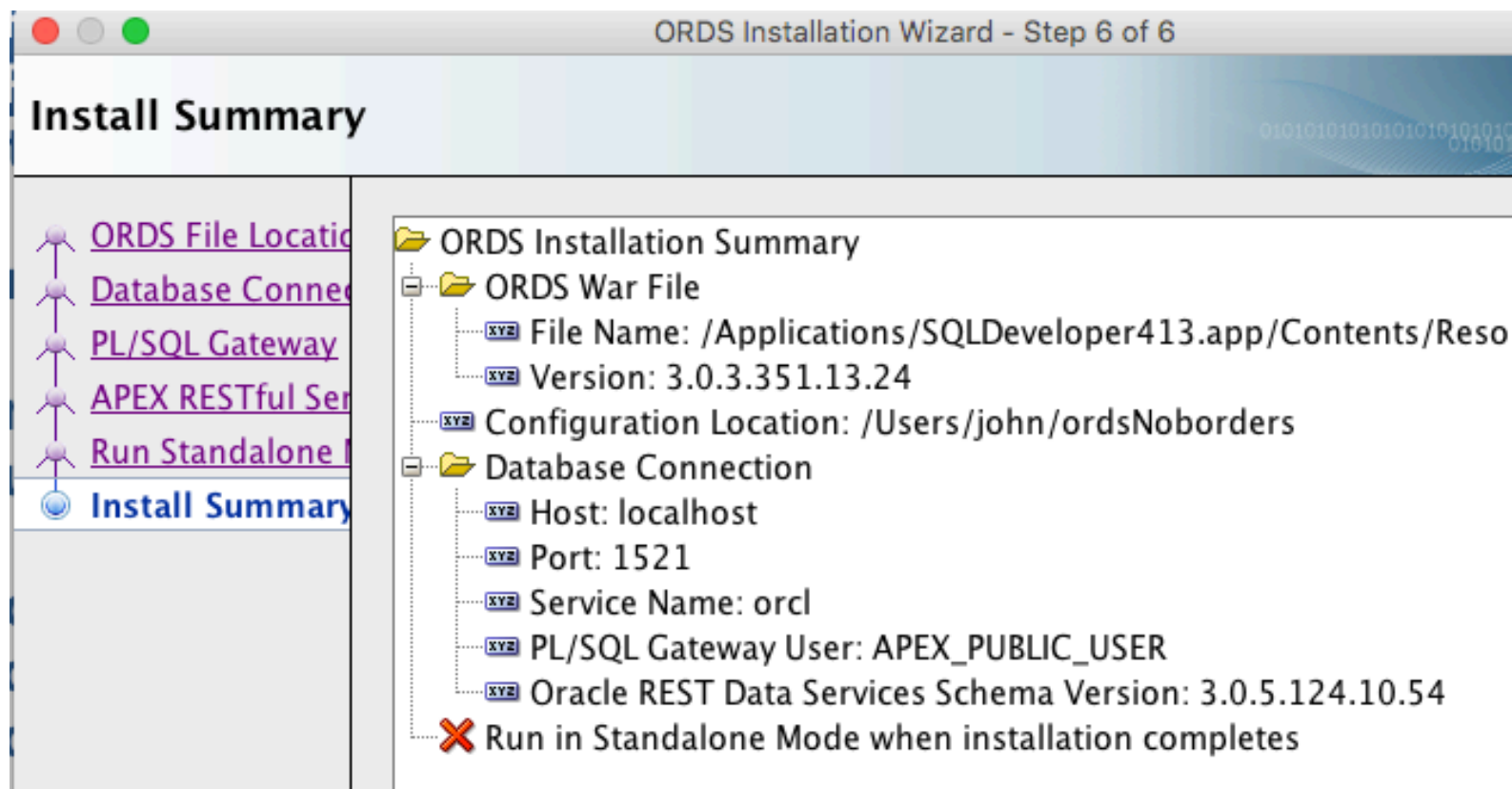
ORDS Version

ORDS war file version is 3.0.3.351.13.24

ORDS Installed



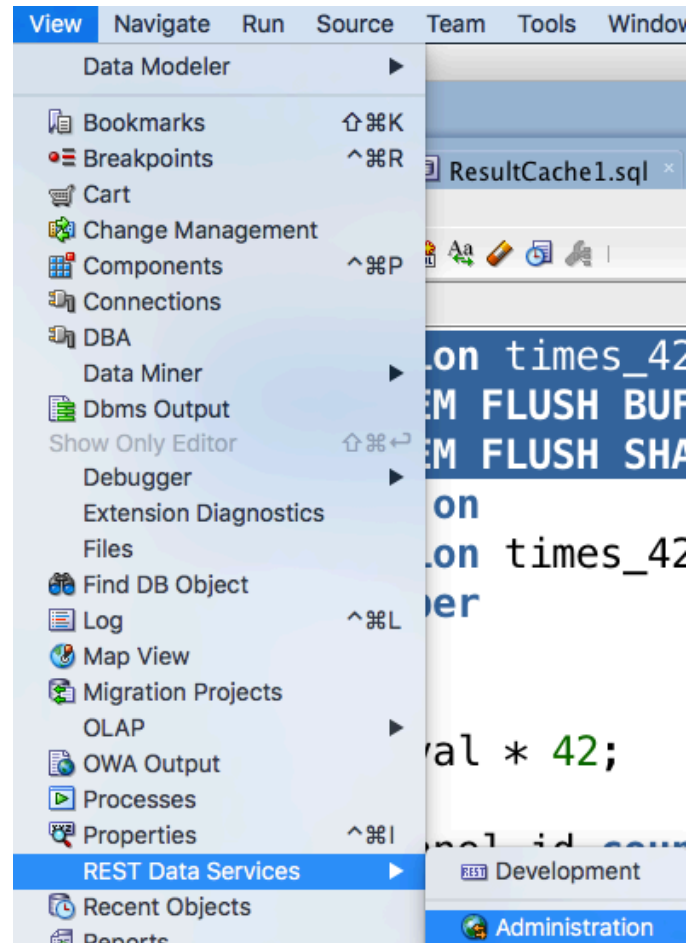
- After several wizard-based steps installation is complete



ORDS Administration



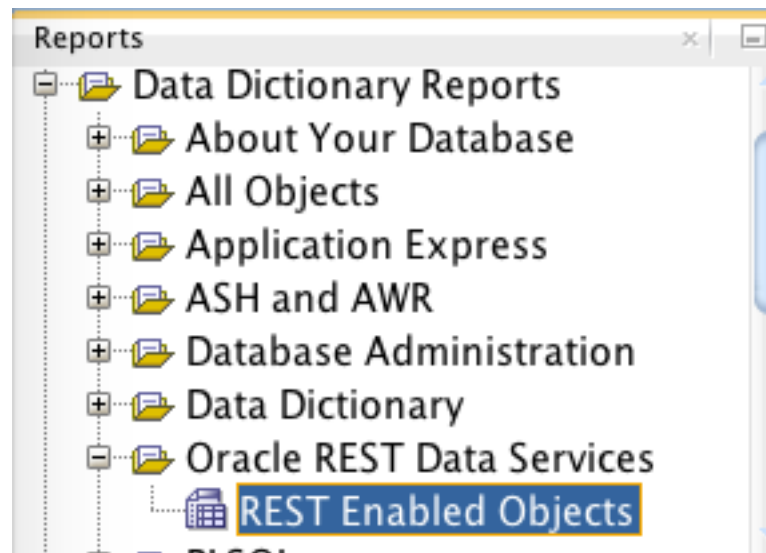
- SQL Developer provides an Administration capability for ORDS



ORDS Reporting



- SQL Developer has reporting built-in

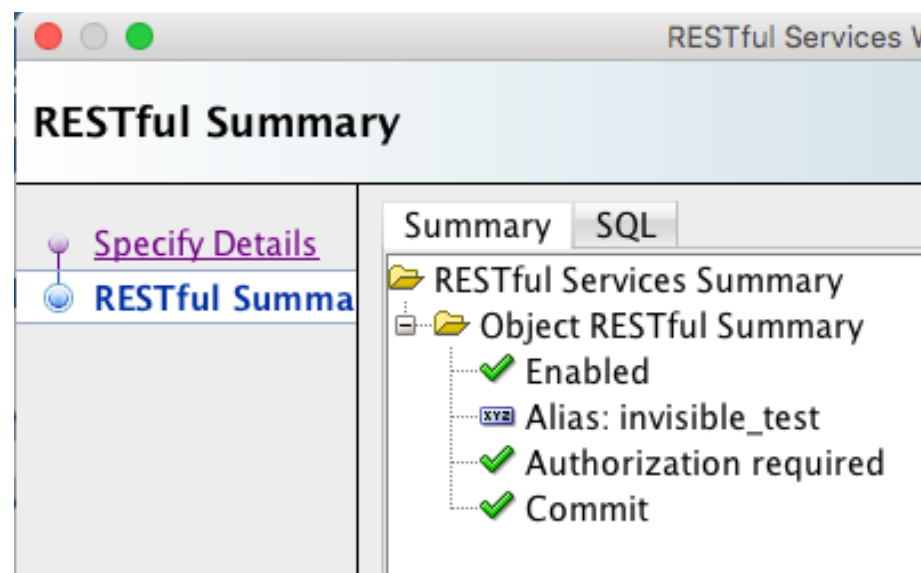
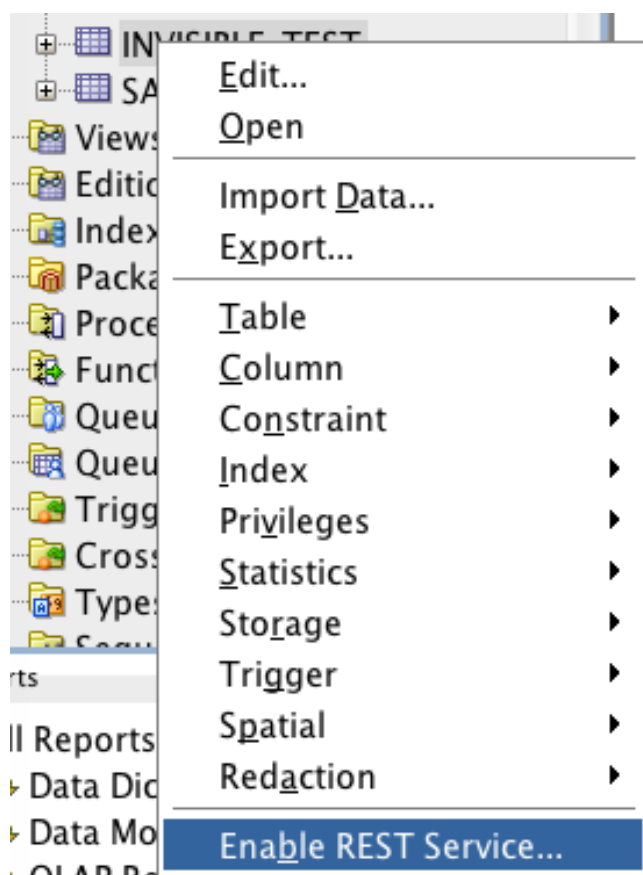


	Schema	Object	Alias	Authorization	Type
1	JOHN	EMP	emp	ENABLED	TABLE
2	JOHN	INVISIBLE TEST	invisible test	DISABLED	TABLE

Enable ORDS for Table

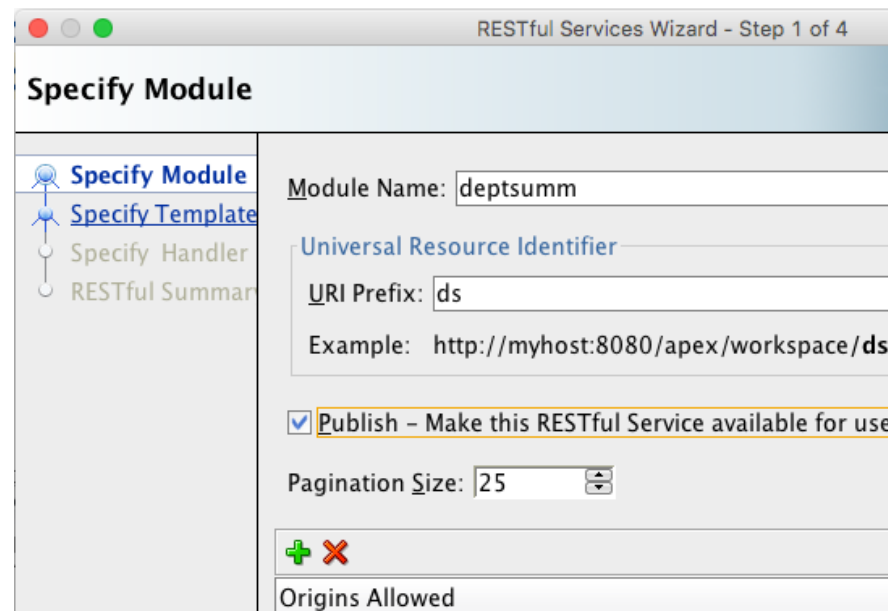
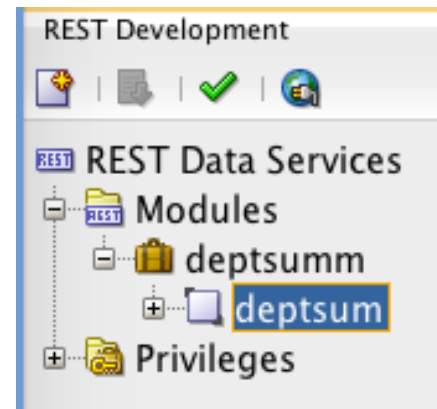
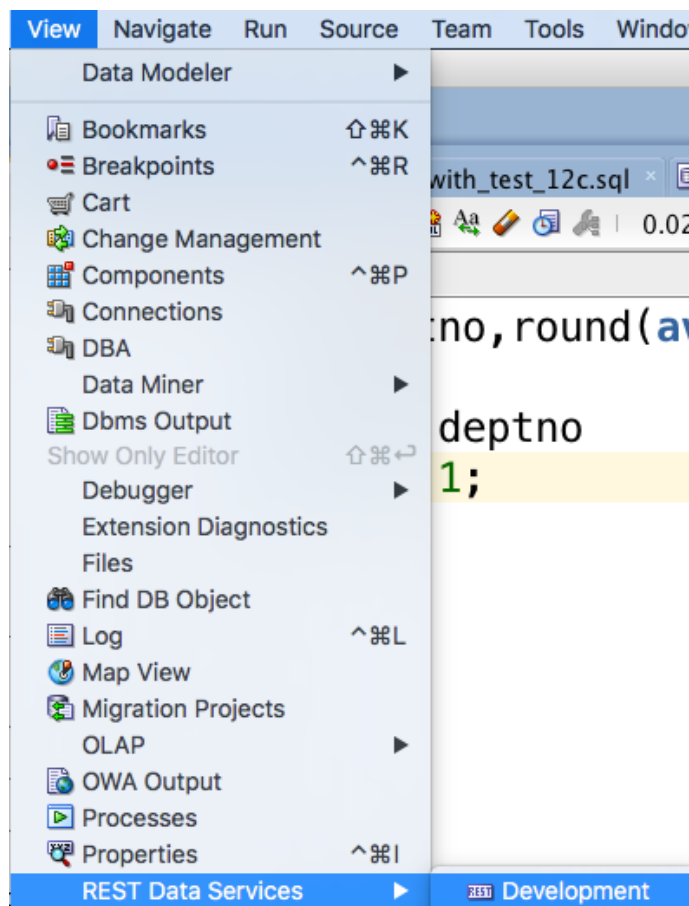


- Right-click on a table to enable ORDS using a wizard-based process





- Use SQL Developer wizards to map ORDS for SQL and PL/SQL



PL/SQL ORDS APIs



- Oracle provides a PL/SQL package that allows creation and manipulation of ORDS in code
- Complete PL/SQL API for defining and configuring RESTful services
 - May be put into scripts
 - May be repeated

[https://docs.oracle.com/cd/
E56351_01/doc.30/e56293/
ords_ref.htm#AELIG90180](https://docs.oracle.com/cd/E56351_01/doc.30/e56293/ords_ref.htm#AELIG90180)