



# 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.**



**ORACLE®**  
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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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@RobbieDatabee @oraesque



**Databees.**

# 500+ Technical Experts Helping Peers Globally



**ORACLE®**  
ACE Director



**ORACLE®**  
ACE



**ORACLE®**  
ACE Associate

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[bit.ly/OracleACEProgram](https://bit.ly/OracleACEProgram)

Nominate yourself or someone you know: [acenomination.oracle.com](https://acenomination.oracle.com)



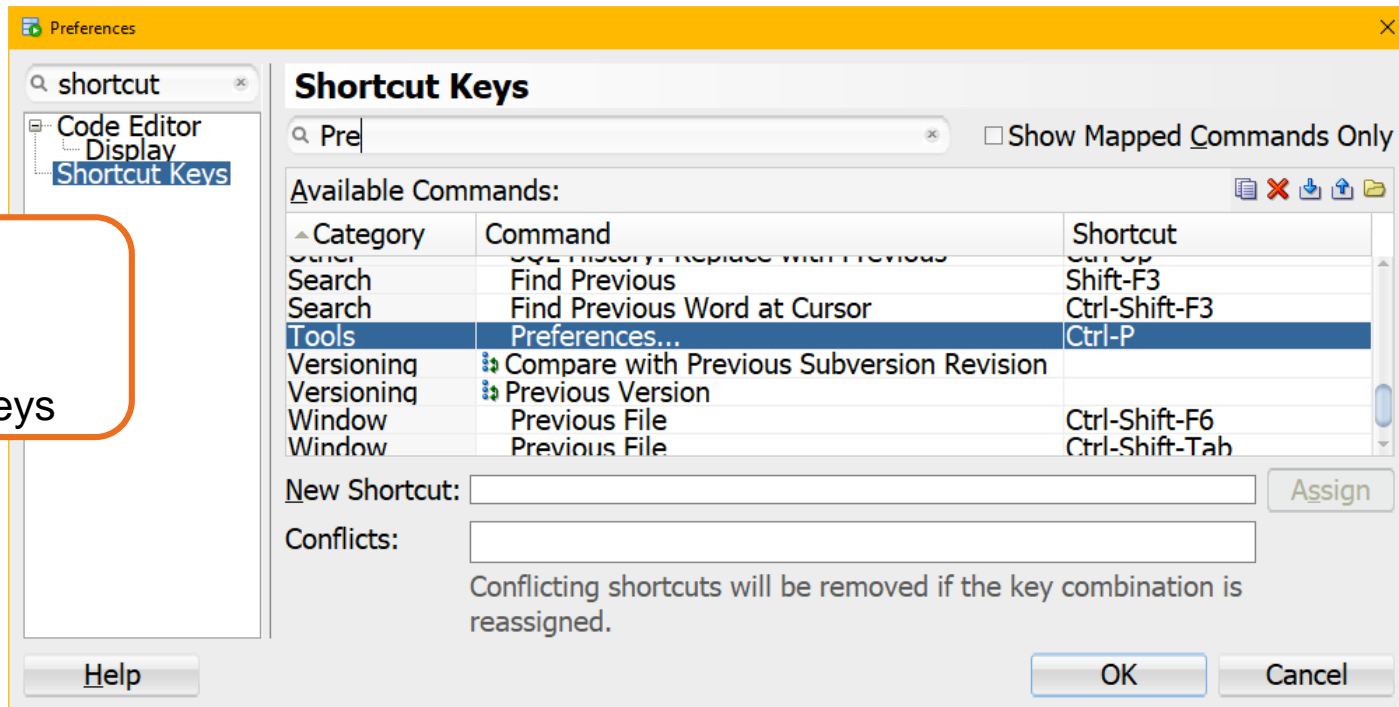
A woman with dark hair in a braid, wearing a black and grey horizontally striped long-sleeved shirt, is looking through black binoculars. She is standing on a high vantage point, looking down at a dense city skyline with many skyscrapers. The sky is filled with soft, white clouds, and a bright sun is visible in the upper left, creating a lens flare effect. 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



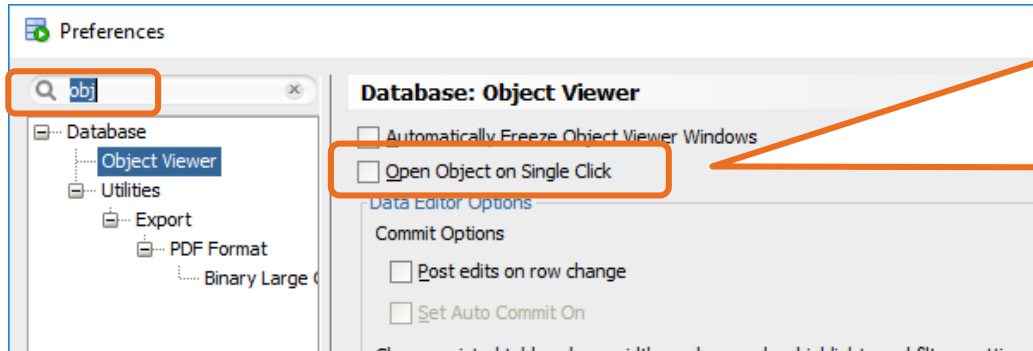
# Edit/Setup Shortcuts

Menu:  
Tools  
→ Preferences  
→ Shortcut Keys





# Open Object on Single or Double Click

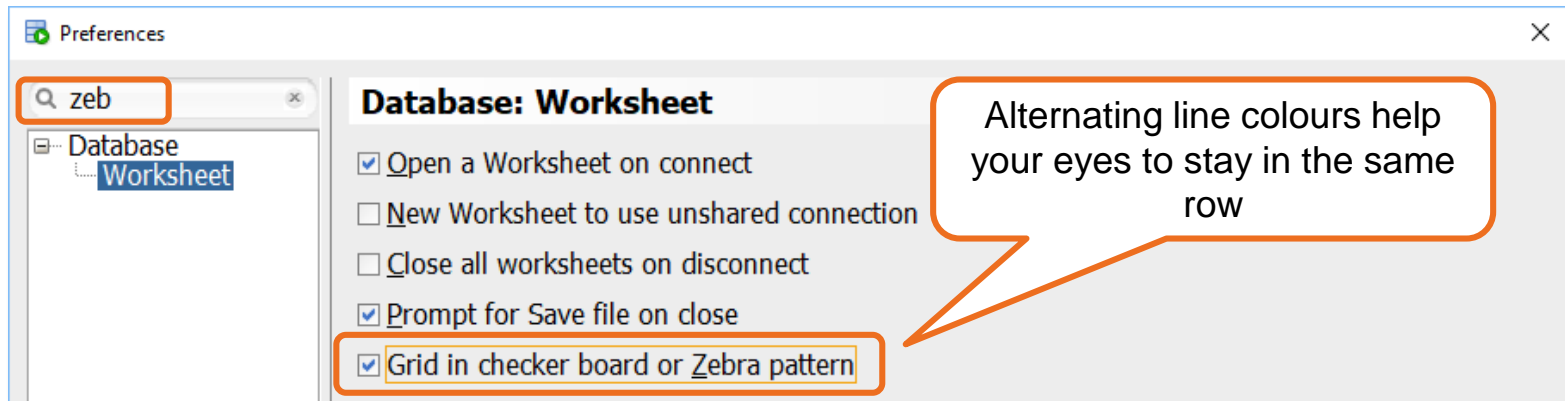


If this option is checked, any table or view in the connection tree is opened in the object viewer as soon as you click on it once.

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



# Data Grid: Zebra Pattern

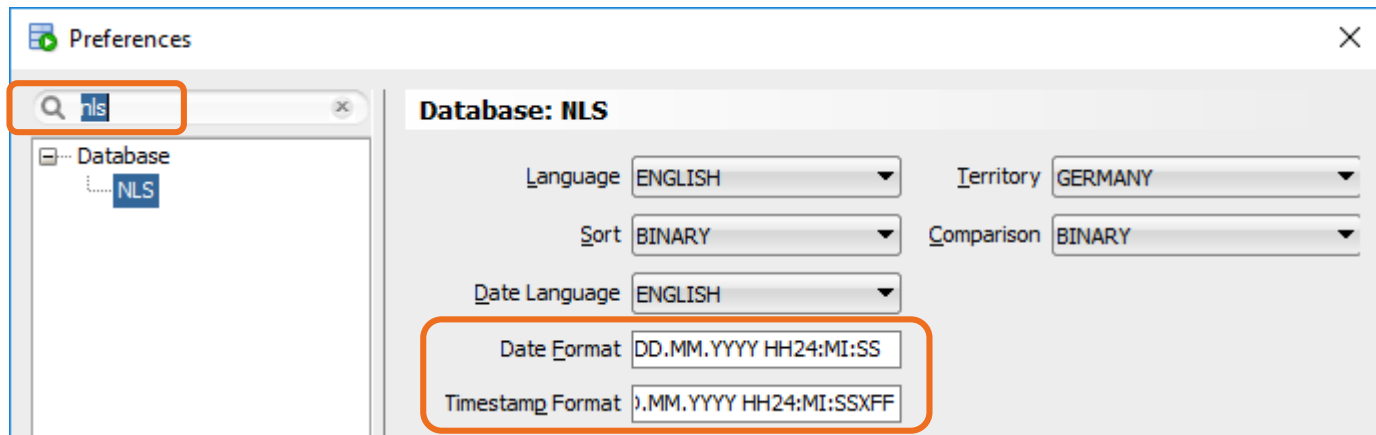


EMPLOYEES					
Columns   Data   Model   Constraints   Grants   Statistics   Triggers   Flashback   Dependencies   Details   Partitions					
Sort..   Filter:					
	EMPLOYEE...	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER
1	222	Han	Solo	HSOLO	515.123.8111
2	221	James P.	Sullivan	JSULLIVAN	515.123.4151
3	220	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

Preferences

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

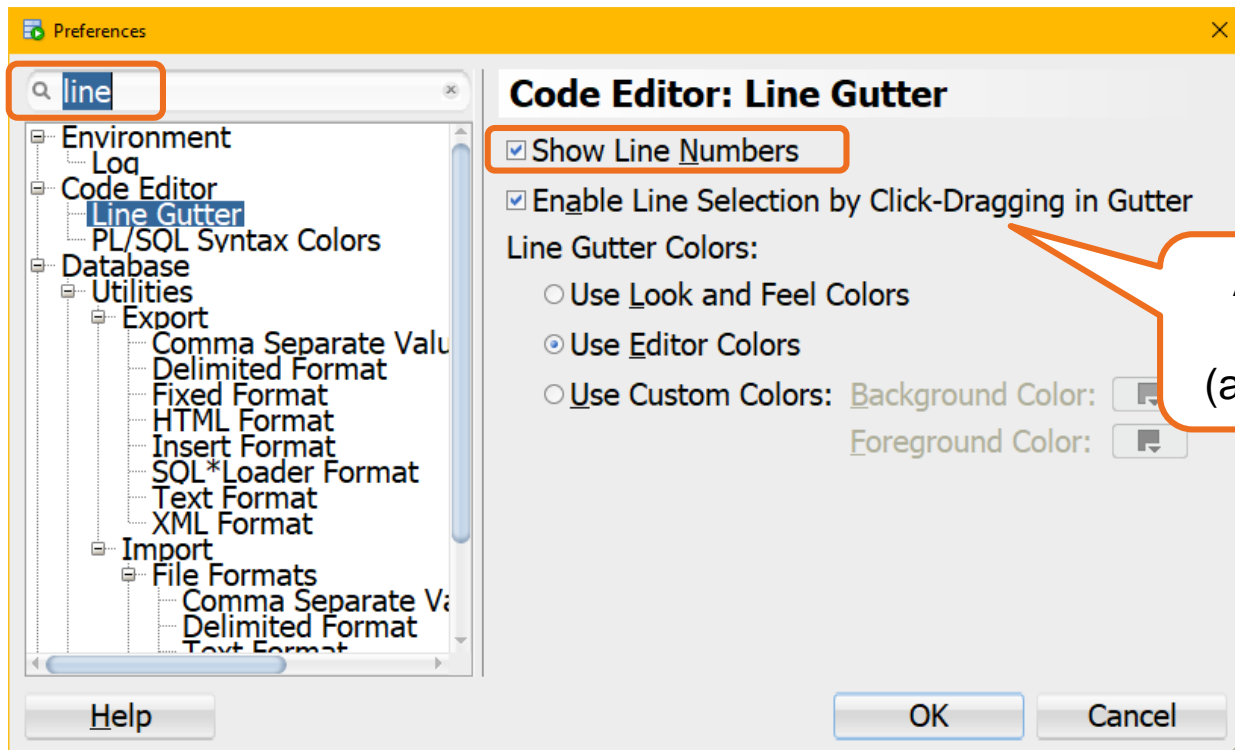
Display Null Using Background Color LIGHT\_GRAY

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 Jabberwocky Rd	26192	Southlake	Texas	US

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



# Show Line Numbers by Default





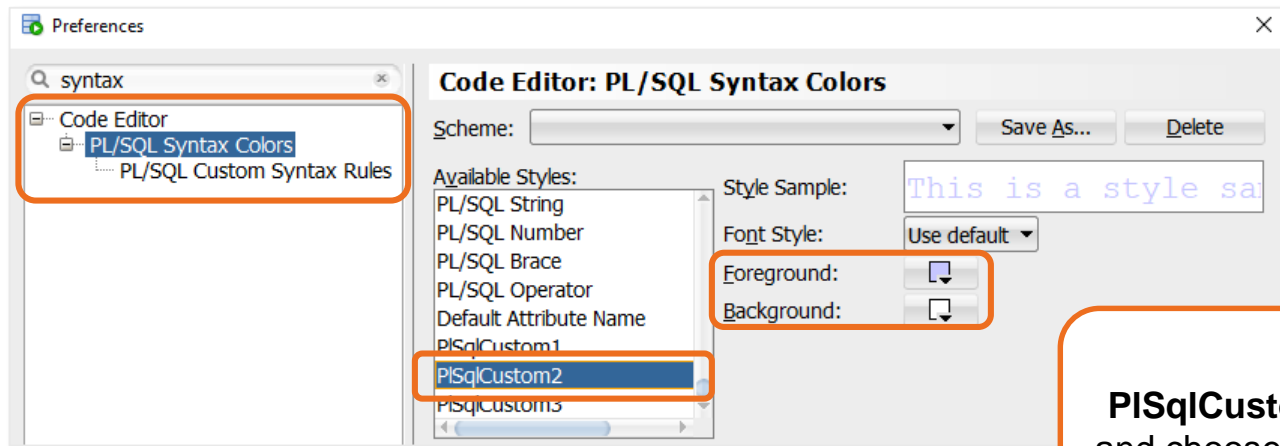
## Greying out Instrumentation Code 1/3

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](#)

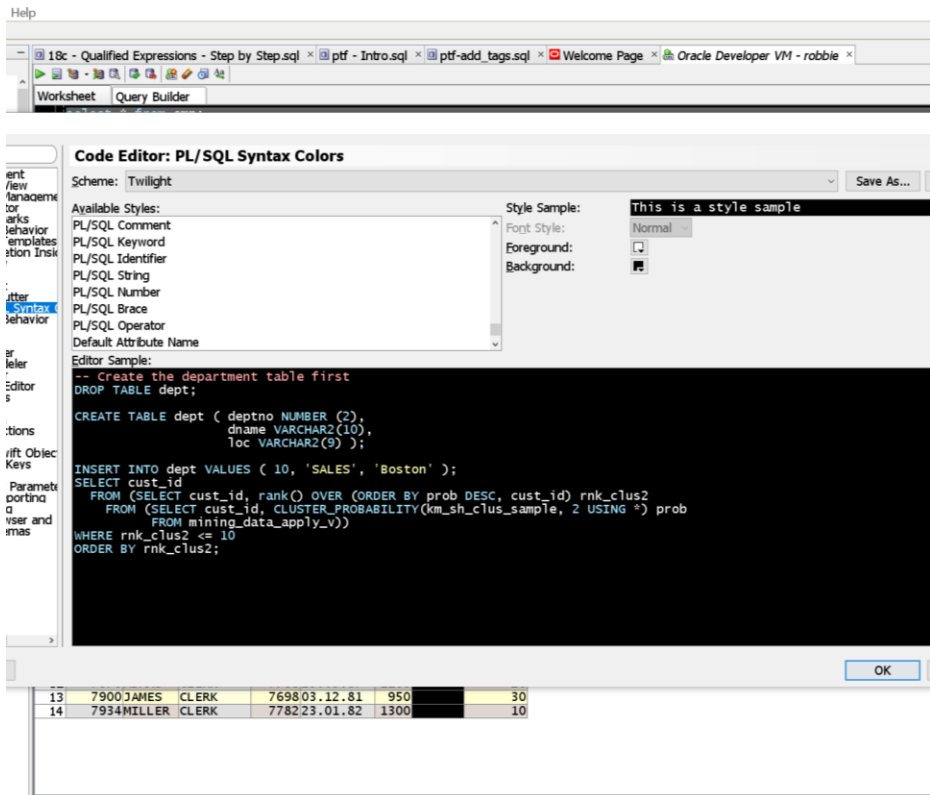




# SQL Developer Dark Mode



# 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



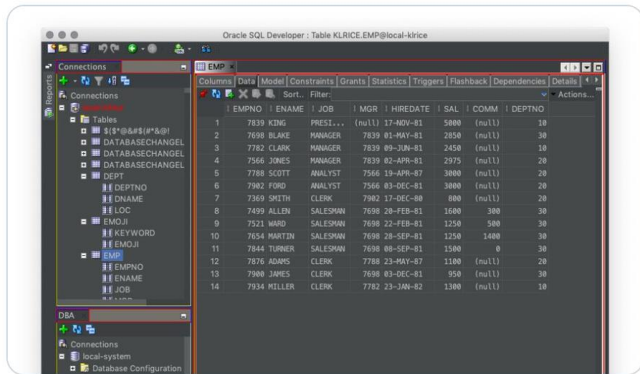
krisrice @krisrice · 26. Dez. 2019

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, multiple computer monitors are visible, displaying code or data. The lighting is warm and focused on the woman, creating a professional yet intimate atmosphere.

# Editing



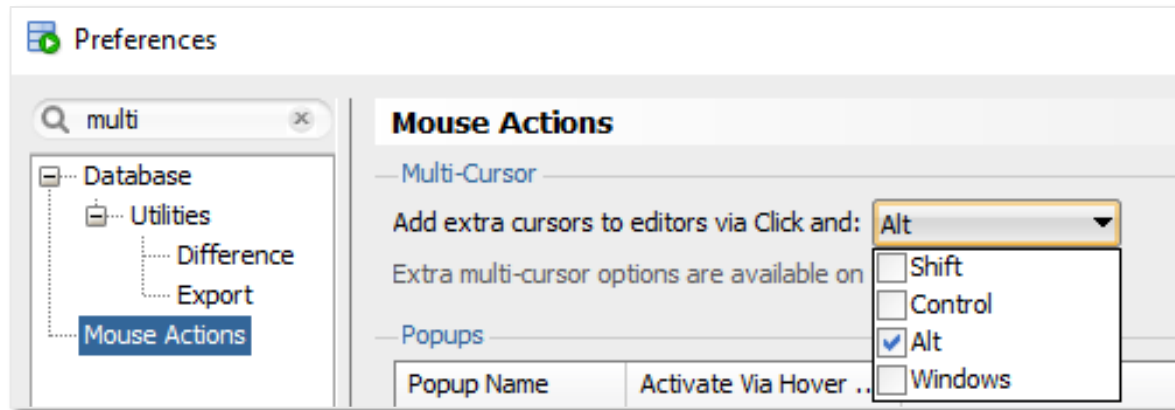


# Multi Cursor Editing - Preparation

## Preparation:

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

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





# Multi Cursor Editing

Worksheet Query Builder

```
1 select
2     employee_id,
3     first_name, last_n
4     email,
5     phone_number,
6     hire_date,
7     job_id
8 from
9     employees
```

Worksheet Query Builder

```
1 select
2     employee_id,
3     first_name, last_name
4     email,
5     phone_number,
6     hire_date,
7     job_id
8 from
9     employees
```

Worksheet Query Builder

```
1 select
2     e.employee_id,
3     e.first_name, e.last_name,
4     e.email,
5     e.phone_number,
6     e.hire_date,
7     e.job_id
8 from
9     employees
```

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 a SQL IDE window titled 'localhost - hr'. The 'Query Builder' tab is active, displaying the following SQL query:

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

A mouse is hovering over the 'Query Result 2' tab, which has a popup showing the SQL statement and connection details:

localhost - hr : select \* from employees where employee\_id > 200 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 3 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



## 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

The screenshot shows a database tool interface with a tab titled 'localhost - hr'. The 'Query Builder' tab is active, displaying a SQL query:

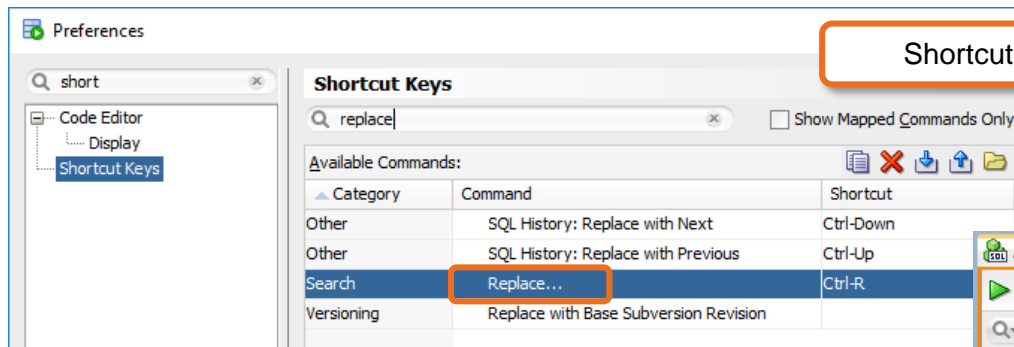
```
1 select *
2 from departments;
3 select * from employees;
4 select * from employees
5 where employee_id > 200
6 order by employee_id;
```

Below the query, there are tabs for 'Query Result 1', 'Query Result 2', and 'Query Result 3'. The 'Query Result 2' tab is selected, showing a table with 6 columns: EMPLOYEE\_ID, FIRST\_NAME, LAST\_NAME, EMAIL, PHONE\_NUMBER, and HIRE\_DATE. The table contains 6 rows of data. A popup menu is open over the 'SQL' button, showing the following text:

**Query Result 2 SQL**  
localhost - hr : select \* from employees  
where employee\_id > 200  
Copy..



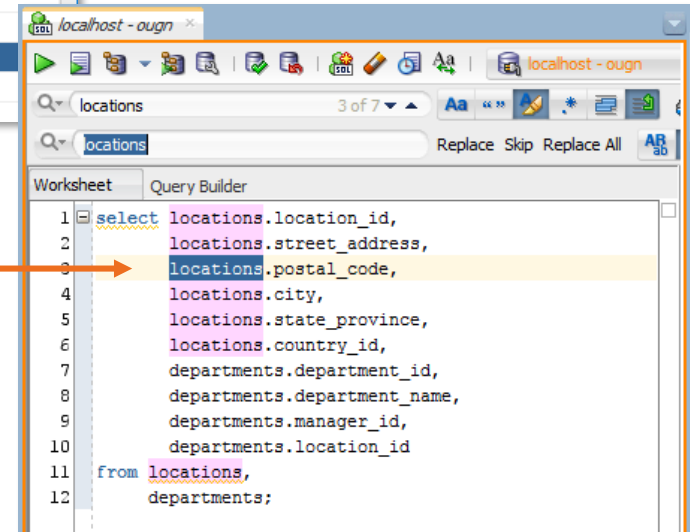
# Search and Replace



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 ☺



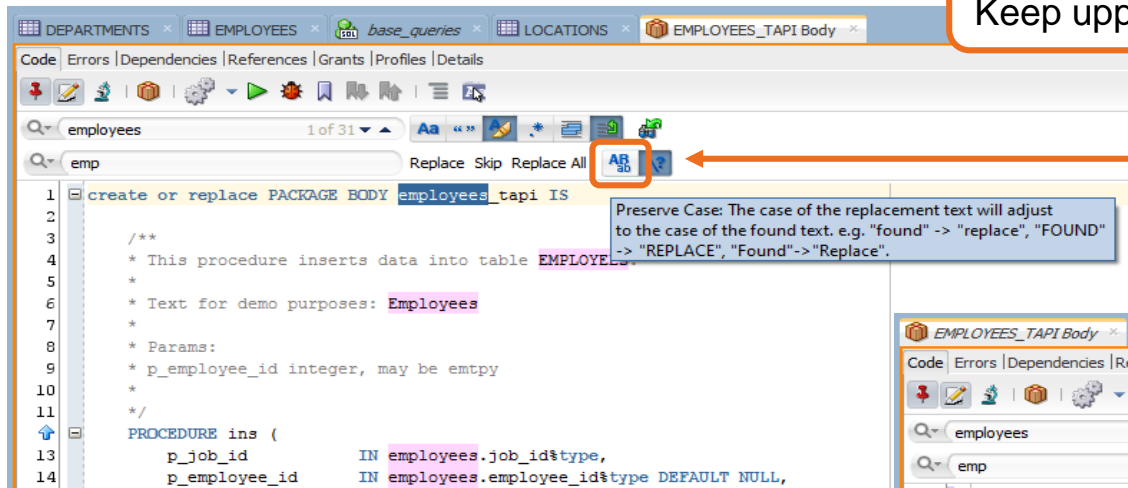
```
1 select locations.location_id,  
2        locations.street_address,  
3        locations.postal_code,  
4        locations.city,  
5        locations.state_province,  
6        locations.country_id,  
7        departments.department_id,  
8        departments.department_name,  
9        departments.manager_id,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



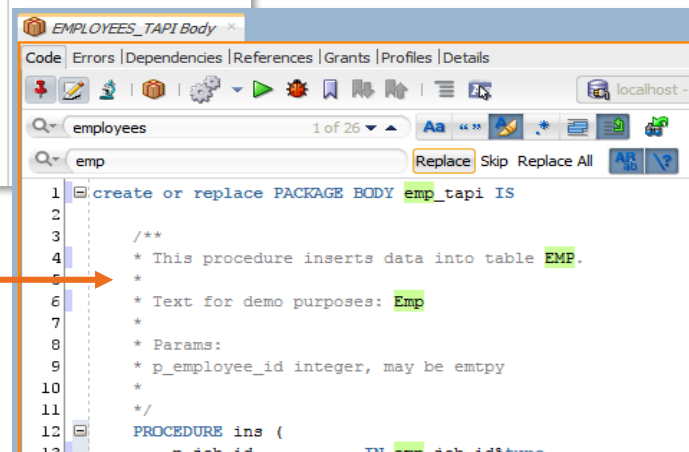
# Search and Replace

Challenge:  
Keep upper case/lower case/init cap

Solution:  
Press this button



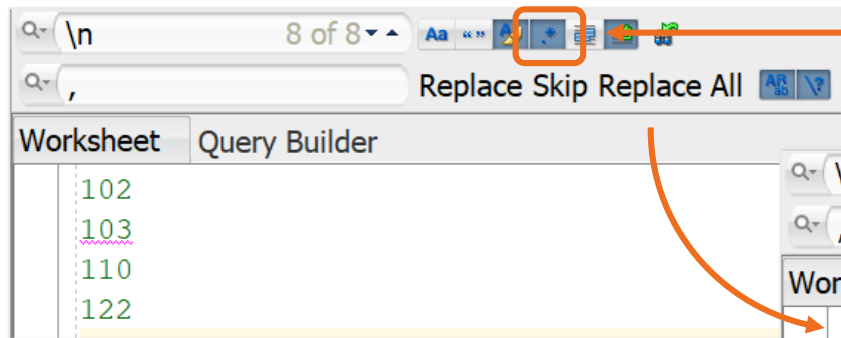
Result



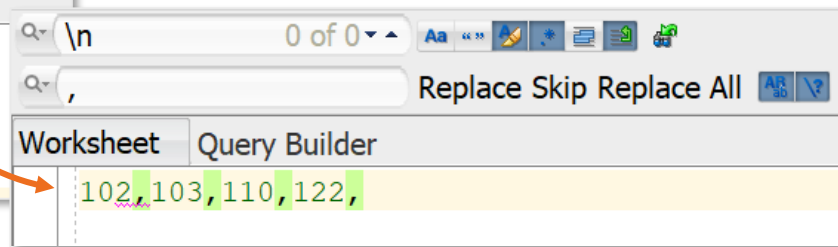




# Search and Replace with RegExp

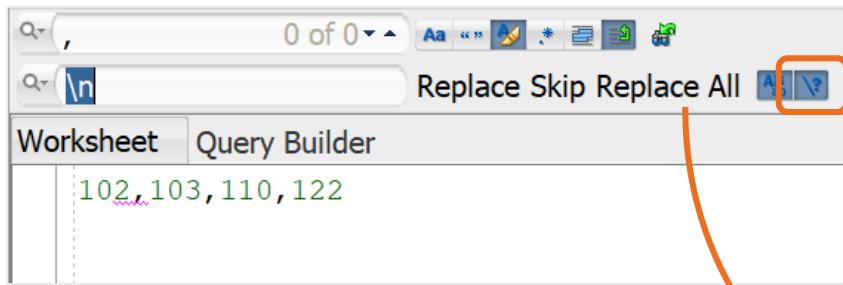


Regular Expressions

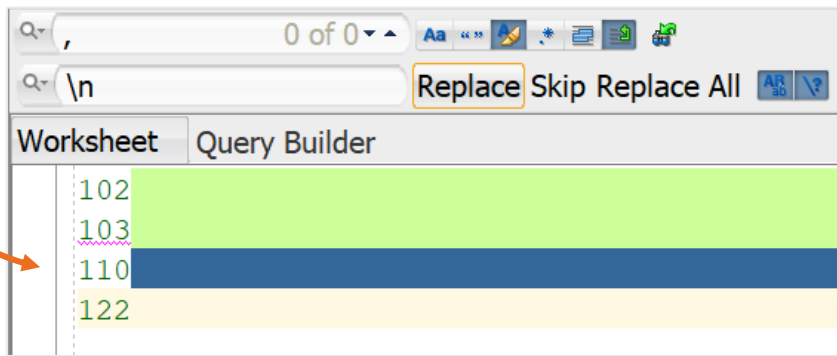




# Search and Replace Escaped Characters



Substitute escaped characters







# Navigation



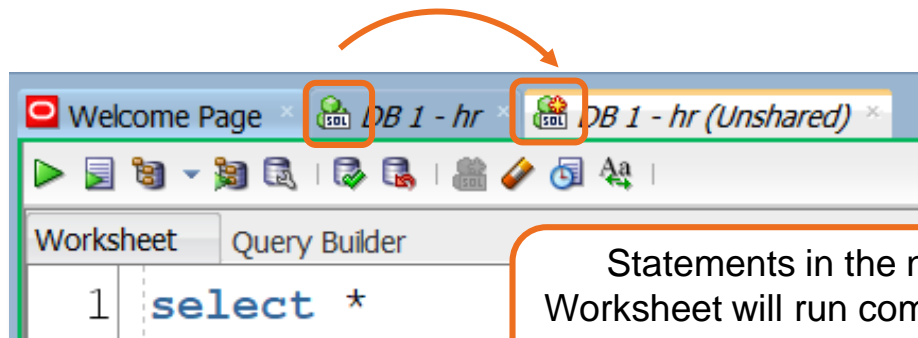


# Unshared Worksheet

While a Worksheet is active, press

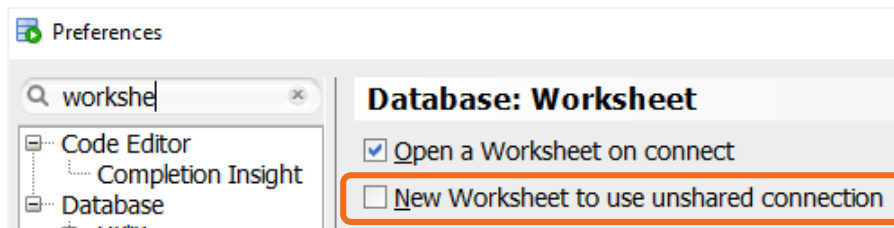


or **Ctrl-Shift-N**  
to open a Worksheet  
with a **new** session using  
the same connection  
information



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

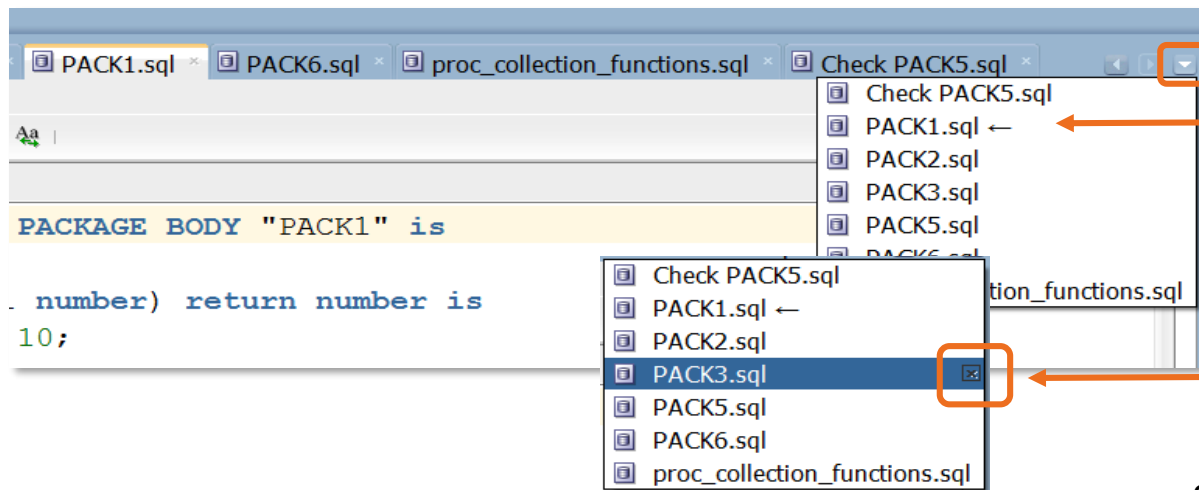
You can make this the  
default, but your DBA  
might not like it if  
you open too many  
connections





## 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

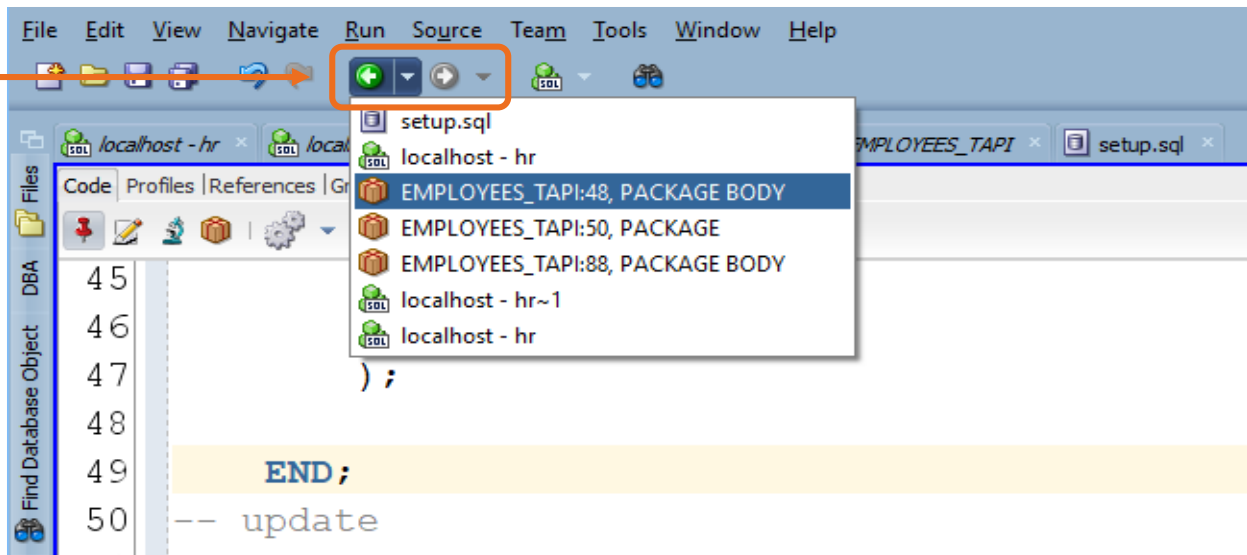




## Jumping Back and Forth

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



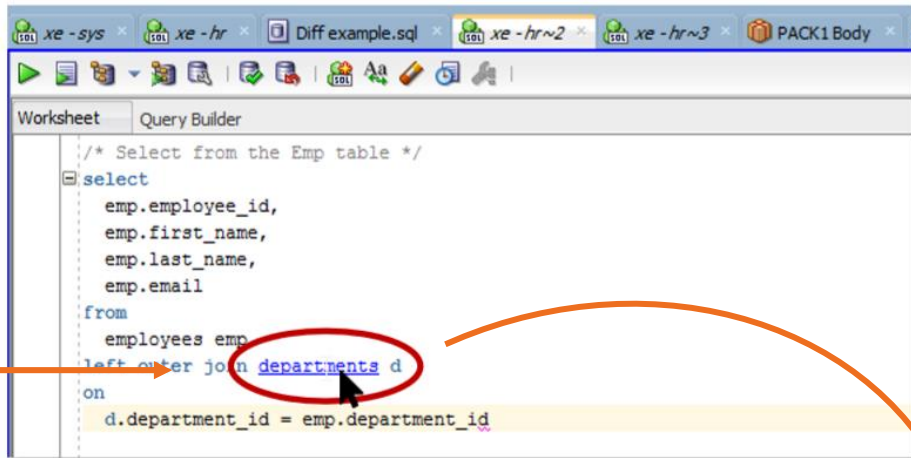


# Go Directly to Object, Do Not Pass Connection Tree

Hover over an object's name while pressing Ctrl

When the hyperlink appears, right click on it

It will take you the Object Viewer:

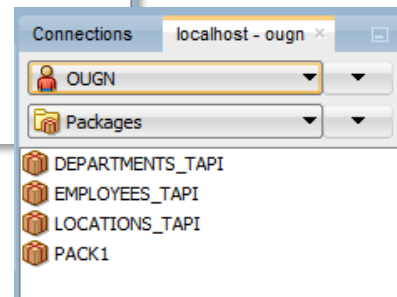
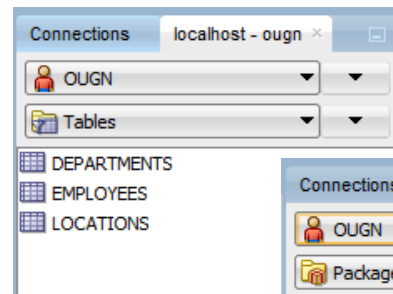
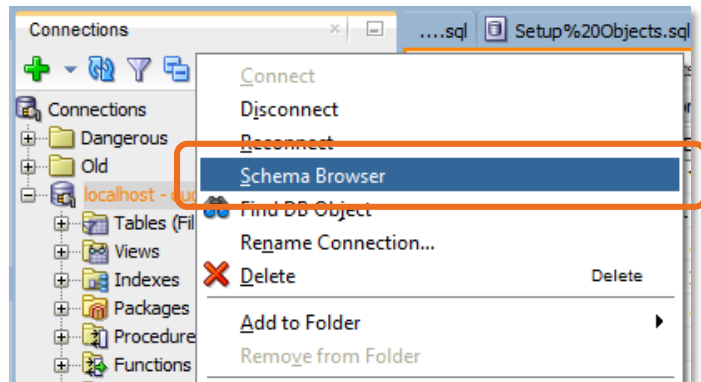


COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
1 DEPARTMENT_ID	NUMBER(4,0)	No	(null)		1 Primary key column of departments table.
2 DEPARTMENT_NAME	VARCHAR2(30 BYTE)	No	(null)		2 A not null column that shows name of a department.
3 MANAGER_ID	NUMBER(6,0)	Yes	(null)		3 Manager_id of a department.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





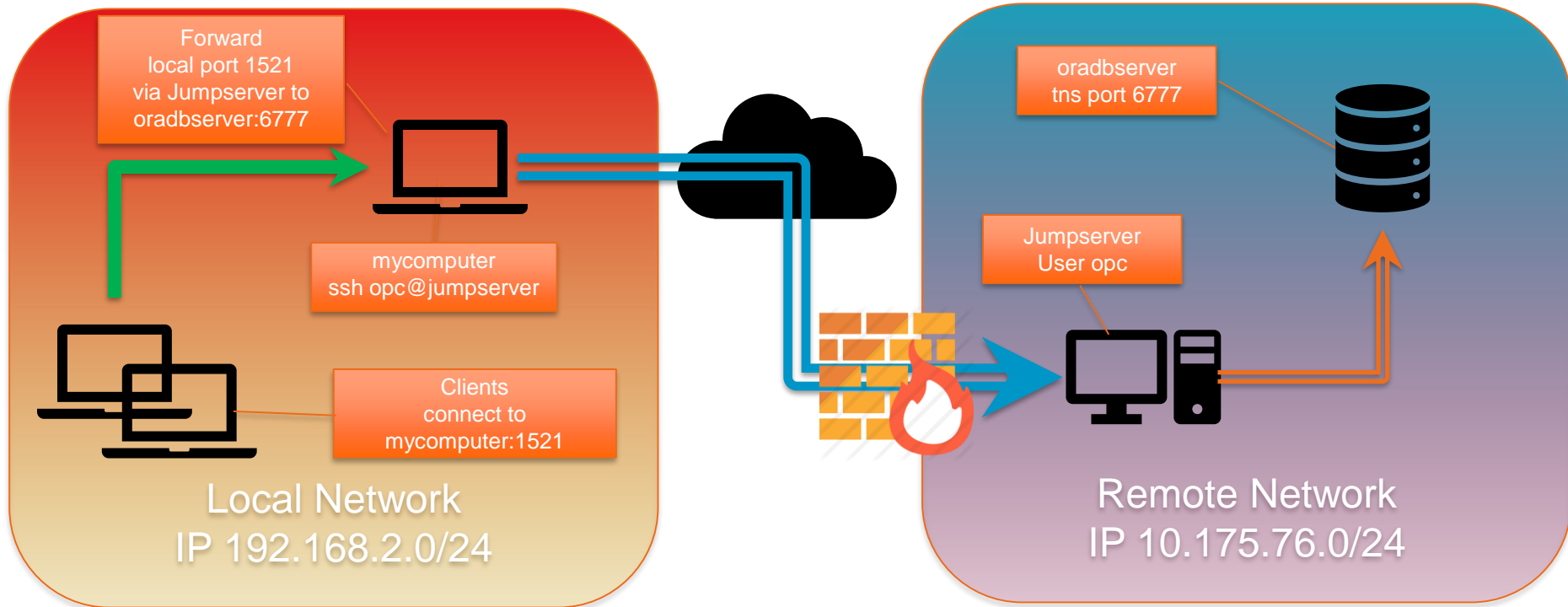


A full-page background image showing a worker in a dark shirt and cap welding the interior of a large tunnel. The worker is positioned on a metal structure, and bright orange sparks are flying from the welding point. The tunnel's interior is lined with a blue, ribbed metal mesh. The floor is wet and reflects the warm yellow light from several bright spotlights. Cables and pipes run along the left side 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 windows in SQL Developer. The top window, titled 'New SSH Host', has fields for Name ('VM ssh Connection'), Host ('jumphost.cloud.oracle.com'), Port ('22'), and Username ('oracle'). The 'Use key file' checkbox is checked. The bottom window, titled 'New / Select Database Connection', shows a list of connections on the left, including 'ssh Oracle Developer VM - robbie'. The main panel shows the configuration for this connection: Name ('ssh Oracle Developer VM - robbie'), Database Type ('Oracle'), and User Info ('Proxy User'). Under 'Authentication Type', 'Default' is selected. Username is 'robbie' and Role is 'default'. The 'Connection Type' is set to 'SSH' and is circled in red. The 'Port Forward' dropdown is also circled in red and shows 'oracle (VM ssh Connection)'. Below it, 'Service name' is set to 'orcl'. At the bottom, there are buttons for 'Help', 'Save', 'Clear', 'Test', 'Connect', and 'Cancel'.



A wooden crate filled with numerous rolled-up ancient scrolls. The scrolls are made of parchment or papyrus, some showing handwritten text in ink. They are tied with thin cords and are scattered throughout the crate, which is made of dark wood. The lighting is warm and focused, highlighting the textures of the wood and the scrolls.

# History (Bonus)



# File History

The important tab!

Navigate

Saved versions  
of your file

Diff with  
current version

The screenshot shows the 'File History' tab in the SQL Worksheet interface. The 'History' section displays a table of saved versions:

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

The 'Source Compare' section shows a diff between the current version and a selected revision. The left pane shows the current version, and the right pane shows the selected revision. The diff highlights changes in the SQL code, with a red 'X' indicating a difference in the 'usage' column of the 'plsscope\_hierarchy' table.

Choose which changes you  
want to apply to your file



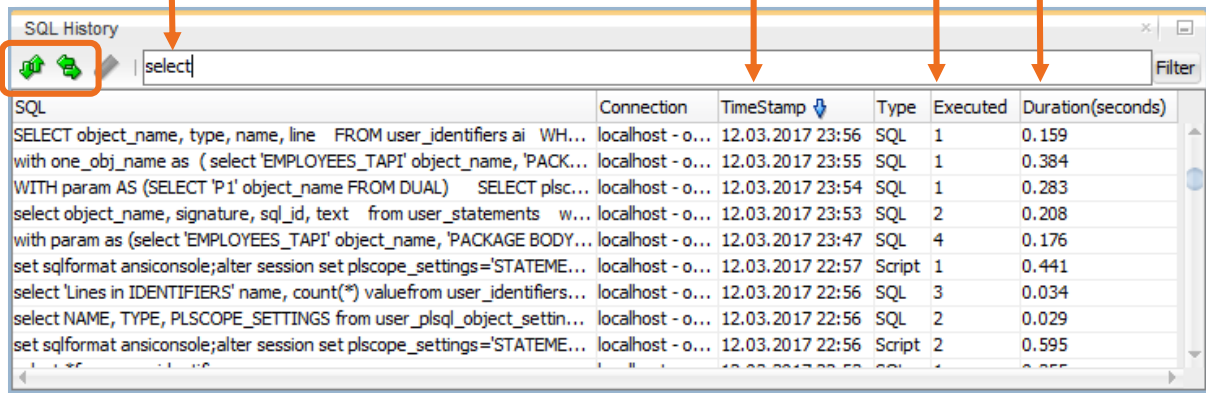
# SQL History

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**