



SQL Developer – Make yourself at home





Robert Marz – Independent Consultant

Primary Job Role

Senior Technical Architect
with database centric view of the world

DOAG (German Oracle User Group)

Active Member of Database Community
Responsible for Cloud Topics



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Databees.



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Sabine Heimsath – Independent Consultant

Self-employed

PL/SQL and APEX Developer

Passionate Data Modeler

**Active Member of
DOAG Development Community
(Responsible for PL/SQL Topics)**



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500+ Technical Experts Helping Peers Globally



ORACLE®
ACE Director



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ACE



ORACLE®
ACE Associate

bit.ly/OracleACEProgram

Nominate yourself or someone you know: acenomination.oracle.com

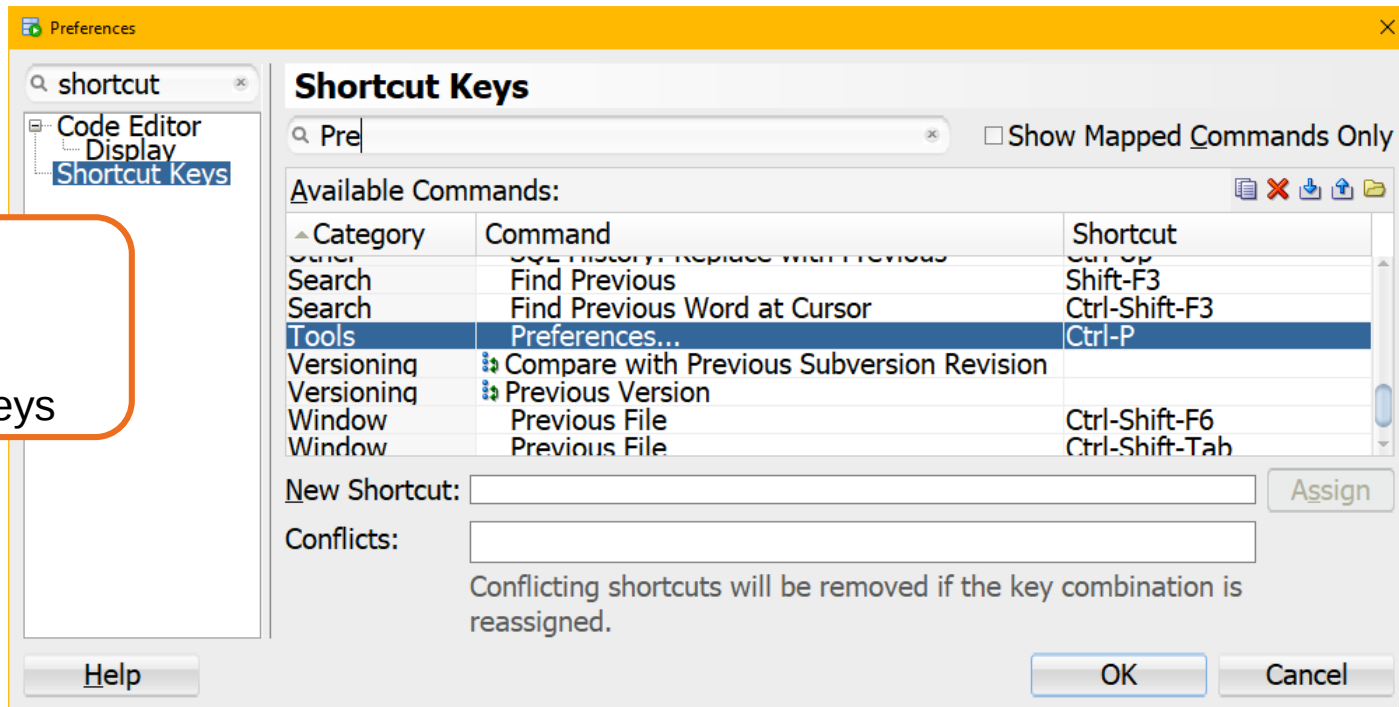
A woman with dark hair in a braid, wearing a black and grey horizontally striped long-sleeved shirt, is looking through black binoculars. She is standing on a high vantage point, looking down at a dense city skyline with many skyscrapers. The sky is filled with soft, white clouds and a bright, hazy light source, possibly the sun, creating a warm atmosphere. An orange rectangular banner is overlaid on the left side of the image, containing the text '@Home in SQL Developer' in white.

@Home in SQL Developer



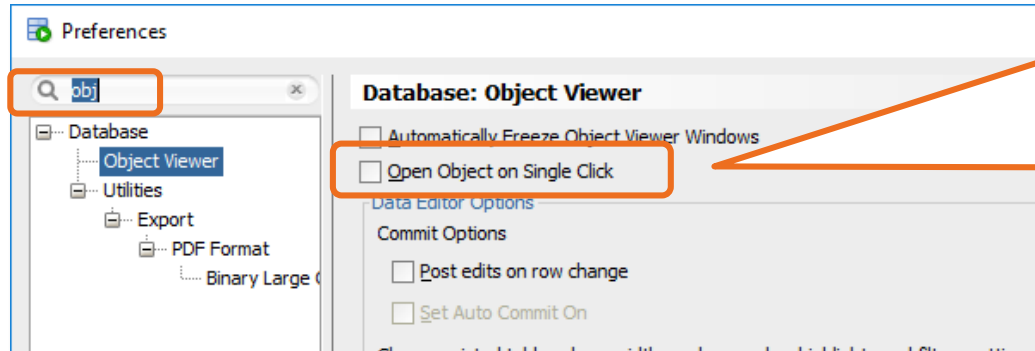
Edit/Setup Shortcuts

Menu:
Tools
→ Preferences
→ Shortcut Keys





Open Object on Single or Double Click

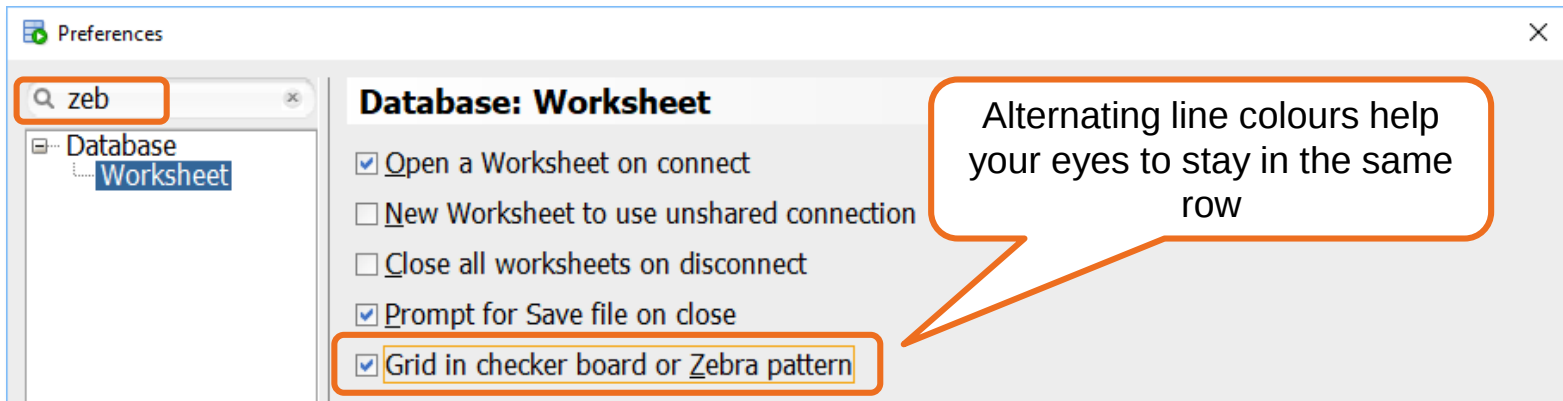


If this option is checked, any table or view in the connection tree is opened in the object viewer as soon as you click on it once.

If you don't like that
(it's driving me nuts!)
uncheck this.



Data Grid: Zebra Pattern

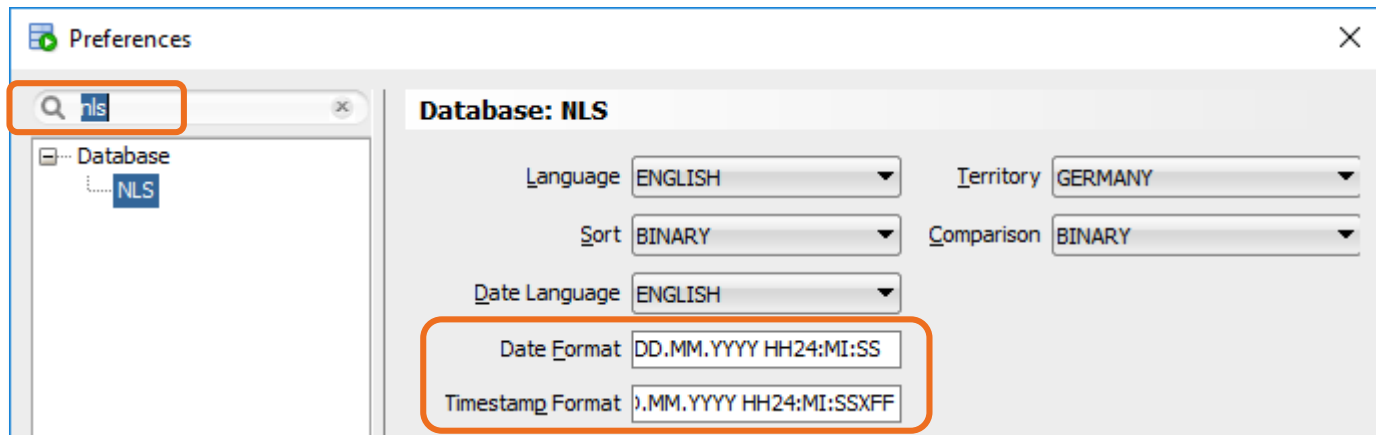


EMPLOYEES

	EMPLOYEE...	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER
1	222	Han	Solo	HSOLO	515.123.8111
2	221	James P.	Sullivan	JSULLIVAN	515.123.4151
3	220	Curtis	Newton	CNEWTON	011.44.1346.729277
4	219	Andreas	von der Meden	AVONDERMEDE	515.123.5555



Display Dates



I don't like the standard setting DD.MM.RR for displaying dates.
You can choose you favourite format here.



Changing the Appearance of Null Values

Database: Advanced

Sql Array Fetch Size (between 50 and 200) 50

Display Null Value As (null)

Display Null Using Background Color NONE

Database: Advanced

Sql Array Fetch Size (between 50 and 200) 50

Display Null Value As

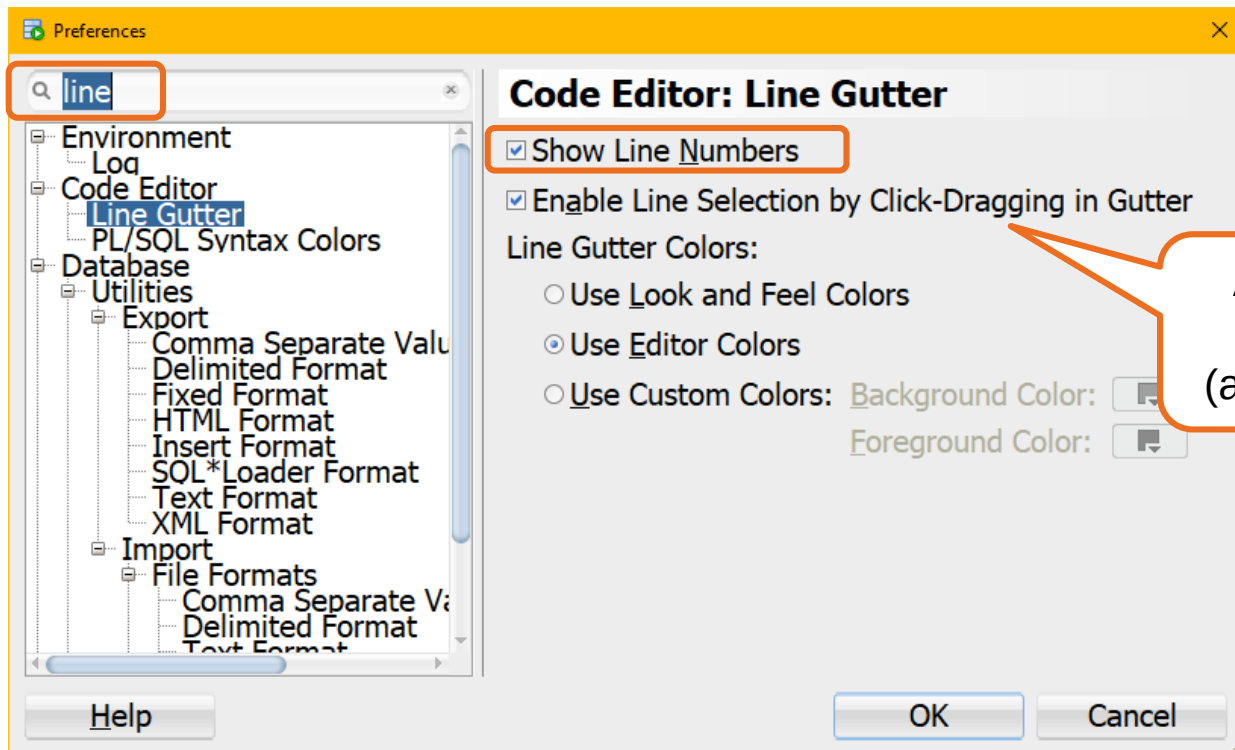
Display Null Using Background Color LIGHT_GRAY

LOCATION_ID	STREET_ADDRESS	POSTAL_CODE	CITY	STATE_PROVINCE	COUNTRY_ID
1000	1297 Via Cola di Rie	00989	Roma		IT
1100	93091 Calle della Testa	10934	Venice		IT
1200	2017 Shinjuku-ku	1689	Tokyo	Tokyo Prefecture	JP
1300	9450 Kamiya-cho	6823	Hiroshima		JP
1400	2014 Jabbawocky Rd	26192	Southlake	Texas	US

Now the values are easy to spot and can be distinguished from whitespace



Show Line Numbers by Default





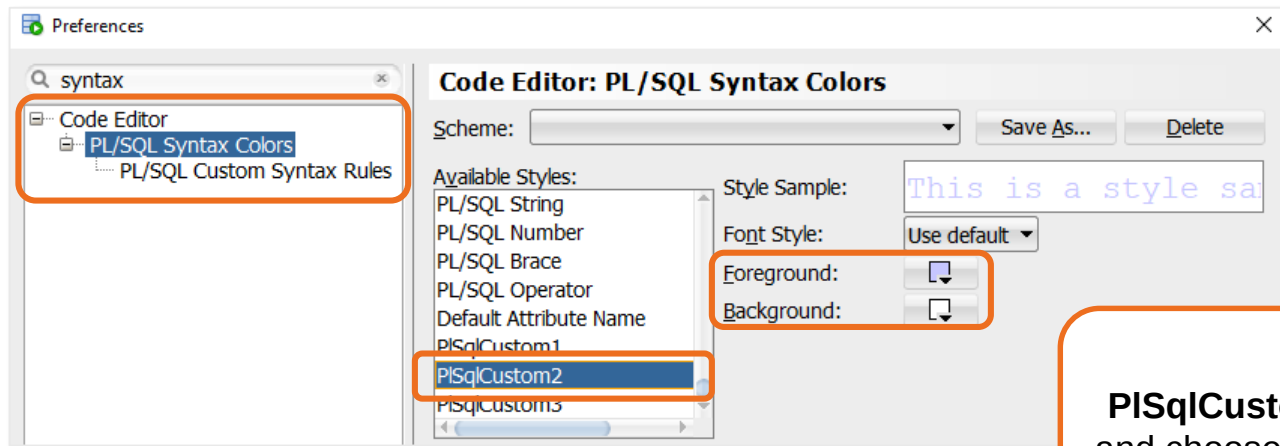
Greying out Instrumentation Code 1/3

You can choose to display instrumentation code in a different colour

```
Code | References | Errors | Grants | Profiles | Dependencies | Details
[Icons]
45         p_commission_pct,
46         p_manager_id
47     );
48     logger.log_info(
49         p_text => 'Update erfolgreich'
50     );
51 END;
52 END;
53
54
55 PROCEDURE upd (
        p_job_id                IN employees.job_id%type,
```



Greying out Instrumentation Code 2/3



Navigate to
PISqlCustom/PISQLLogger (new!)
and choose an unobtrusive but legible
colour



Greying out Instrumentation Code 3/3



You'll find some typical instrumentation tools in the predefined list.
You can easily configure your own by adding
| ?grandChild = 'pit'
or the name of your own package

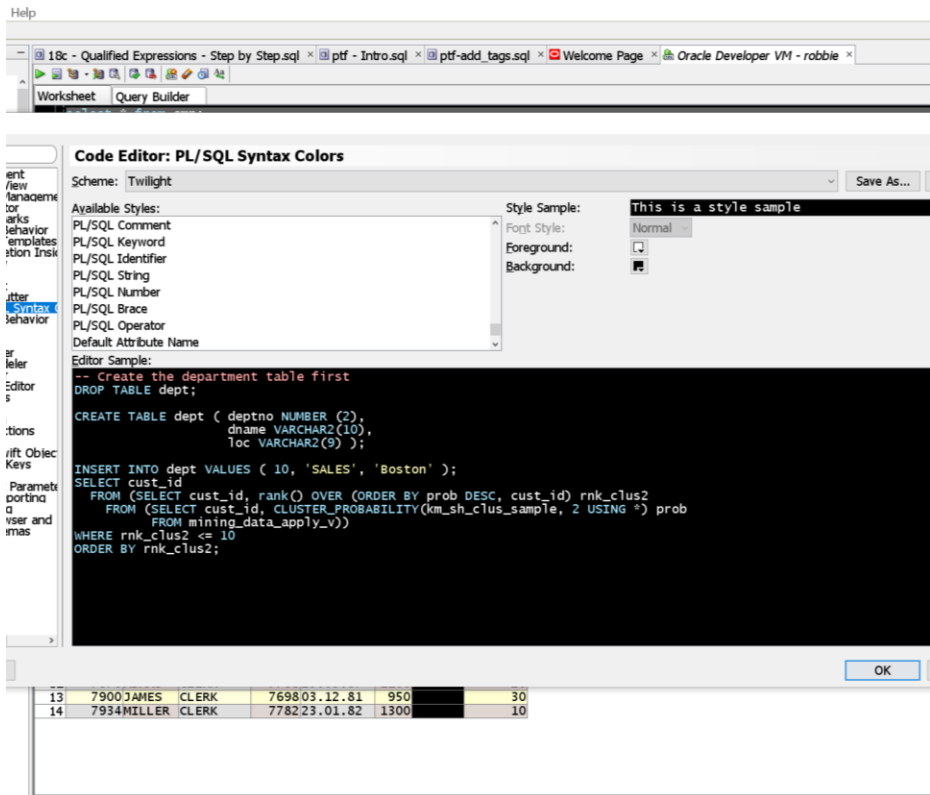
By the way, here's more info about the *PL/SQL Instrumentation Toolkit* (PIT): [GitHub PIT](#)
... and about *Logger*: [GitHub Logger](#)



SQL Developer Dark Mode



SQL Dev got the Look



Color-Themes Limited to

Oracle (blue)
OS Native (Windows / Mac / Linux)

Code Editor has more Options

Only affects Editor-Pane
Custom Themes can be extended
by editing XML-File
e.g. [Dracula Theme](#)
Edits will be migrated between Releases
Remainder of UI is unchanged



Java Swing Dark/Flat Look & Feel



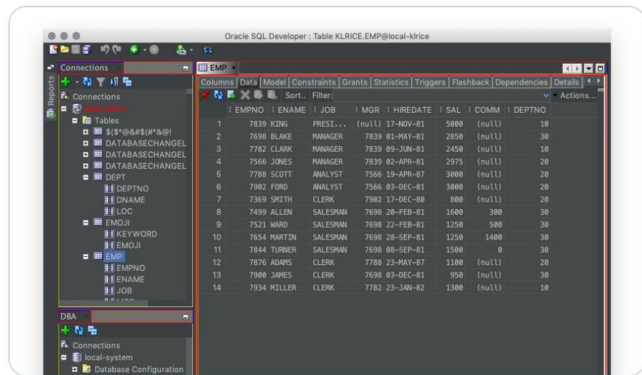
krisrice @krisrice · 26. Dez. 2019

An almost dark/flat mode for @OracleSQLDev

add this to sqldeveloper.conf

AddJavaLibFile ../lib/flatlaf-0.22.jar

AddVMOption -Dswing.defaultlaf=com.formdev.flatlaf.FlatDarkLaf



Friedhold Matz @FriedholdMatz · 25. Dez. 2019



Sometimes it's unclear: #FlatUI design is modern and different from Skeuomorphic design; e.g. Open Source #FlatLaf based on Java Swing.



8



11



42



Download

[formdev.com flat L&F Home](https://formdev.com/flat/L&F/Home/flatlaf-0.36.jar)
[flatlaf-0.36.jar](https://formdev.com/flat/L&F/Home/flatlaf-0.36.jar)

place in sqldeveloper/sqldeveloper/lib

Edit sqldeveloper.conf

(located in sqldeveloper/sqldeveloper/bin)

AddJavaLibFile ../lib/flatlaf-0.36.jar

AddVMOption -Dswing.defaultlaf=[choose from below]

com.formdev.flatlaf.FlatLightLaf

com.formdev.flatlaf.FlatDarkLaf

com.formdev.flatlaf.FlatDarculaLaf

com.formdev.flatlaf.FlatIntelliJLaf

Enjoy

looks very pleasing

but low contrast in datagrid zebra pattern

absolutely no support from Oracle



A woman with red hair tied back, wearing glasses and a light-colored plaid shirt, is seated in a black office chair. She is focused on her work, with her hands on a black keyboard. The desk is cluttered with various items, including a mouse, a telephone, and some papers. In the background, there are multiple computer monitors displaying code or data. The lighting is warm and focused on the woman, creating a professional yet intimate atmosphere.

Editing

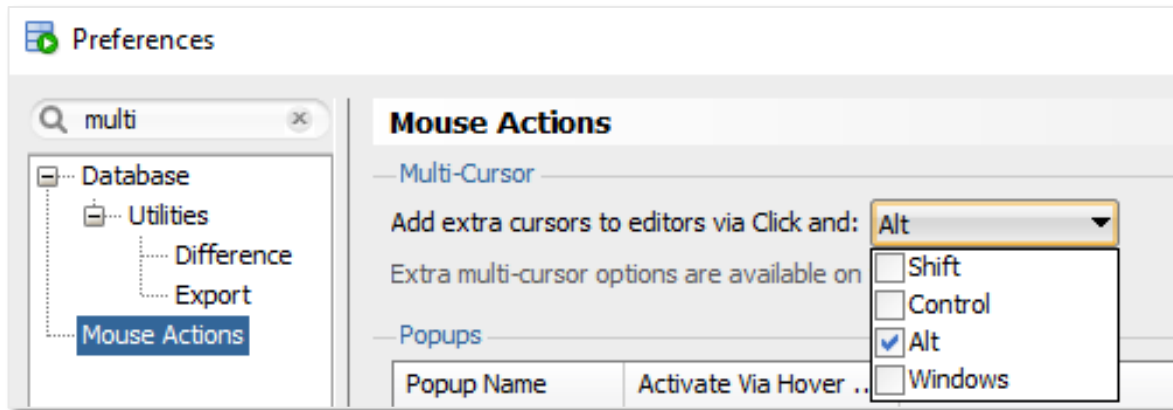


Multi Cursor Editing - Preparation

Preparation:

Choose your favourite key/key combination for adding extra cursors.

(Standard is Shift-Ctrl-Click, which is waaay to complicated ;-)





Multi Cursor Editing

Keep the Alt key pressed while placing the cursors in the worksheet

Start typing to add text at the cursor positions



Find the SQL of Your Result Tab 1/2

Hovering the mouse over the result tab will show a popup including connection and SQL statement

The screenshot shows the SQL Developer interface with a query window titled 'localhost - hr'. The query is as follows:

```
1 select *
2 from departments;
3 select * from employees;
4 select * from employees
5 where employee_id > 200
6 order by employee_id;
```

The results are displayed in a table with the following columns: EMPLOYEE_ID, FIRST_NAME, LAST_NAME, EMAIL, PHONE_NUMBER, and HIRE_DATE. The table contains three rows of data.

	EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE
1	201	Michael	Hartstein	MHARTSTE	515.123.5555	17.02.1996 00:00:00
2	202	Pat	Fay	PFAY	603.123.6666	17.08.1997 00:00:00
3	203	Susan	Mavris	SMAVRIS	515.123.7777	07.06.1994 00:00:00

The tooltip for 'Query Result 2' shows the following information:

- Connection: localhost - hr
- SQL Statement: select * from employees where employee_id > 200 order by employee_id
- Status: All Rows Fetched: 21 in 0.01 seconds



Find the SQL of Your Result Tab 2/2

Clicking the SQL button gives you an extra popup showing connection, SQL statement and a copy link

localhost - hr

Worksheet Query Builder

```
1 select *
2 from departments;
3 select * from employees;
4 select * from employees
5 where employee_id > 200
6 order by employee_id;
```

Query Result x Query Result 1 x Query Result 2 x Query Result 3 x

SQL All Rows Fetched: 21 in 0.016 seconds

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE
100	Michael	Hartstein	MHARTSTE	515.123.5555	17.02.1996 00:00:00
101	Pat	Fay	PFAY	603.123.6666	17.08.1997 00:00:00
102	Savris	SMAVRI	515.123.7777	07.06.1994 00:00:00	
103	Mann	Baer	HBAER	515.123.8888	07.06.1994 00:00:00
104	Shelley	Higgins	SHIGGINS	515.123.8080	07.06.1994 00:00:00
105	William	Gietz	WGIEZT	515.123.8181	07.06.1994 00:00:00

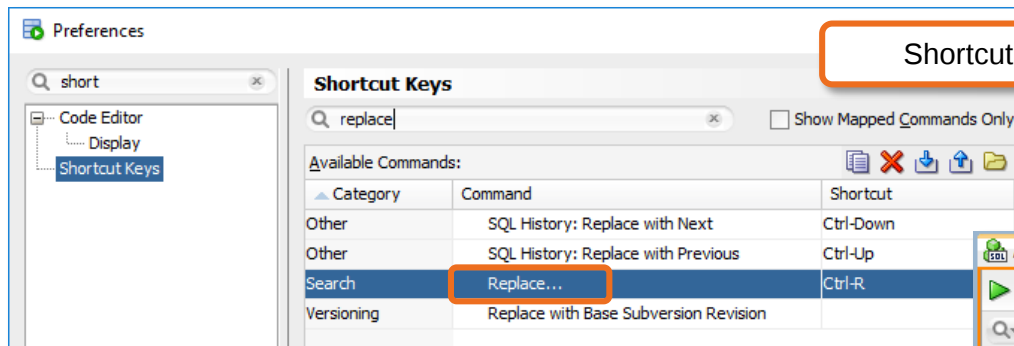
Query Result 2 SQL

localhost - hr : select * from employees
where employee_id > 200

Copy..



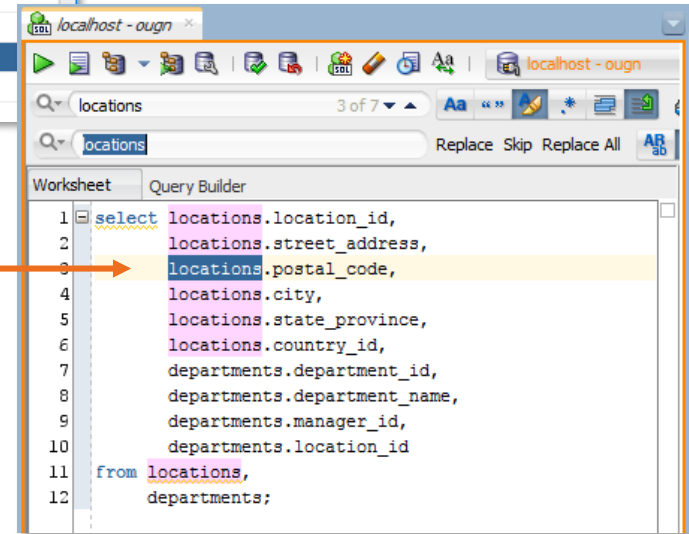
Search and Replace



Shortcut CTRL-R

Mark the string you want to replace and press Ctrl-R

- All occurrences are highlighted
- The focus is in the 'Replace' field
- You can start replacing right ahead ☺



```
1 select locations.location_id,  
2        locations.street_address,  
3        locations.postal_code,  
4        locations.city,  
5        locations.state_province,  
6        locations.country_id,  
7        departments.department_id,  
8        departments.department_name,  
9        departments.manager_id,  
10       departments.location_id  
11 from locations,  
12      departments;
```



Search and Replace

Challenge:
Keep upper case/lower case/init cap

Solution:
Press this button

Code Errors Dependencies References Grants Profiles Details

employees 1 of 31

emp Replace Skip Replace All AR

1 create or replace PACKAGE BODY employees_tapi IS

2

3 /**

4 * This procedure inserts data into table EMPLOYEE.

5 * Text for demo purposes: Employees

6

7 * Params:

8 * p_employee_id integer, may be empty

9

10 */

11 PROCEDURE ins (

12 p_job_id IN employees.job_id%type,

13 p_employee_id IN employees.employee_id%type DEFAULT NULL,

14

Preserve Case: The case of the replacement text will adjust to the case of the found text. e.g. "found" -> "replace", "FOUND" -> "REPLACE", "Found"->"Replace".



Result

EMPLOYEES_TAPI Body

Code Errors Dependencies References Grants Profiles Details

localhost

employees 1 of 26

emp Replace Skip Replace All AR

1 create or replace PACKAGE BODY emp_tapi IS

2

3 /**

4 * This procedure inserts data into table EMP.

5

6 * Text for demo purposes: Emp

7

8 * Params:

9 * p_employee_id integer, may be empty

10

11 */

12 PROCEDURE ins (

13 p_job_id IN emp.job_id%type,

14



Search and Replace with RegExp

Regular Expressions

The image shows a search and replace dialog box with the search term `\n` and the replace term `,`. The search results show 8 of 8 matches. The 'Replace' button is highlighted with an orange box. An orange arrow points from this button to a second, smaller dialog box that shows the result of the replacement: the text `102,103,110,122,` is displayed in the 'Worksheet' tab, with the commas highlighted in green.

Search: `\n` 8 of 8

Replace: `,`

Replace Skip Replace All

Worksheet Query Builder

102
103
110
122

Search: `\n` 0 of 0

Replace: `,`

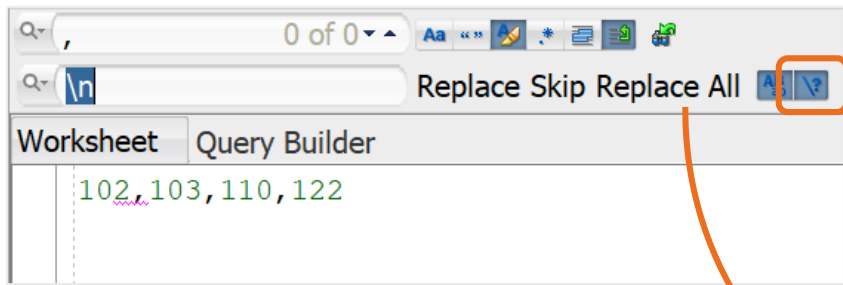
Replace Skip Replace All

Worksheet Query Builder

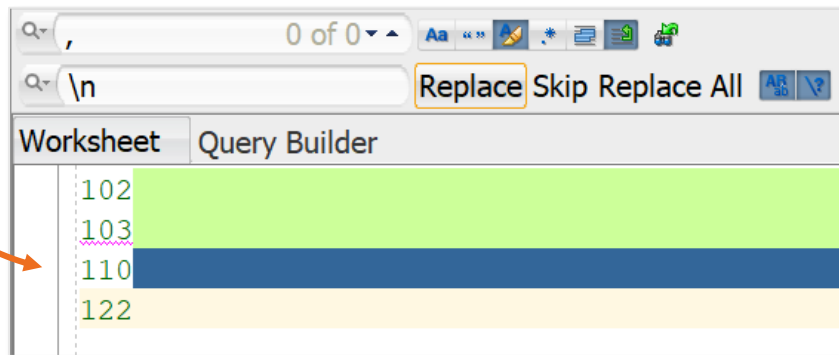
102,103,110,122,



Search and Replace Escaped Characters



Substitute escaped characters





Navigation



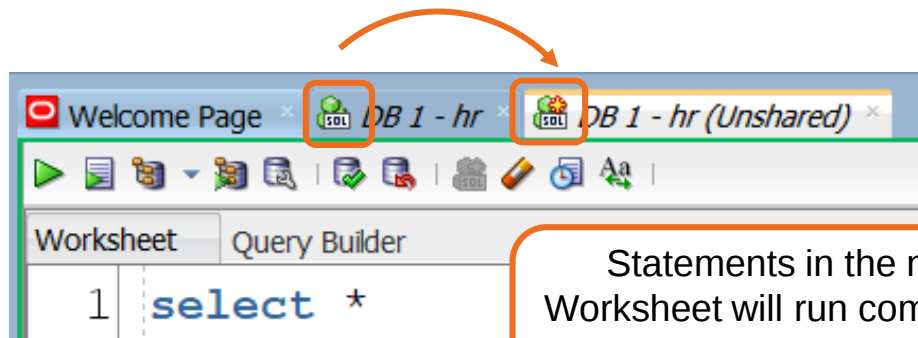


Unshared Worksheet

While a Worksheet is active, press

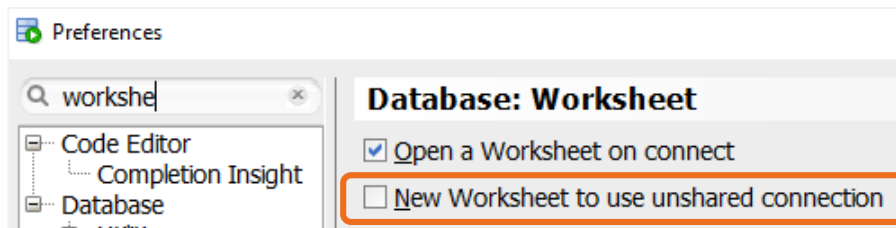


or **Ctrl-Shift-N**
to open a Worksheet
with a **new** session using
the same connection
information



Statements in the new
Worksheet will run completely
independent of the original
session

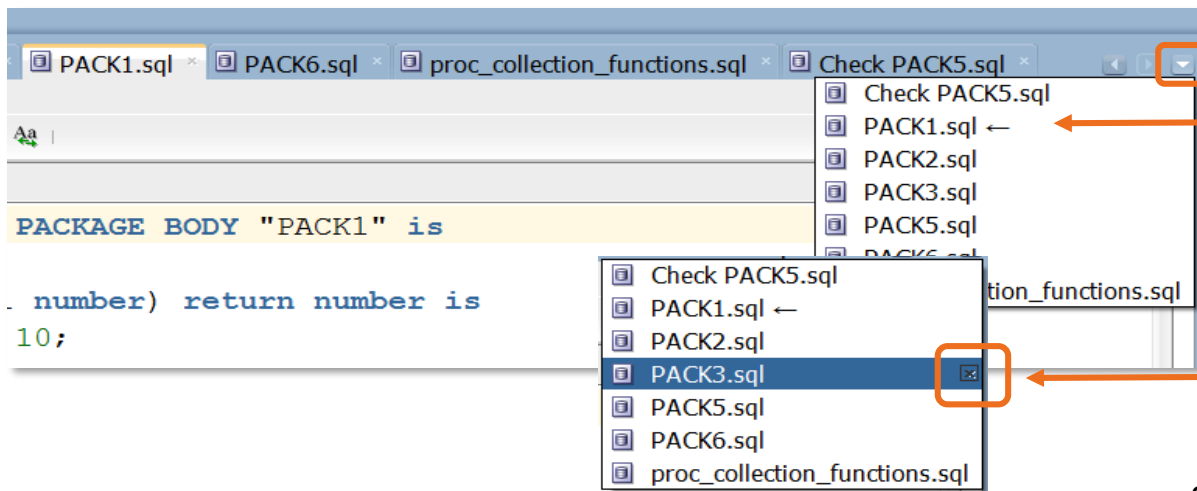
You can make this the
default, but your DBA
might not like it if
you open too many
connections





List of Open Tabs

You can use the left and right arrows to navigate the tabs but there is an alternative:



Unobtrusive, but very helpful:
List of Open Windows

Current Window marked
by arrow

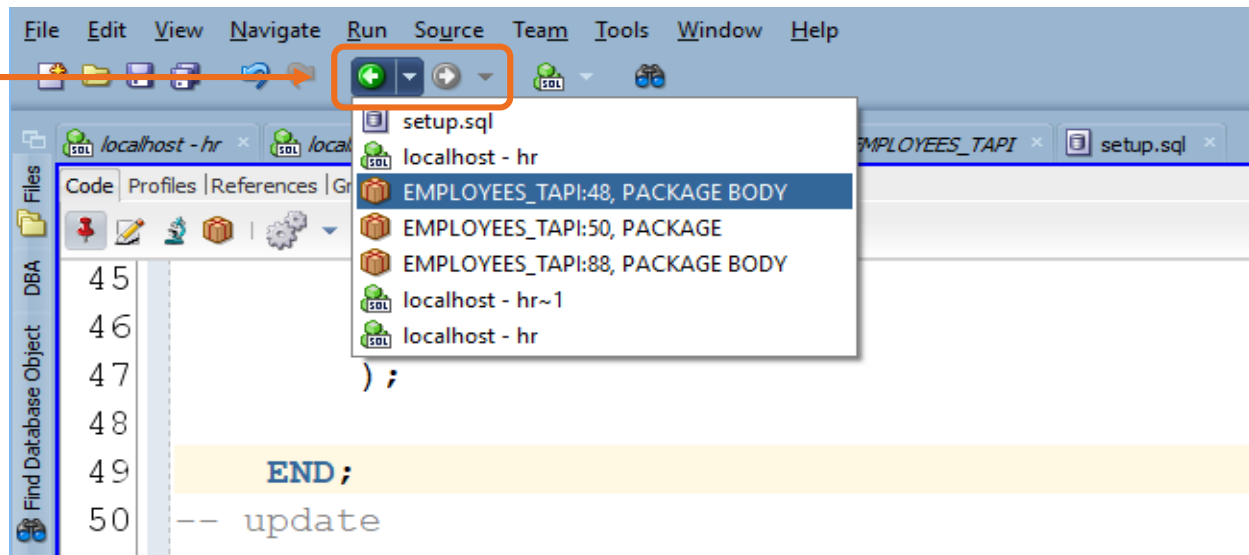
Windows can be closed via
the little x
Sometimes faster than via tab



Jumping Back and Forth

You can use the green buttons to go back and forward one step.

The arrow down shows the history of tabs (including worksheets, files, object viewers, package viewers). A simple click will take you there



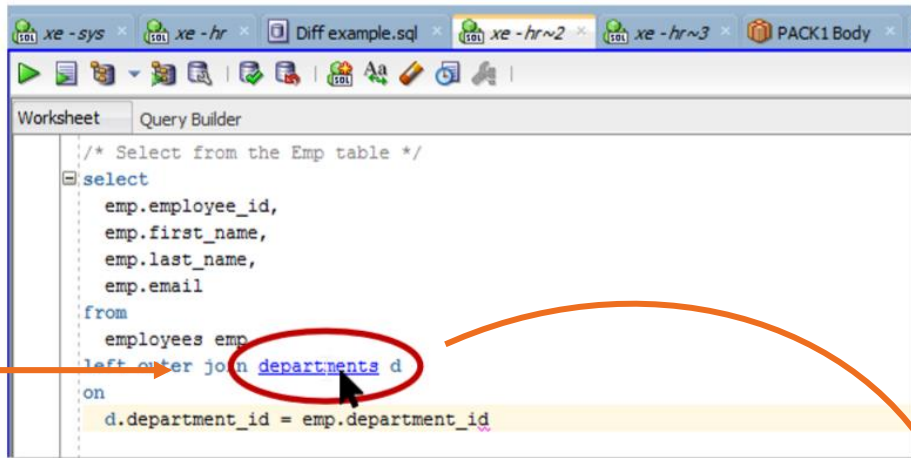


Go Directly to Object, Do Not Pass Connection Tree

Hover over an object's name while pressing Ctrl

When the hyperlink appears, right click on it

It will take you the Object Viewer:

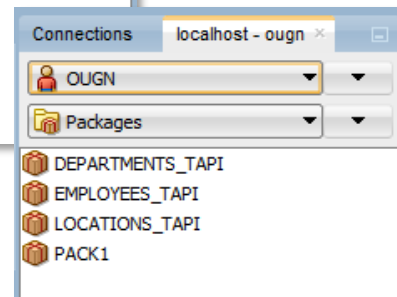
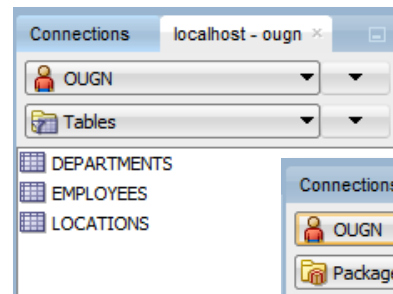
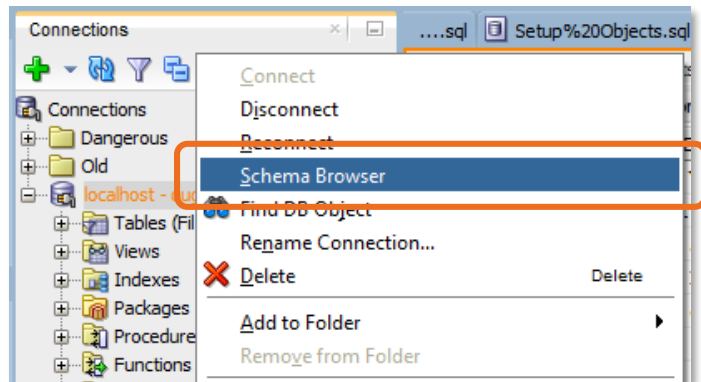


COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
1 DEPARTMENT_ID	NUMBER(4,0)	No	(null)		1 Primary key column of departments table.
2 DEPARTMENT_NAME	VARCHAR2(30 BYTE)	No	(null)		2 A not null column that shows name of a department.
3 MANAGER_ID	NUMBER(6,0)	Yes	(null)		3 Manager_id of a department. Foreign key to EMP.
4 LOCATION_ID	NUMBER(4,0)	Yes	(null)		4 Location id where a department is located.



Schema Browser

If you don't like the Connection Tree ... Just use the Schema Browser!



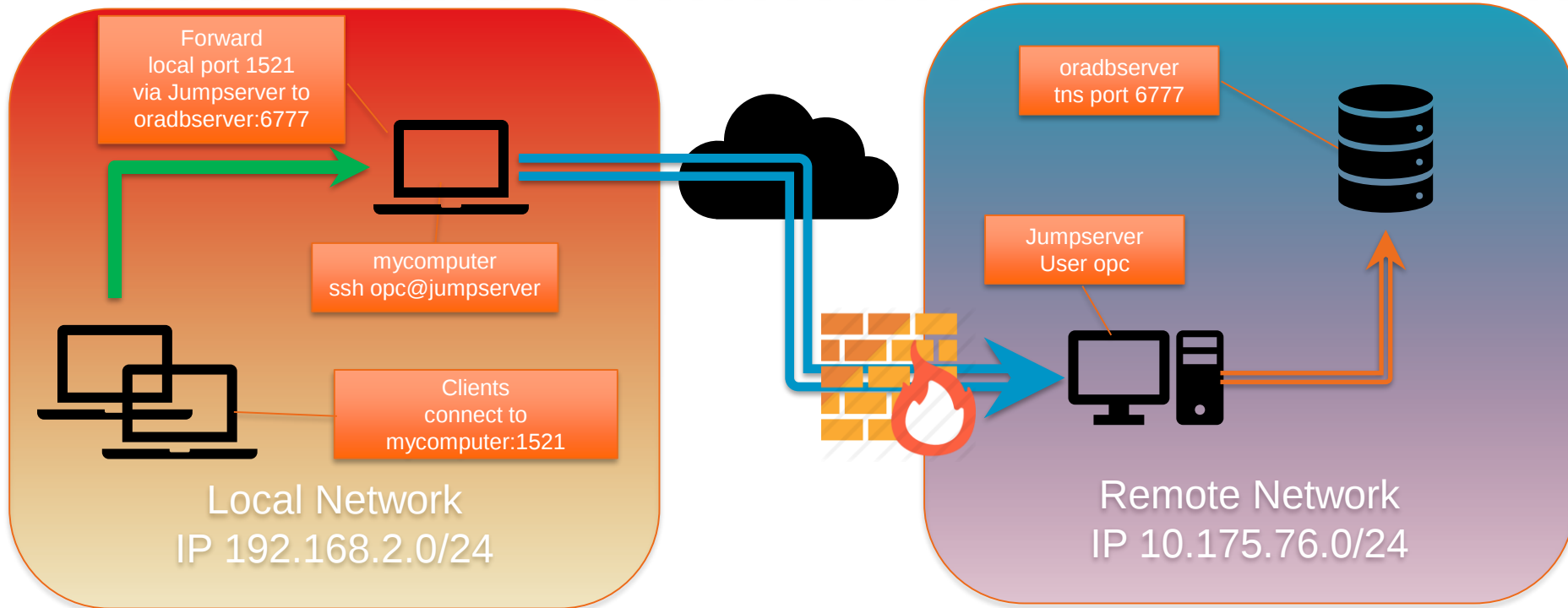


A photograph of a worker in a dark shirt and cap welding inside a large, circular tunnel. The tunnel's interior is lined with a blue, ribbed metal structure. Bright sparks are visible from the welding process. A large, solid orange rectangular box is superimposed over the center of the image, containing the text 'ssh Tunnels' in white. The tunnel floor is wet and reflects the lights. Various cables and pipes are visible along the walls and floor of the tunnel.

ssh Tunnels



ssh Tunnels



```
ssh -L 1521:oradbserver:6777 opc@jumpserver  
sqlplus robbie@mycomputer:1521/orcl
```



ssh Tunnel in SQL Developer

Show „SSH Hosts“ pane:

- Menu View => SSH

Create new SSH Host

- Wizard lets you create (one step)
 - ssh connection
 - Port Forward
- Test it!

Create new Oracle Connection

- Choose Connection Type SSH
- Select existing Port Forward
- Provide SID / Service name

New SSH Host

Name: VM ssh Connection

Host: jumphost.cloud.ora Port: 22

Username: oracle

☒ Use key file

Key file: r\ymarz@Nightspark_id_rsa Browse...

☒ Add a Local Port Forward

Name: oracle

Host: 10.145.176.35 Port: 1521

☒ Automatically assign local port

☐ Use specific local port: 0

Help OK Cancel



ssh Tunnel in SQL Developer

Show „SSH Hosts“ pane:

- Menu View => SSH

Create new SSH Host

- Wizard lets you create (one step)
 - ssh connection
 - Port Forward
- Test it!

Create new Oracle Connection

- Choose Connection Type SSH
- Select existing Port Forward
- Provide SID / Service name

The screenshot shows two overlapping dialog boxes in SQL Developer. The top dialog, titled 'New SSH Host', has fields for Name ('VM ssh Connection'), Host ('jumphost.cloud.oracle.com'), Port ('22'), and Username ('oracle'). It also has a checked checkbox for 'Use key file'. The bottom dialog, titled 'New / Select Database Connection', shows a list of connections on the left, including 'ssh Oracle Developer VM - robbie'. The right pane is active, showing settings for 'ssh Oracle Developer VM - robbie'. The 'Database Type' is 'Oracle'. Under 'User Info', the 'Authentication Type' is 'Default', 'Username' is 'robbie', and 'Password' is masked. The 'Connection Type' is set to 'SSH' (circled in red). Below this, the 'Port Forward' section shows 'oracle (VM ssh Connection)' selected in a dropdown (also circled in red). The 'Service name' is 'orcl'. At the bottom, there are buttons for 'Help', 'Save', 'Clear', 'Test', 'Connect', and 'Cancel'.





History (Bonus)



File History

The important tab!

Navigate

Saved versions
of your file

Diff with
current version

The screenshot shows the SQL Worksheet interface with the 'History' tab selected. The 'History' tab displays a table of saved versions of the file '20 Simple Tree.sql'.

Date	Revision	Description
Mar 12, 2017 11:51:38 PM	Local	Save
Mar 12, 2017 10:33:31 PM	Local	Save
Mar 12, 2017 10:33:31 PM	Local	Load External State

Below the history table is the 'Source Compare' window, which shows a diff between the current version of the file and a selected revision. The diff highlights changes in the SQL code, such as the addition of a new line in the 'select' statement.

Choose which changes you
want to apply to your file



SQL History

You can filter for any string!

Time of execution

Number of executions

Duration

SQL	Connection	TimeStamp	Type	Executed	Duration(seconds)
SELECT object_name, type, name, line FROM user_identifiers ai WH...	localhost - o...	12.03.2017 23:56	SQL	1	0.159
with one_obj_name as (select 'EMPLOYEES_TAPI' object_name, 'PACK...	localhost - o...	12.03.2017 23:55	SQL	1	0.384
WITH param AS (SELECT 'P1' object_name FROM DUAL) SELECT plsc...	localhost - o...	12.03.2017 23:54	SQL	1	0.283
select object_name, signature, sql_id, text from user_statements w...	localhost - o...	12.03.2017 23:53	SQL	2	0.208
with param as (select 'EMPLOYEES_TAPI' object_name, 'PACKAGE BODY...	localhost - o...	12.03.2017 23:47	SQL	4	0.176
set sqlformat ansiconsole;alter session set plscope_settings='STATEME...	localhost - o...	12.03.2017 22:57	Script	1	0.441
select 'Lines in IDENTIFIERS' name, count(*) valuefrom user_identifiers...	localhost - o...	12.03.2017 22:56	SQL	3	0.034
select NAME, TYPE, PLSCOPE_SETTINGS from user_plsql_object_settin...	localhost - o...	12.03.2017 22:56	SQL	2	0.029
set sqlformat ansiconsole;alter session set plscope_settings='STATEME...	localhost - o...	12.03.2017 22:56	Script	2	0.595

With these buttons you can replace the current text in the worksheet with the selected statement or insert the selected statement at cursor position



Statement History

Great for inquisitive people! 😊

This log contains *everything* that's sent to the database.
So you see your own statements as well as the metadata queries that SQL Developer uses to display the database objects

You can filter for any string!

Duration

Parameters

Double click
opens a window
with the complete
text

Seq...	Connection Name	Elapsed	SQL	Parameters
311	localhost - ougn	304	beginbms_utility.expand_sql_text(input_sql_text => :sql,output_sql_text => :x);end;	1="select object_name, signature,
310	localhost - ougn	63	select 1 from sys.obj\$ where 1=0	
309	localhost - ougn	2	/* + NO_PARALLEL */SELECT ROWID "ROWID", ORA_ROWSCN "ORA_ROWSCN", EMPLOYEE_ID EM...	
308	localhost - ougn	3	SELECT 'COLUMN' type, owner, table_name object_name, column_name, column_id, data_type FRO...	1="OUGN", 2="EMPLOYEES"
307	localhost - ougn	4	select NULLIF((select count(1) from all_external_tables where owner = 'OUGN' and table_name = 'E...	
306	localhost - ougn	3	select column_name from all_tab_cols A where TABLE_NAME = :OBJECT_NAME and owner = :OBJEC...	"OBJECT_NAME"="EMPLOYEES", "C
305	localhost - ougn	4	select column_name from all_tab_cols A where TABLE_NAME = :OBJECT_NAME and owner = :OBJEC...	"OBJECT_NAME"="EMPLOYEES", "C
304	localhost - ougn	2	select NULLIF((select count(1) from all_external_tables where owner = 'OUGN' and table_name = 'E...	
303	localhost - ougn	7	/* + NO_PARALLEL */SELECT ROWID "ROWID", ORA_ROWSCN "ORA_ROWSCN", DEPARTMENT_ID ...	



Conclusion





Make yourself @Home in SQL Developer

SQL Dev is highly customisable

Observe yourself while working

Ask for help, discuss (Twitter, OTN)

Follow @thatjeffsmith, @krisrice,
@OracleSQLDev

Always use the newest version

PLEASE
DO
TRY THIS
AT HOME