

Top 10 Features of SQL Developer everybody should use, even in the Cloud

Heli Helskyaho, Elise Valin-Raki

Introduction, Heli

- * Graduated from University of Helsinki (Master of Science, computer science), currently a doctoral student, researcher and lecturer (databases, Big Data, Multi-model Databases, methods and tools for utilizing semi-structured data for decision making) at University of Helsinki
- * Worked with Oracle products since 1993, worked for IT since 1990
- * Data and Database!
- * CEO for Miracle Finland Oy
- * Oracle ACE Director
- * Ambassador for EOUC (EMEA Oracle Users Group Community)
- * Public speaker and an author
- * Winner of Devvy for Database Design Category, 2015
- * Author of the book Oracle SQL Developer Data Modeler for Database Design Mastery (Oracle Press, 2015), co-author for Real World SQL and PL/SQL: Advice from the Experts (Oracle Press, 2016)

ORACLE

Oracle SQL Developer Data Modeler for Database Design Mastery

Design, Deploy, and Maintain World-Class Databases
on Any Platform

Heli Helskyaho

Oracle ACE Director

Forewords by C.J. Date and Tom Kyte

Oracle
Press

ORACLE

Real World SQL & PL/SQL

Advice from the Experts

Arup Nanda

Brendan Tierney

Heli Helskyaho

Martin Widlake

Alex Nuijten

Oracle
Press

Introduction, Elise

- * Oracle Database Lead for Fennia Insurance Company
- * Master of Science degree from Helsinki High School of Economics (with major in Management Science)
- * IT sector since 1987, different positions
- * OUGF (Oracle User Group Finland):
 - * Exa-SIG founder
- * Oracle ACE Associate
- * DBA

500+ Technical Experts Helping Peers Globally



3 Membership Tiers

- Oracle ACE Director
- Oracle ACE
- Oracle ACE Associate

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

Oracle SQL Developer vs Oracle SQL Developer Data Modeler

- * Two separate products BUT
 - * There is a version of Data Modeler that is integrated in SQL Developer
- * To see the datastructures and objects in the database and to maintain the data: **SQL Developer**
- * To design the database and to maintain the data structures: **Data Modeler**
- * To design the data architecture: **Data Modeler**

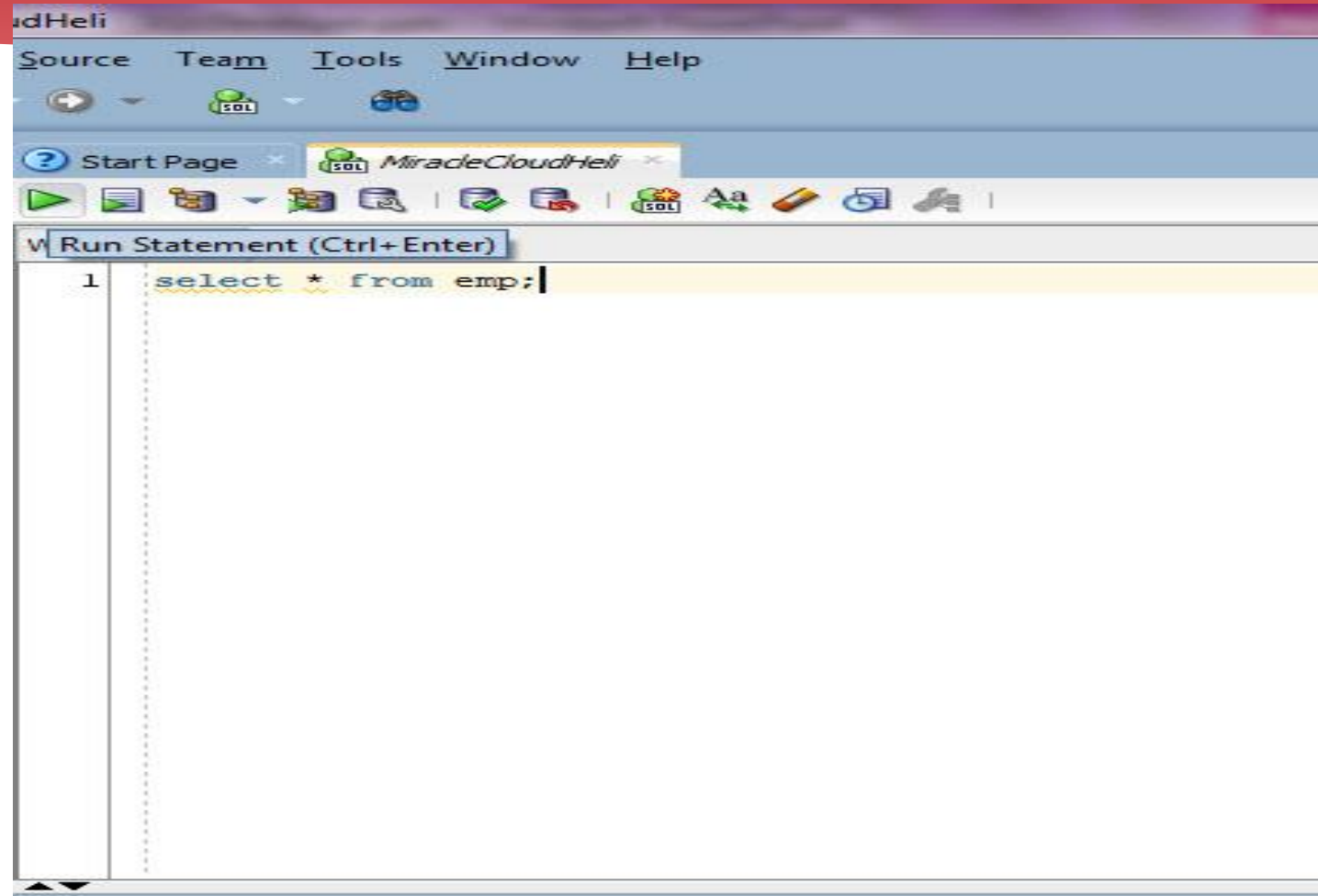
In this session

1. Useful shortcuts
2. Queries
3. Debugger
4. Compile
5. Export the result set
6. Data Modeling
7. Documentation and Reports
8. Database Copy and Diff
9. Schema Browser
10. Explain Plan

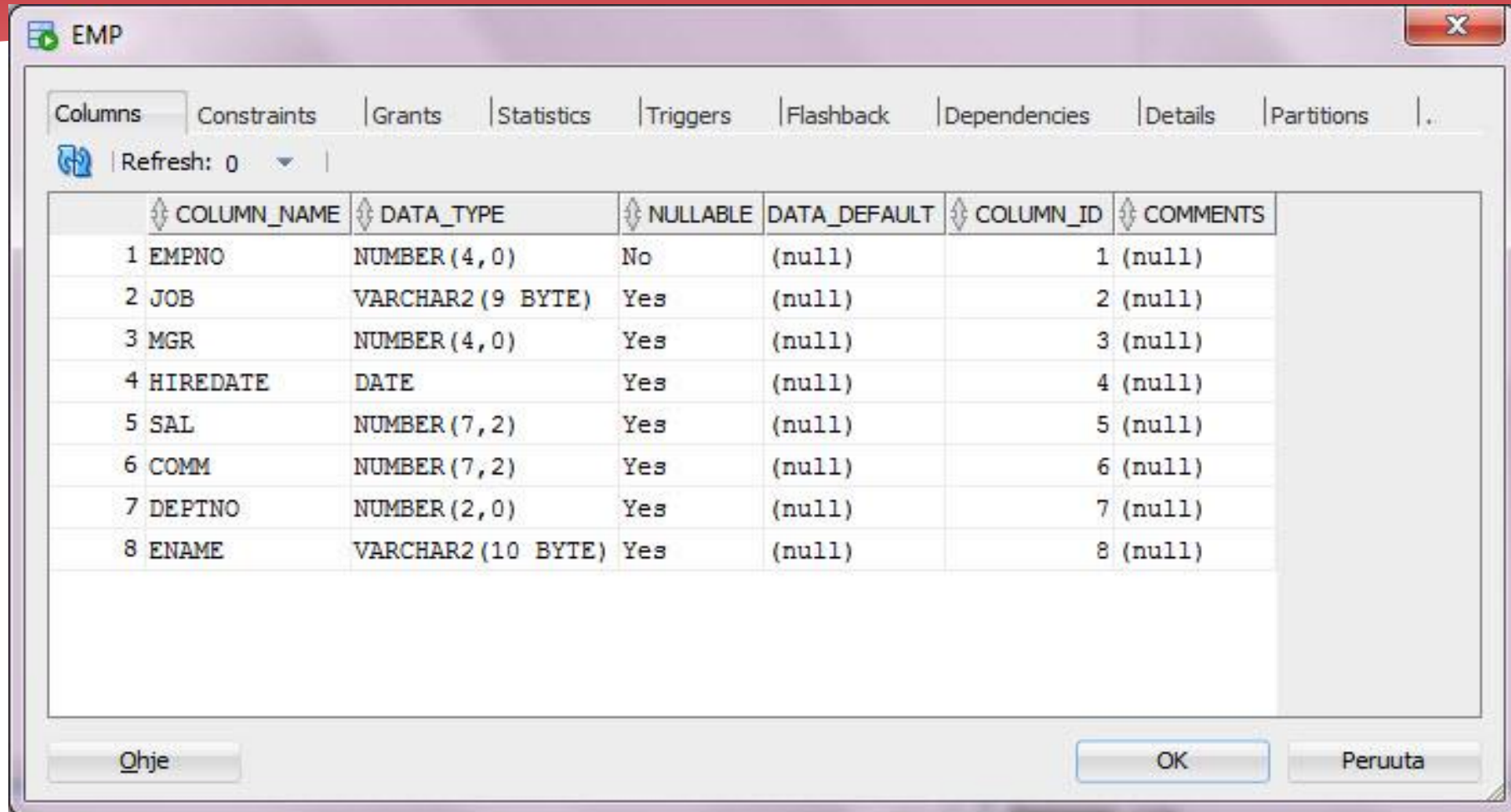
Misc

1. Useful shortcuts

Run Statement: Ctrl+Enter or F9

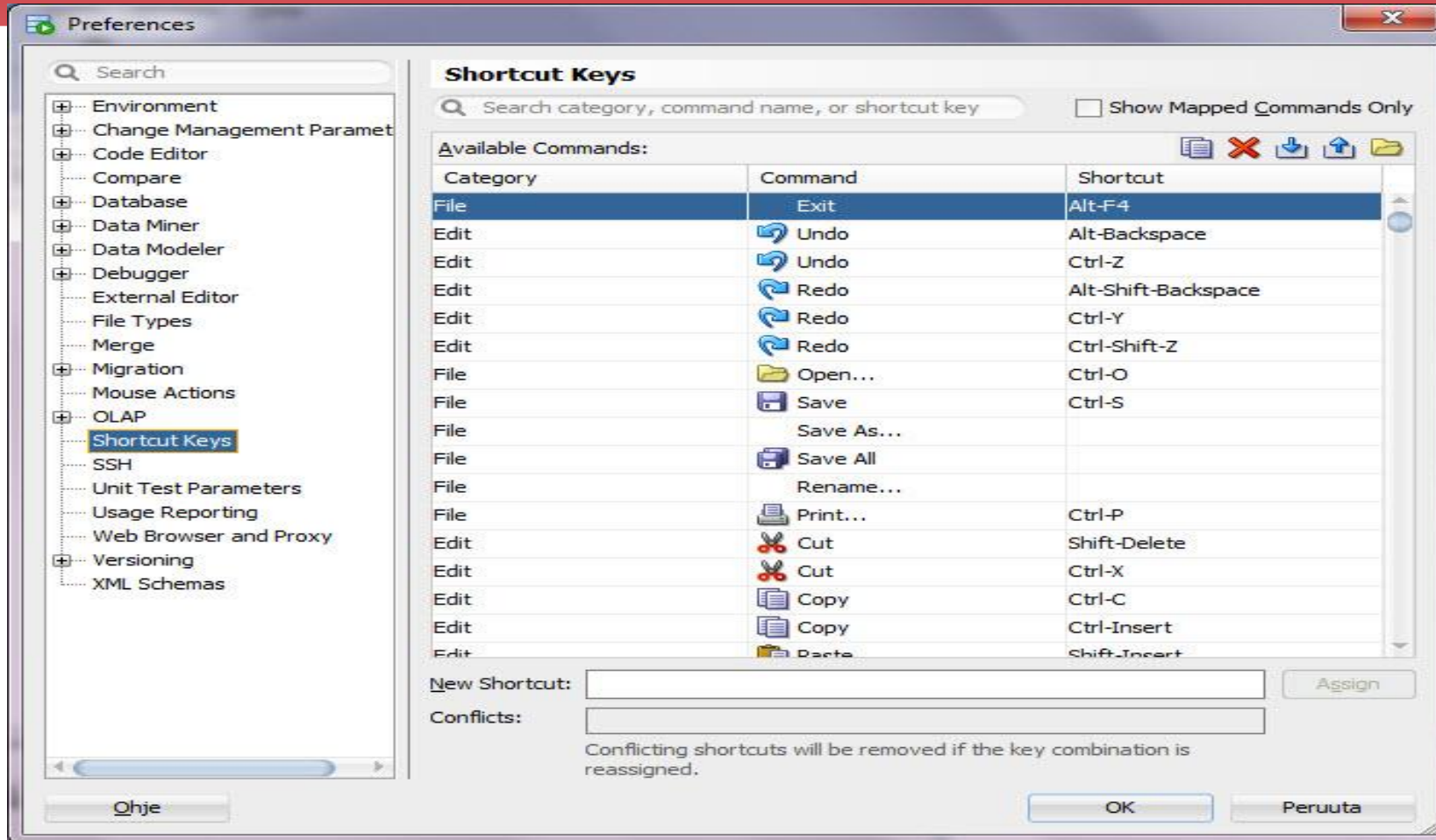


Shift+F4

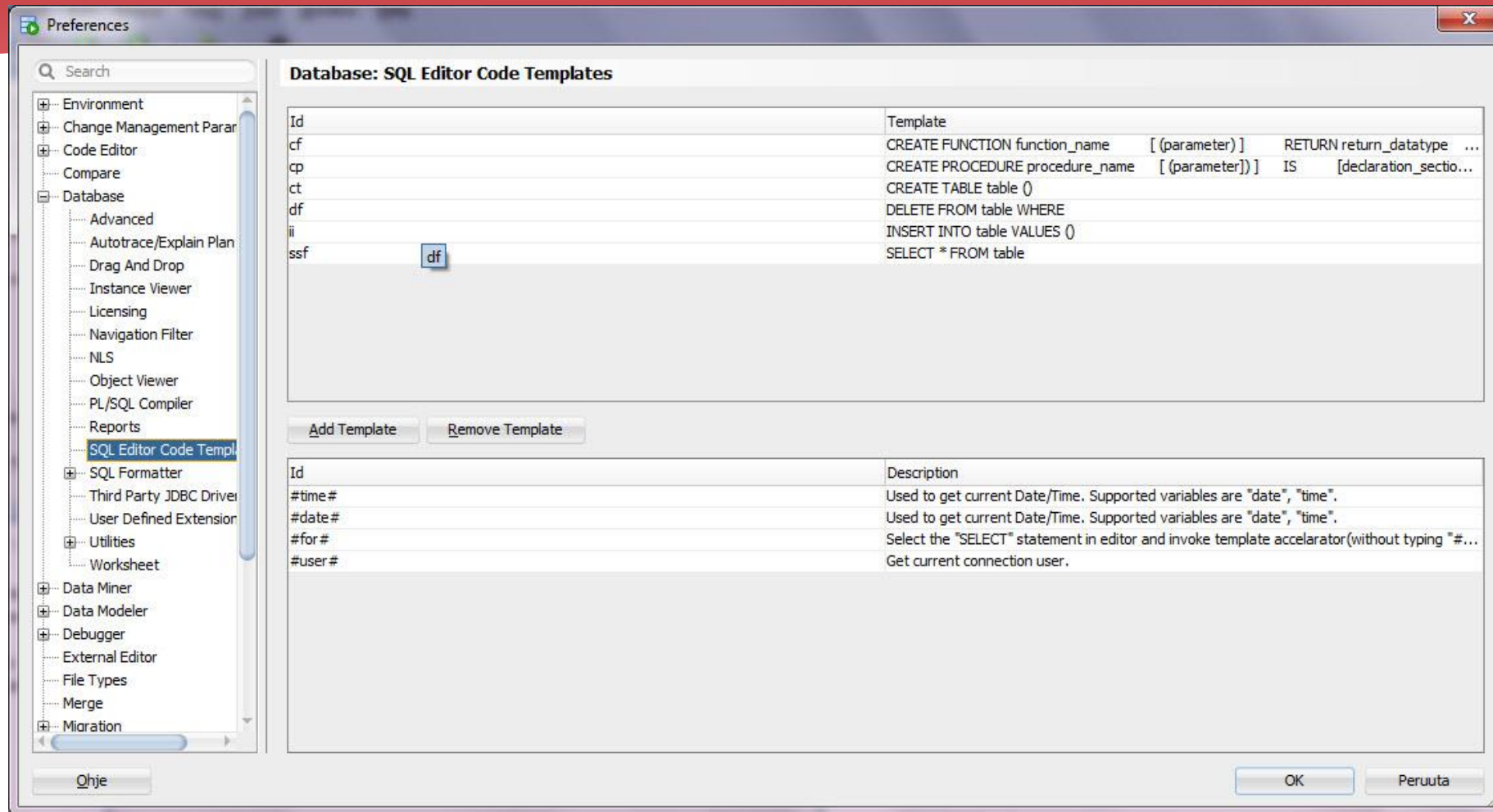


	↕ COLUMN_NAME	↕ DATA_TYPE	↕ NULLABLE	DATA_DEFAULT	↕ COLUMN_ID	↕ COMMENTS
1	EMPNO	NUMBER(4,0)	No	(null)	1	(null)
2	JOB	VARCHAR2(9 BYTE)	Yes	(null)	2	(null)
3	MGR	NUMBER(4,0)	Yes	(null)	3	(null)
4	HIREDATE	DATE	Yes	(null)	4	(null)
5	SAL	NUMBER(7,2)	Yes	(null)	5	(null)
6	COMM	NUMBER(7,2)	Yes	(null)	6	(null)
7	DEPTNO	NUMBER(2,0)	Yes	(null)	7	(null)
8	ENAME	VARCHAR2(10 BYTE)	Yes	(null)	8	(null)

Add your own shortcuts

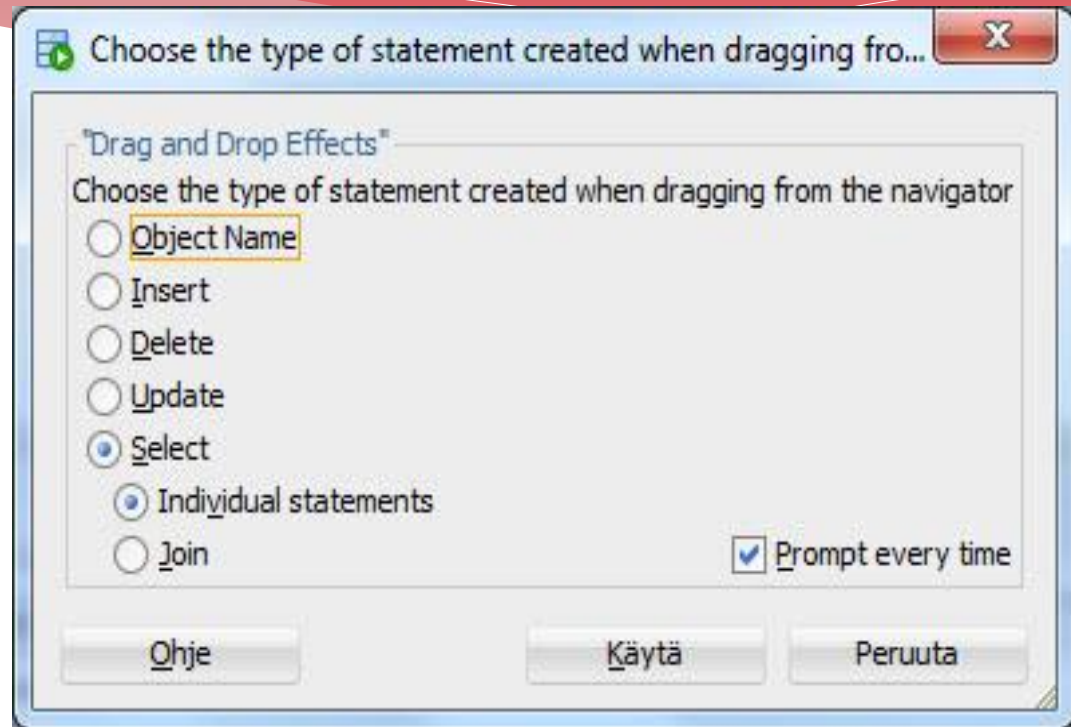
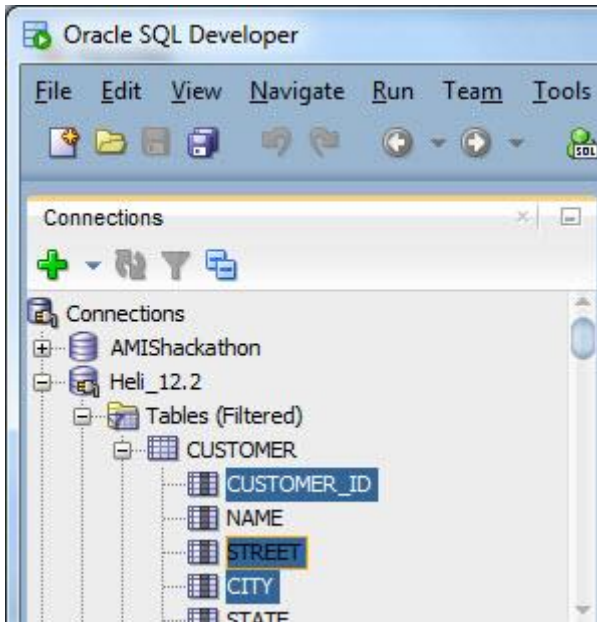


Code Templates

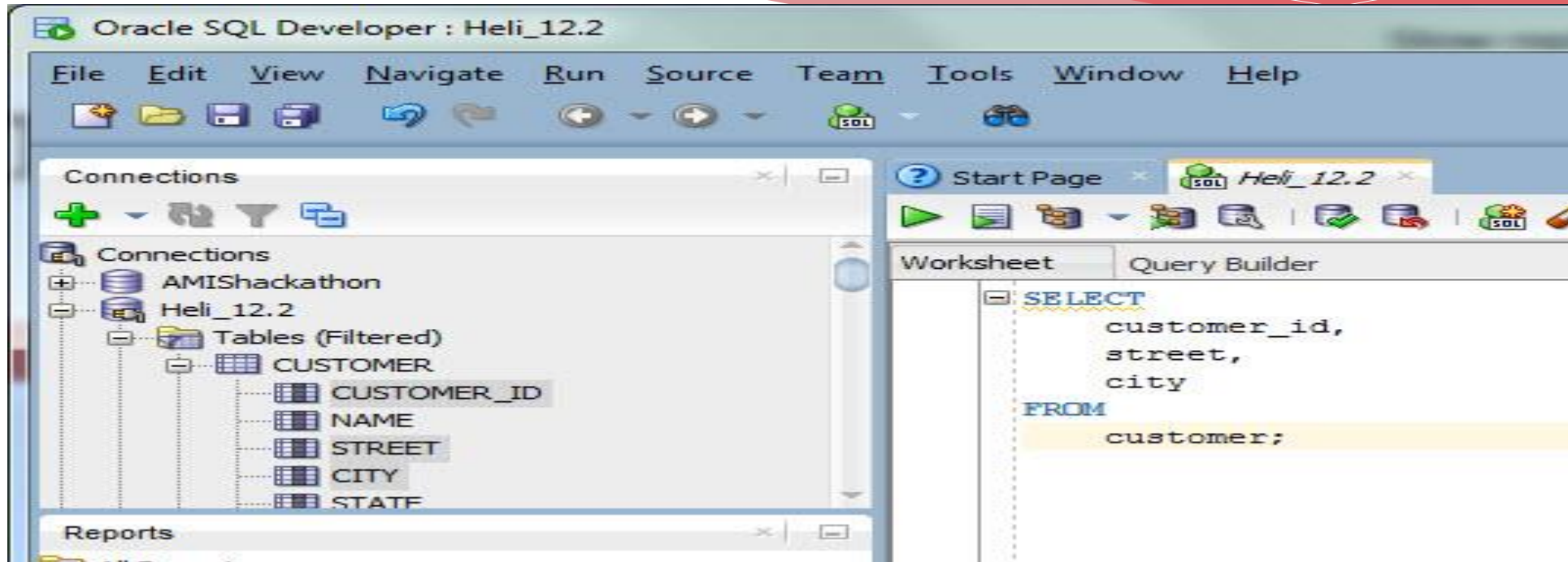


2. Queries

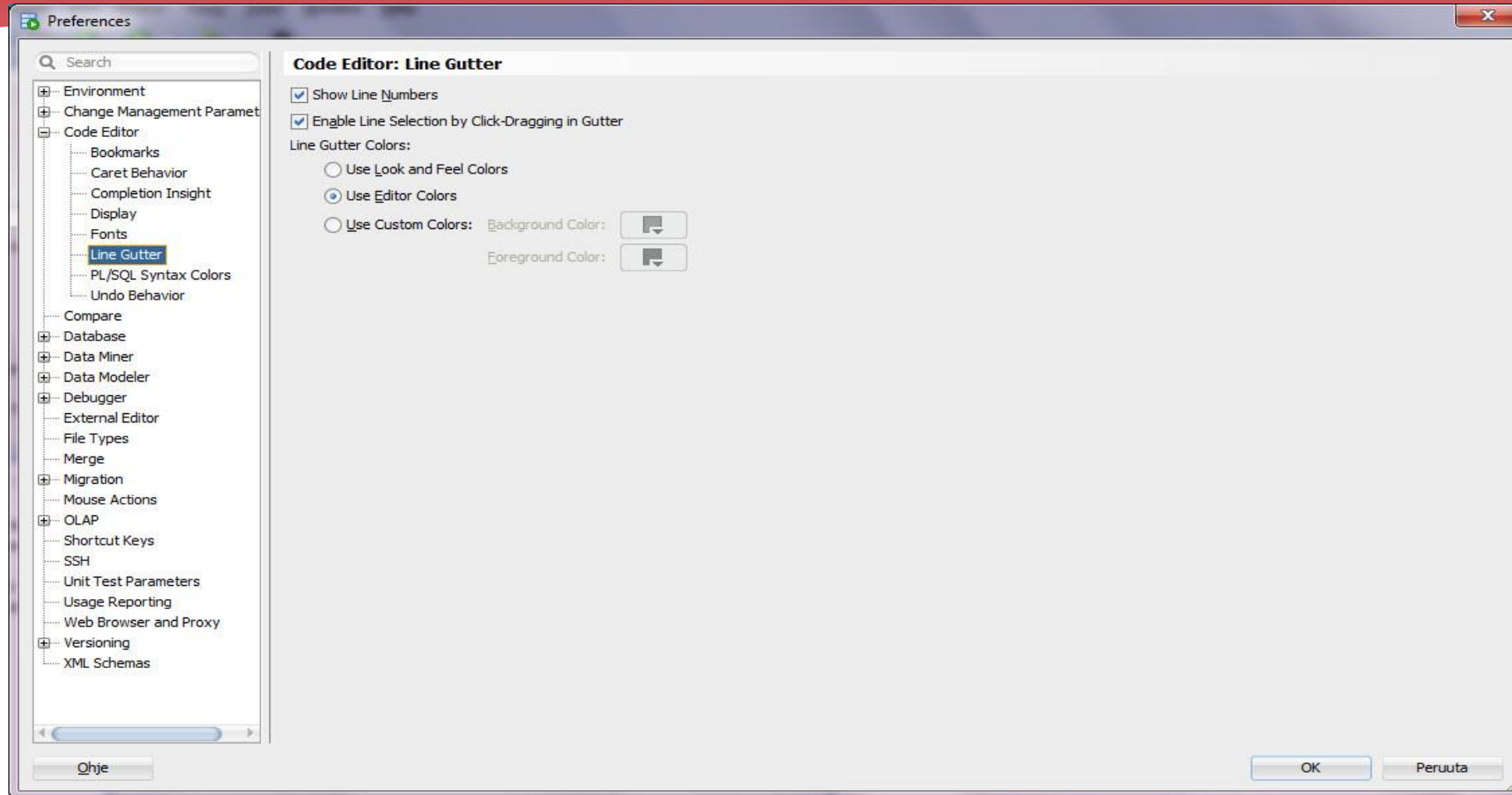
Easy querying: Drag-and-drop from the Browser



Drag-and-drop from the Browser



Preferences, Line Numbers



The Query Result

The screenshot shows a database query tool interface. At the top, there is a menu bar with 'Source', 'Team', 'Tools', 'Window', and 'Help'. Below the menu bar is a toolbar with various icons. The main area is divided into two panes: 'Worksheet' and 'Query Builder'. The 'Query Builder' pane contains a single line of SQL code: `select * from emp;`. Below the query builder is a 'Query Result' pane. This pane shows the results of the query in a table format. The table has 9 columns: EMPNO, JOB, MGR, HIREDATE, SAL, COMM, DEPTNO, and ENAME. There are 4 rows of data. The first row is for Heli (EMPNO 1, CEO, MGR null, HIREDATE 14.10.2010, SAL 3000, COMM 0, DEPTNO 20). The second row is for Tim (EMPNO 2, Manager, MGR 1, HIREDATE 14.10.2013, SAL 3000, COMM 1000, DEPTNO 20). The third row is for Tom (EMPNO 3, Clerk, MGR 2, HIREDATE 01.02.2013, SAL 2000, COMM 1500, DEPTNO 20). The fourth row is for Sue (EMPNO 4, Clerk, MGR 2, HIREDATE 02.02.2013, SAL 2500, COMM 1500, DEPTNO 20).

	EMPNO	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO	ENAME
1	1	CEO	{null}	14.10.2010	3000	0	20	Heli
2	2	Manager	1	14.10.2013	3000	1000	20	Tim
3	3	Clerk	2	01.02.2013	2000	1500	20	Tom
4	4	Clerk	2	02.02.2013	2500	1500	20	Sue

Copy: Ctrl+Shift+C

Query Result x

SQL | All Rows Fetched: 4 in 0,131 seconds

	EMPNO	JOB	MGR	HIRE...	SAL	COMM	DEPTNO	ENAME
1	1	CEO	(null)	14.10.2010	3000	0	20	Heli
2	2	Manager	1	14.10.2013	3000	1000	20	Tim
3	3	Clerk	2	01.02.2013	2000	1500	20	Tom
4	4	Clerk	2	02.02.2013	2500	1500	20	Sue

Paste (Ctrl+Shift+C) with Ctrl+V

HIREDATE

14.10.2010

14.10.2013

01.02.2013

02.02.2013

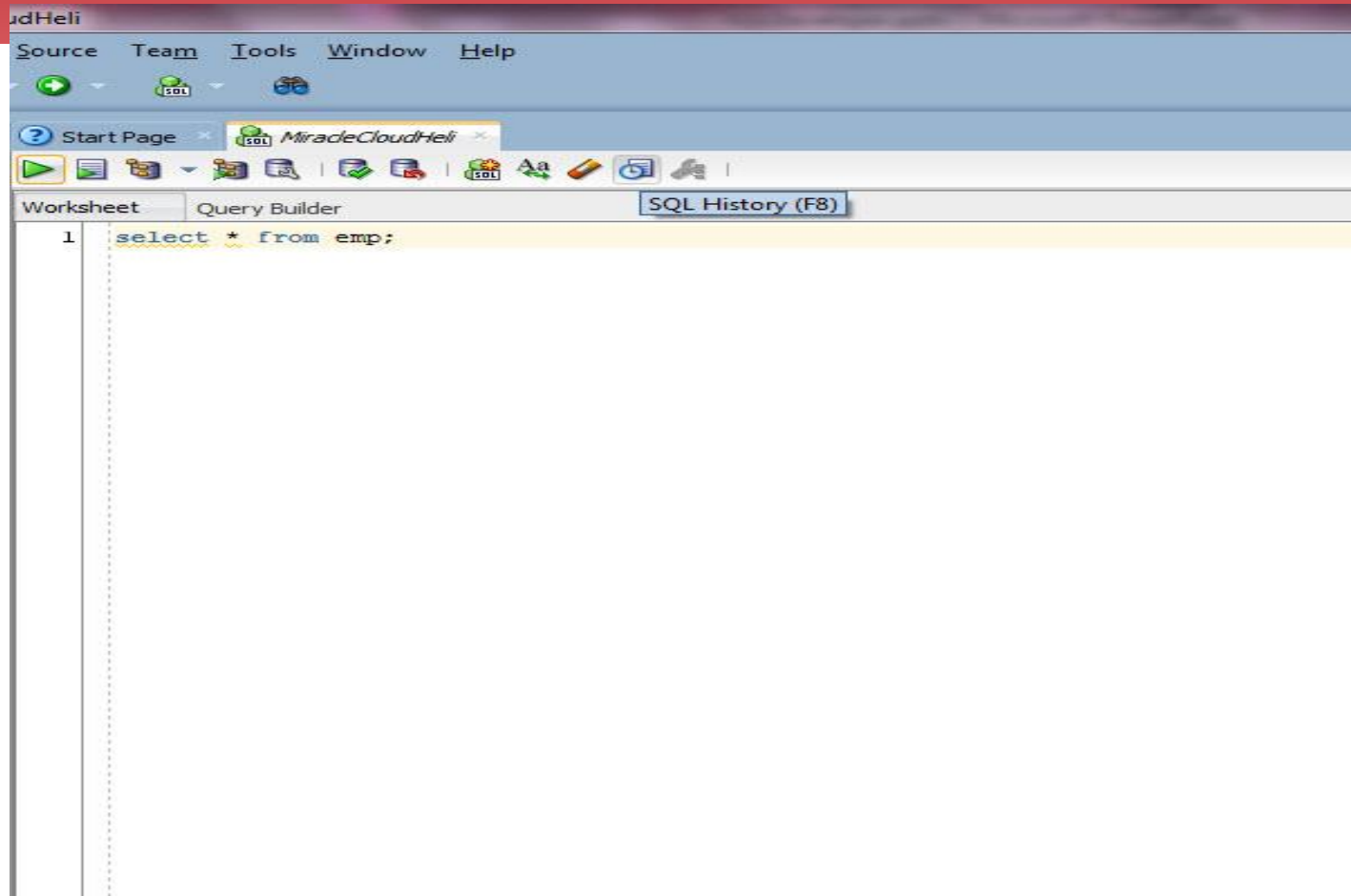
What was the SQL for the result set?

The screenshot shows the Oracle SQL Developer interface. The 'Query Builder' tab is active, displaying the SQL query: `select * from emp;`. Below the query editor, the 'Query Result' window shows the execution results. The status bar indicates 'All Rows Fetched: 4 in 0,131 seconds'. The result set is displayed in a table with the following columns: EMPNO, SQL (Ctrl+Q) R, HIREDATE, SAL, COMM, DEPTNO, and ENAME. The data rows are:

EMPNO	SQL (Ctrl+Q) R	HIREDATE	SAL	COMM	DEPTNO	ENAME
1	1	14-10-2010	3000	0	20	Hel...
2	2	13-12-2013	3000	1000	20	Tim...
3	3	01-02-2015	2000	1500	20	Tom...
4	4	02-02-2015	2500	1500	20	Sue...

A 'Query Result SQL' dialog box is open over the table, showing the SQL query: `MiracleCloudHeli : select * from emp;` and a 'Copy..' button.

SQL History



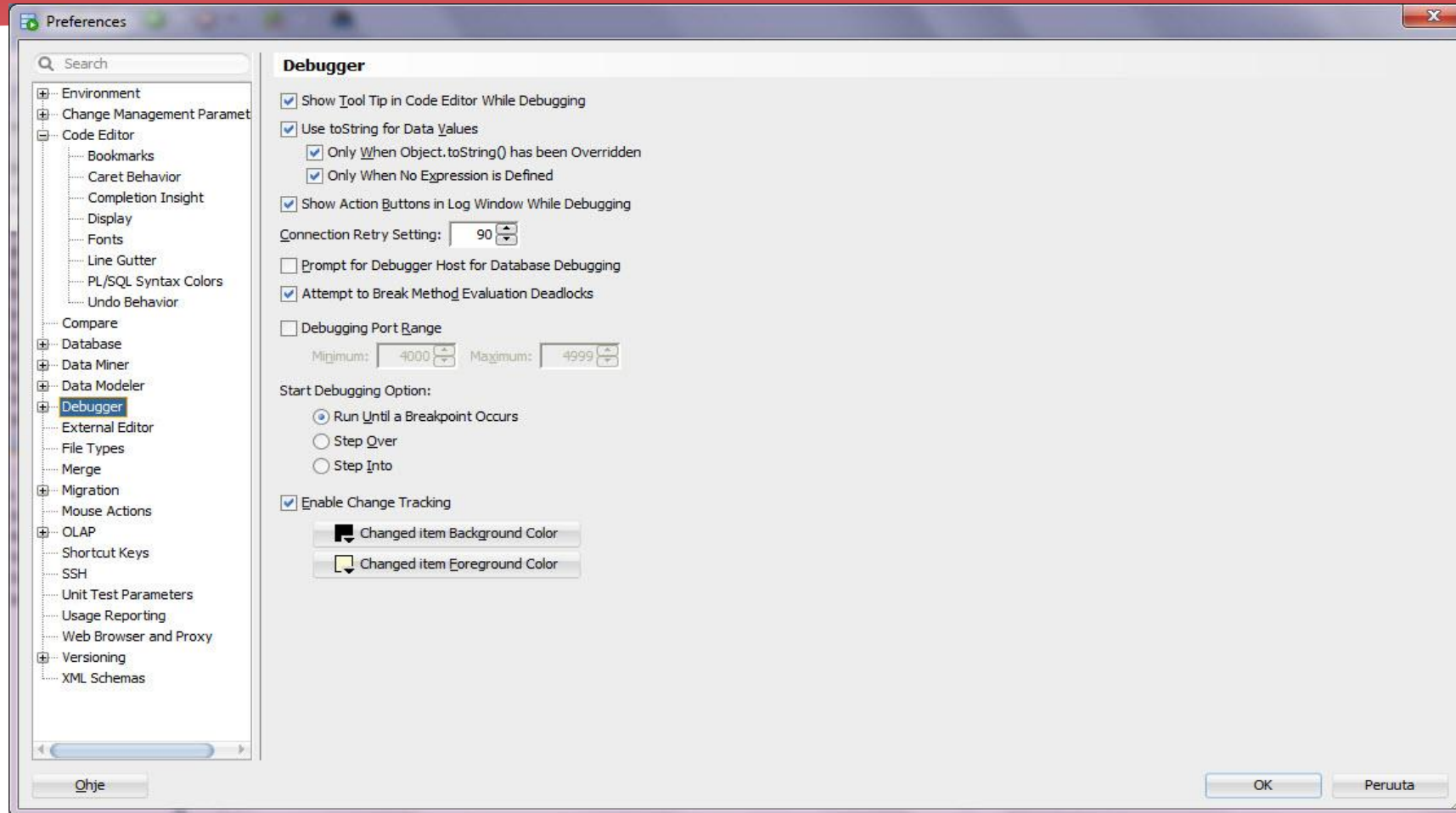
SQL History

The screenshot shows a SQL client interface with a menu bar (Team, Tools, Window, Help) and a toolbar. The main window is titled 'MiracleCloudHeli' and contains a 'Query Builder' tab with a single query: `select * from emp;`. Below the query editor is an 'SQL History' window displaying a list of executed queries with columns for SQL, Connection, TimeStamp, Type, Executed, and Duration(se...).

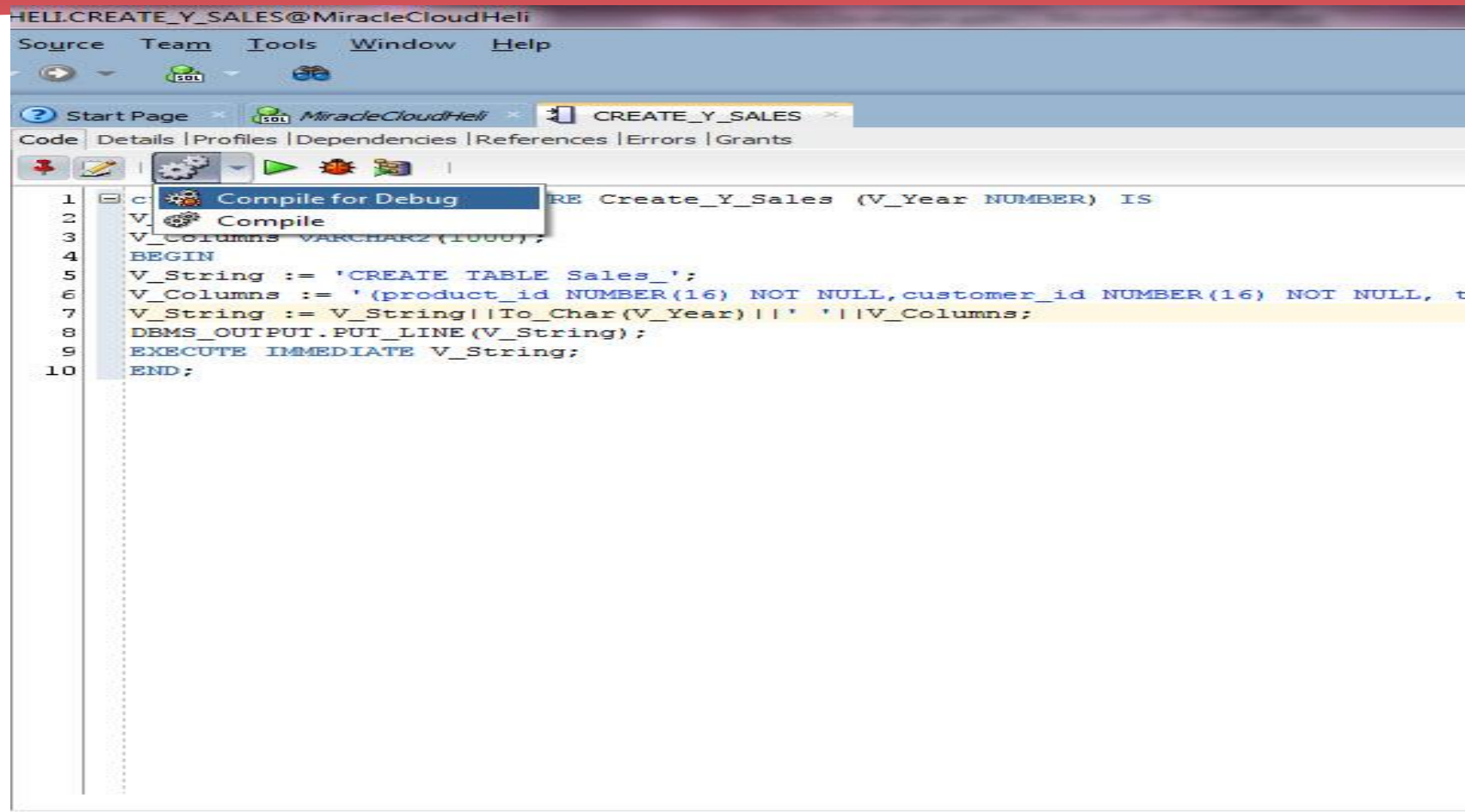
SQL	Connection	TimeStamp	Type	Executed	Duration(se...)
select * from emp;	MiracleCloud...	25.05.2016 ...	SQL	1	0.131
desc Sales_2016	MiracleCloud...	17.02.2016 ...	SQL	2	0.253
CREATE TABLE Sales_2016 (product_id NUMBER(16) NOT NULL,custom...	MiracleCloud...	17.02.2016 ...	SQL	1	0.092
drop table Sales_2016;	MiracleCloud...	17.02.2016 ...	SQL	1	0.131
execute Create_Y_Sales(2016);	MiracleCloud...	17.02.2016 ...	SQL	2	0.261
CREATE OR REPLACE PROCEDURE Create_Y_Sales (V_Year NUMBER) I...	MiracleCloud...	17.02.2016 ...	SQL	1	0.287
drop table Sales_2016 ;	MiracleCloud...	17.02.2016 ...	SQL	1	0.204
Desc Sales_2016	MiracleCloud...	17.02.2016 ...	SQL	1	0.313
CREATE TABLE Sales_2016 (product_id NUMBER(16) NOT NULL,custom...	MiracleCloud...	17.02.2016 ...	SQL	1	0.105
CREATE OR REPLACE PROCEDURE Create_Y_Sales (V_Year NUMBER) I...	MiracleCloud...	17.02.2016 ...	SQL	1	0.231
CREATE OR REPLACE PROCEDURE Create_Y_Sales (V_Year NUMBER) I...	MiracleCloud...	17.02.2016 ...	SQL	1	0.232
CREATE OR REPLACE PROCEDURE Create_Y_Sales (V_Year NUMBER) I...	MiracleCloud...	17.02.2016 ...	SQL	2	0.215
desc Sales_2016;	MiracleCloud...	17.02.2016 ...	SQL	1	0.072
CREATE OR REPLACE PROCEDURE Create_Y_Sales (V_Year NUMBER) I...	MiracleCloud...	17.02.2016 ...	SQL	1	0.24
CREATE OR REPLACE PROCEDURE Create_Y_Sales (V_Year NUMBER(4...	MiracleCloud...	17.02.2016 ...	SQL	1	0.223
drop procedure dyn_example;	MiracleCloud...	17.02.2016 ...	SQL	1	0.137
execute dyn_example;	MiracleCloud...	17.02.2016 ...	SQL	1	0.153
CREATE OR REPLACE PROCEDURE Dyn_Example ISV_String VARCHAR...	MiracleCloud...	17.02.2016 ...	SQL	1	0.296
execute Dyn_Example;	MiracleCloud...	17.02.2016 ...	SQL	1	0.138
CREATE OR REPLACE PROCEDURE Dyn_Example ISV_String VARCHAR...	MiracleCloud...	17.02.2016 ...	SQL	1	0.283
CREATE OR REPLACE PROCEDURE Dyn_Example ISV_String VARCHAR...	MiracleCloud...	17.02.2016 ...	SQL	1	0.223

3. Debugger

Preferences



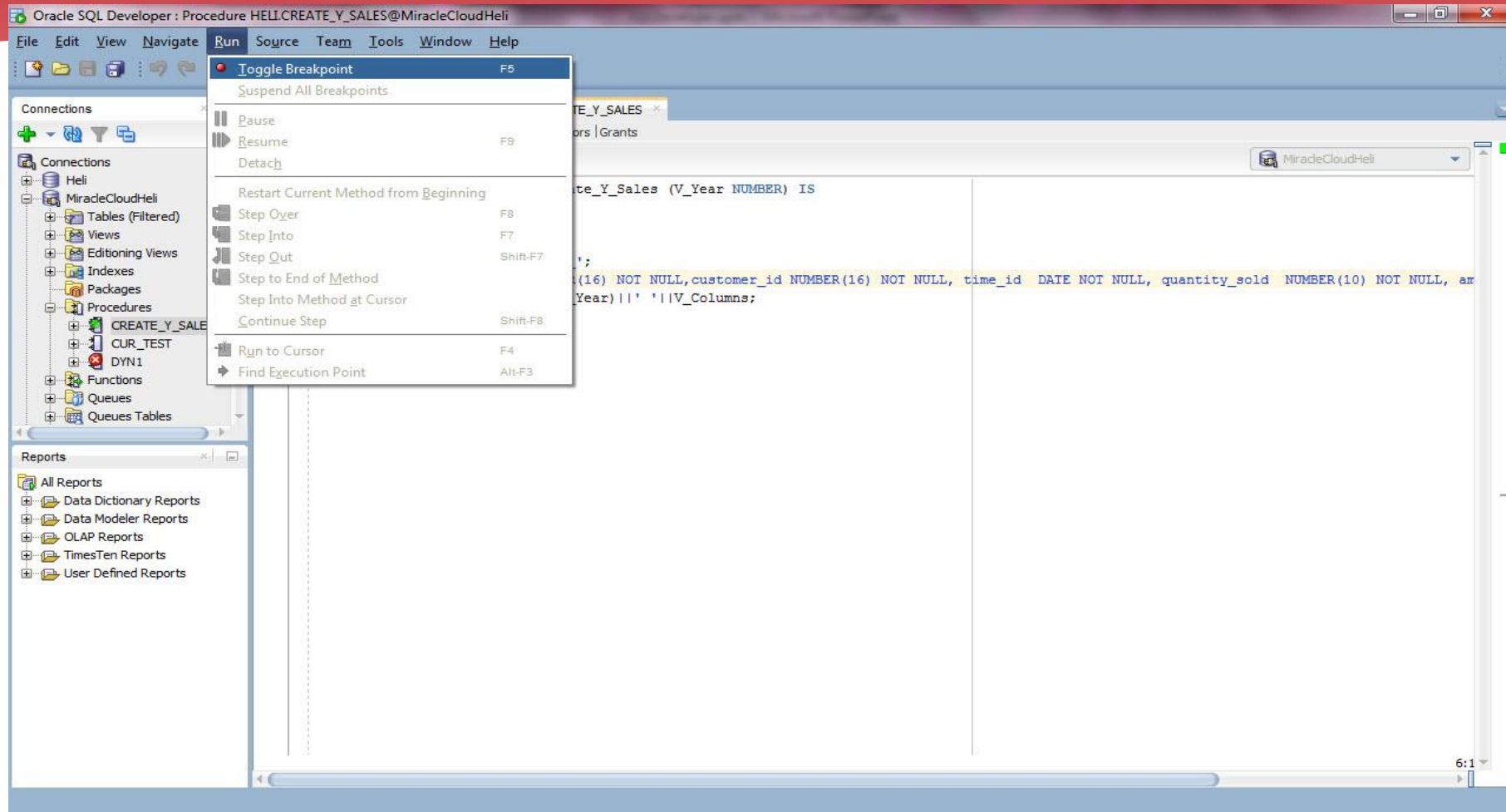
Compile for Debug



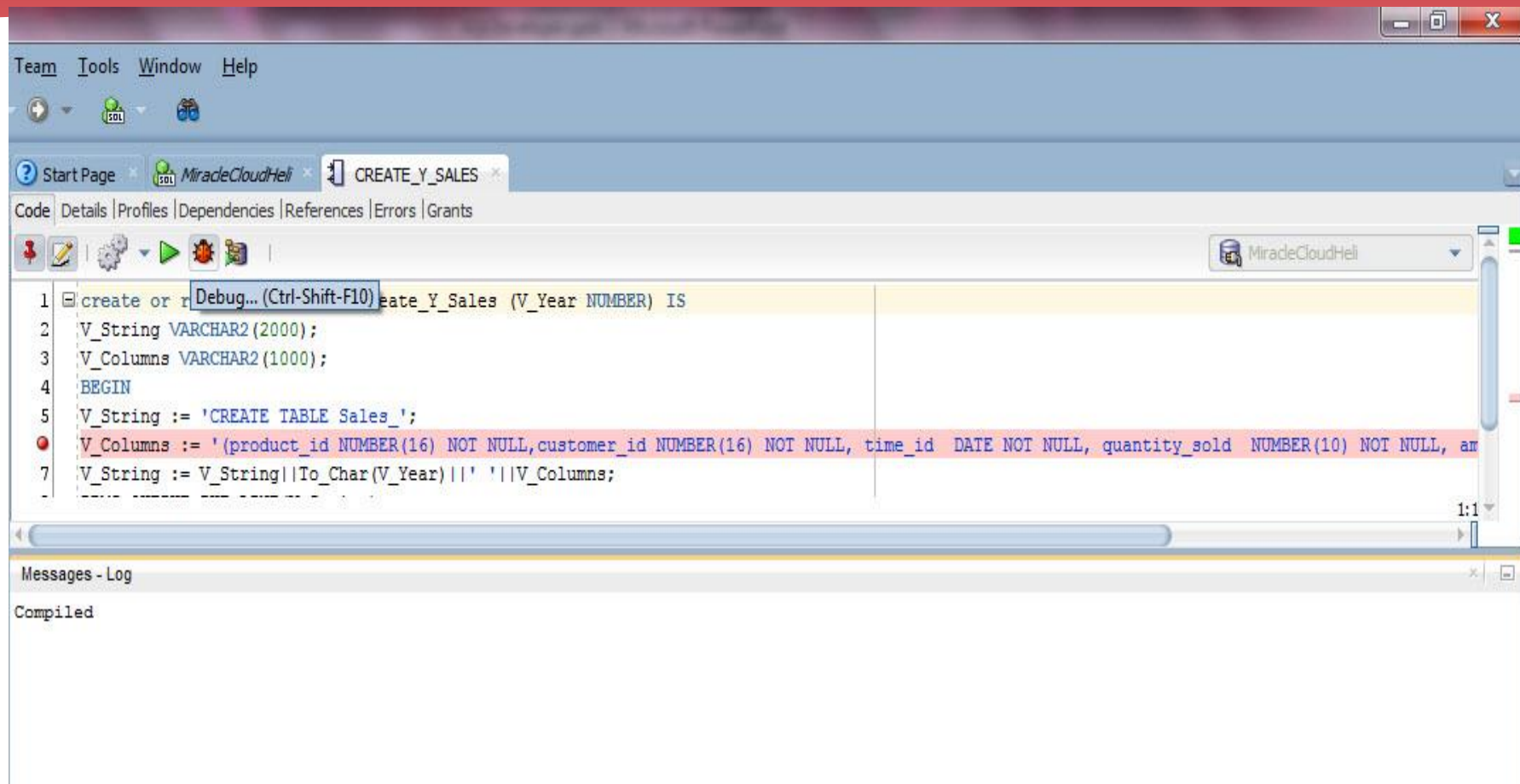
The screenshot shows an IDE window titled 'HELICREATE_Y_SALES@MiracleCloudHeli'. The menu bar includes 'Source', 'Team', 'Tools', 'Window', and 'Help'. The toolbar contains icons for 'Start Page', 'MiracleCloudHeli', and 'CREATE_Y_SALES'. Below the toolbar, there are tabs for 'Code', 'Details', 'Profiles', 'Dependencies', 'References', 'Errors', and 'Grants'. A context menu is open over the 'Compile' button, showing 'Compile for Debug' and 'Compile' options. The code editor displays the following PL/SQL script:

```
1  CREATE Create_Y_Sales (V_Year NUMBER) IS
2  V
3  V_Columns VARCHAR2(1000);
4  BEGIN
5  V_String := 'CREATE TABLE Sales_';
6  V_Columns := '(product_id NUMBER(16) NOT NULL, customer_id NUMBER(16) NOT NULL, t
7  V_String := V_String || To_Char(V_Year) || ' ' || V_Columns;
8  DBMS_OUTPUT.PUT_LINE(V_String);
9  EXECUTE IMMEDIATE V_String;
10 END;
```

Toggle Breakpoint



Debug



The screenshot shows a SQL IDE window with the following content:

- Menu: Team, Tools, Window, Help
- Toolbars: Start Page, MiradeCloudHei, CREATE_Y_SALES
- Code Editor: Code, Details, Profiles, Dependencies, References, Errors, Grants
- Code:

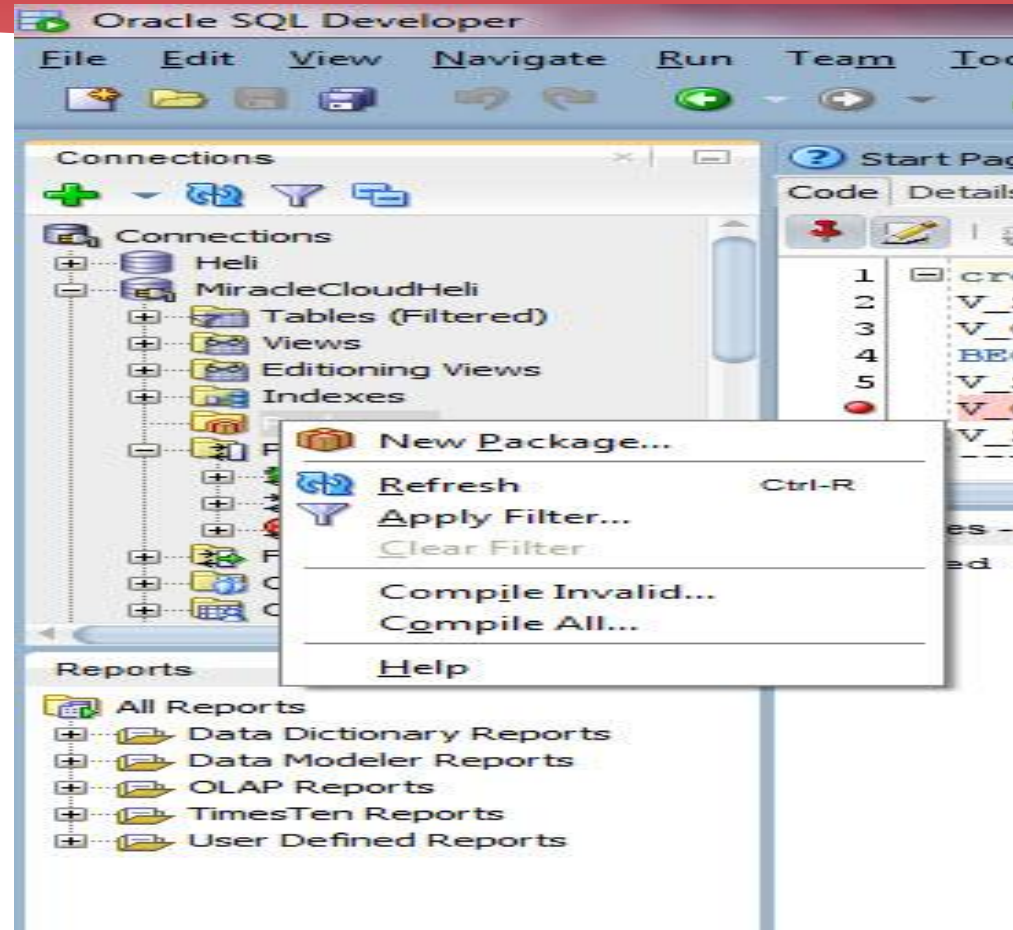
```
1 create or r Debug... (Ctrl-Shift-F10) eate_Y_Sales (V_Year NUMBER) IS
2 V_String VARCHAR2(2000);
3 V_Columns VARCHAR2(1000);
4 BEGIN
5 V_String := 'CREATE TABLE Sales_';
6 V_Columns := '(product_id NUMBER(16) NOT NULL, customer_id NUMBER(16) NOT NULL, time_id DATE NOT NULL, quantity_sold NUMBER(10) NOT NULL, ar
7 V_String := V_String||To_Char(V_Year)||' '||V_Columns;
```
- Messages - Log: Compiled

Worth reading

- * <http://www.thatjeffsmith.com/archive/2014/02/how-to-start-the-plsql-debugger/>
- * <https://galobalda.wordpress.com/2014/02/17/sql-developers-plsql-debugger-and-oracle-12c/>

4. Compile

Compile Invalid, Compile All



5. Export the result set

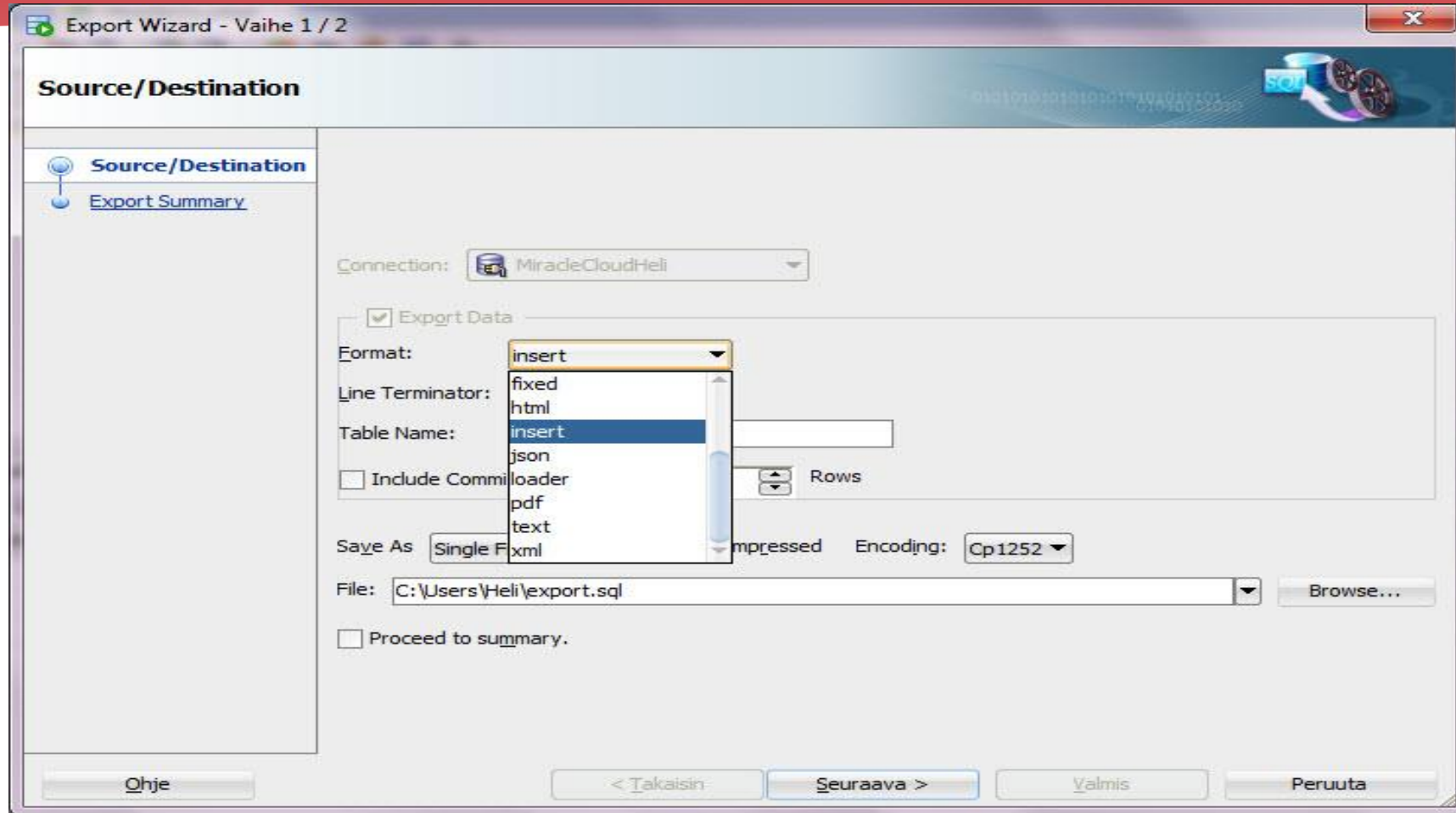
The screenshot shows the Oracle SQL Developer interface. The top menu bar includes 'Source', 'Team', 'Tools', 'Window', and 'Help'. The toolbar contains various icons for navigation and execution. The 'Worksheet' tab is active, showing a query: `select * from emp;`. Below the query, the 'Query Result' window displays the following data:

EMPNO	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO	ENAME
1	1 CEO	(null)	14.10.2010	3000	0	20	Heli
2	2 Manager	1	14.10.2013	3000	1000	20	Tim
3	3 Clerk	2	01.02.2013	2000	1500	20	Tom
4	4 Clerk	2	02.02.2013	2500	1500	20	Sue

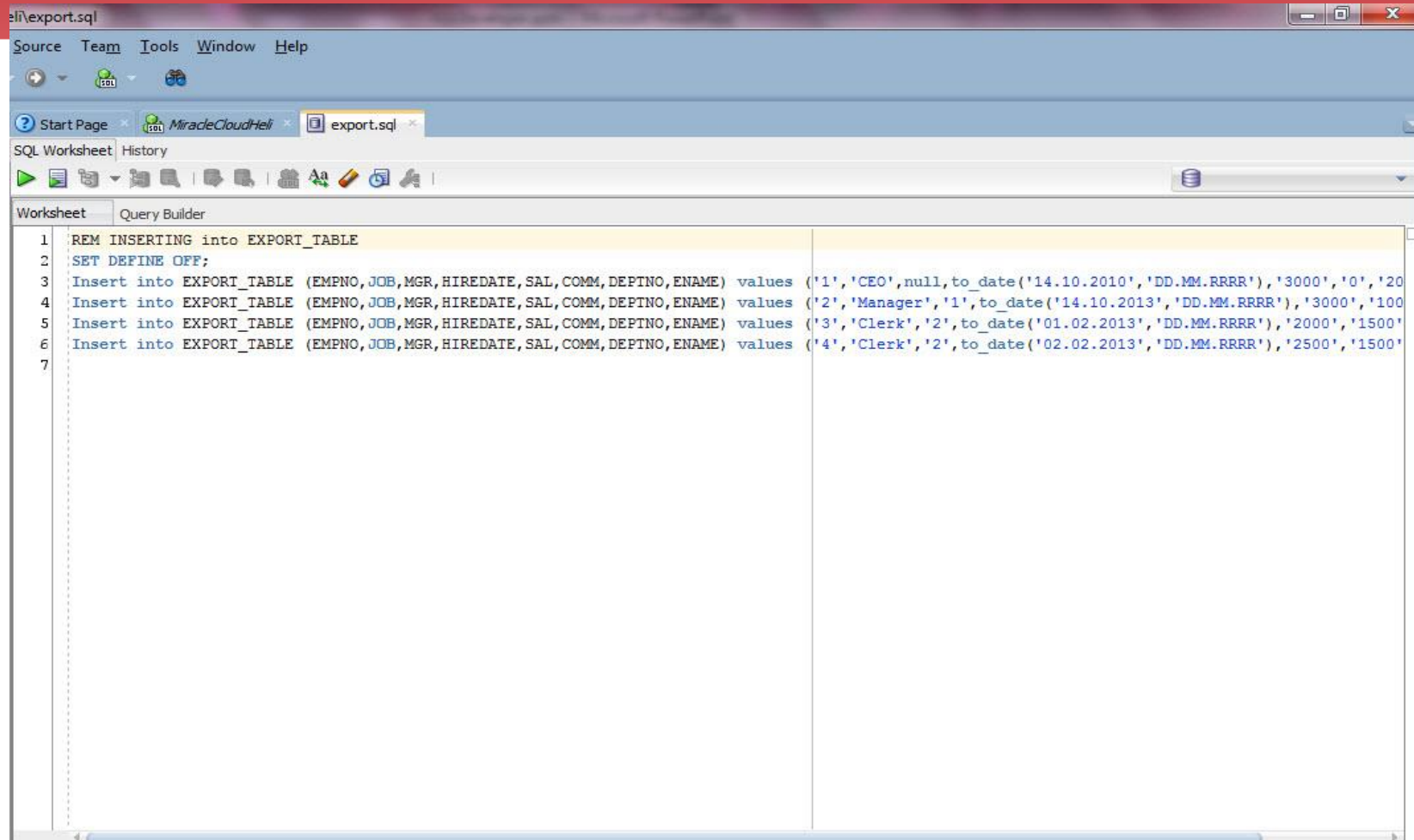
A context menu is open over the table, listing the following options:

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

Export the result set



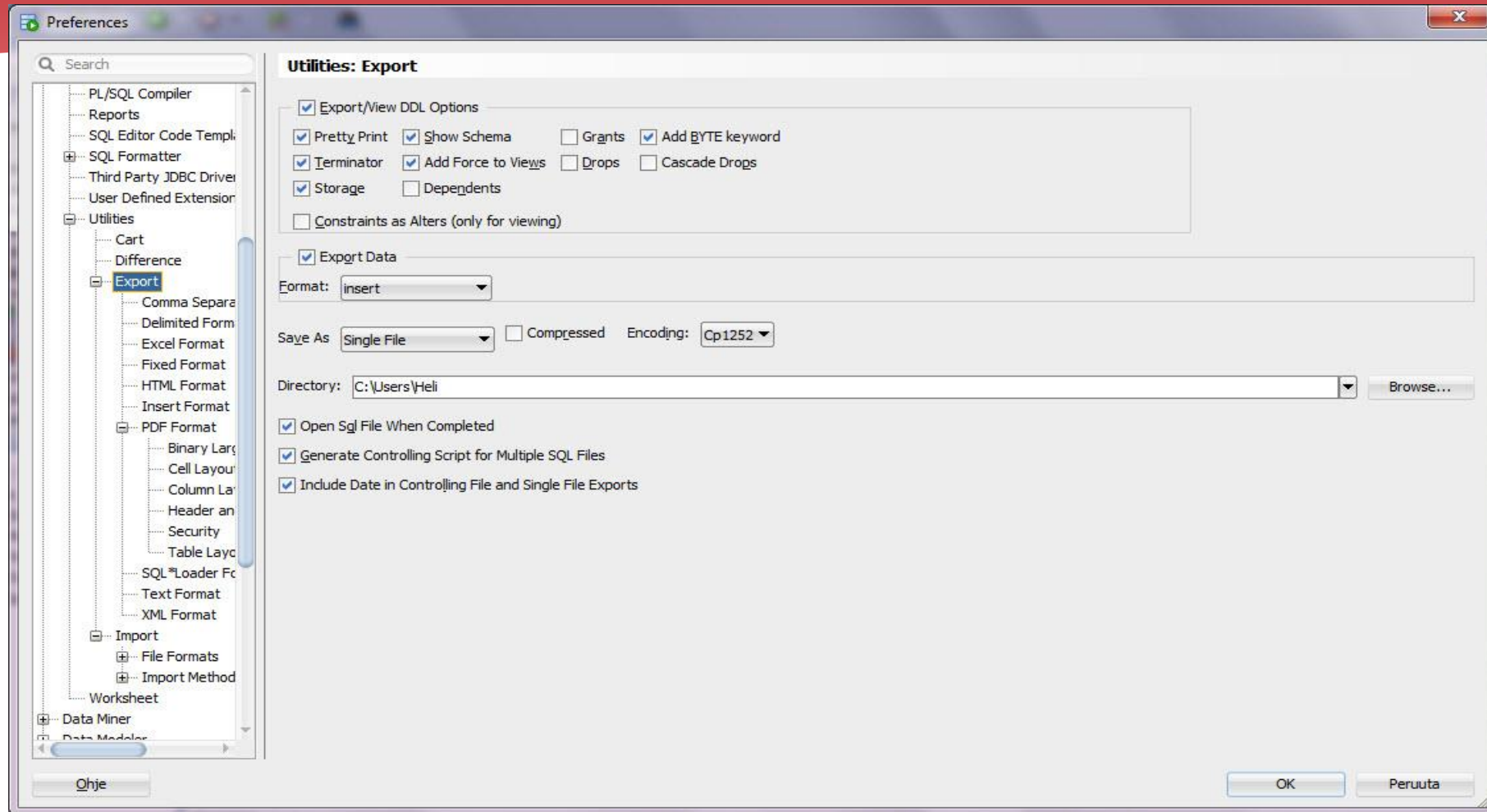
Export the result set



The screenshot shows a SQL development tool window titled 'el\export.sql'. The main area contains the following SQL code:

```
1 REM INSERTING into EXPORT_TABLE
2 SET DEFINE OFF;
3 Insert into EXPORT_TABLE (EMPNO, JOB, MGR, HIREDATE, SAL, COMM, DEPTNO, ENAME) values ('1','CEO',null,to_date('14.10.2010','DD.MM.RRRR'),'3000','0','20
4 Insert into EXPORT_TABLE (EMPNO, JOB, MGR, HIREDATE, SAL, COMM, DEPTNO, ENAME) values ('2','Manager','1',to_date('14.10.2013','DD.MM.RRRR'),'3000','100
5 Insert into EXPORT_TABLE (EMPNO, JOB, MGR, HIREDATE, SAL, COMM, DEPTNO, ENAME) values ('3','Clerk','2',to_date('01.02.2013','DD.MM.RRRR'),'2000','1500'
6 Insert into EXPORT_TABLE (EMPNO, JOB, MGR, HIREDATE, SAL, COMM, DEPTNO, ENAME) values ('4','Clerk','2',to_date('02.02.2013','DD.MM.RRRR'),'2500','1500'
7
```

Preferences

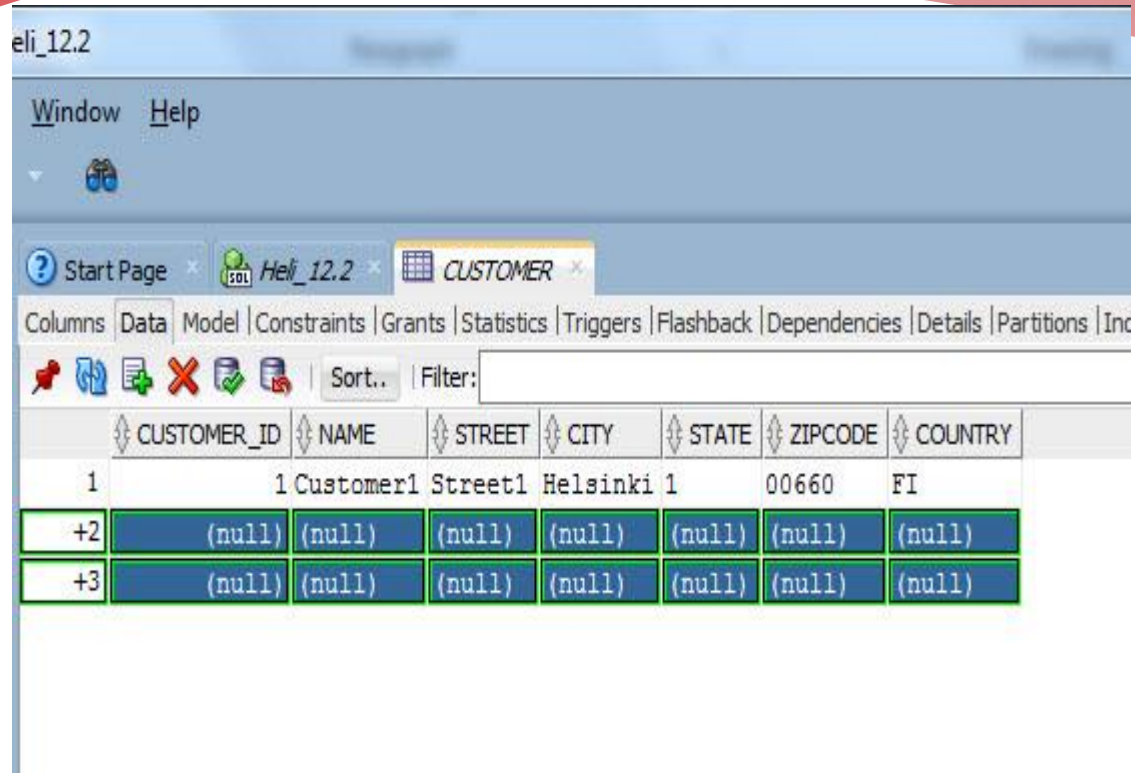


Add data from Excel, Ctrl+C

The screenshot shows the Microsoft Excel interface with the following data in the spreadsheet:

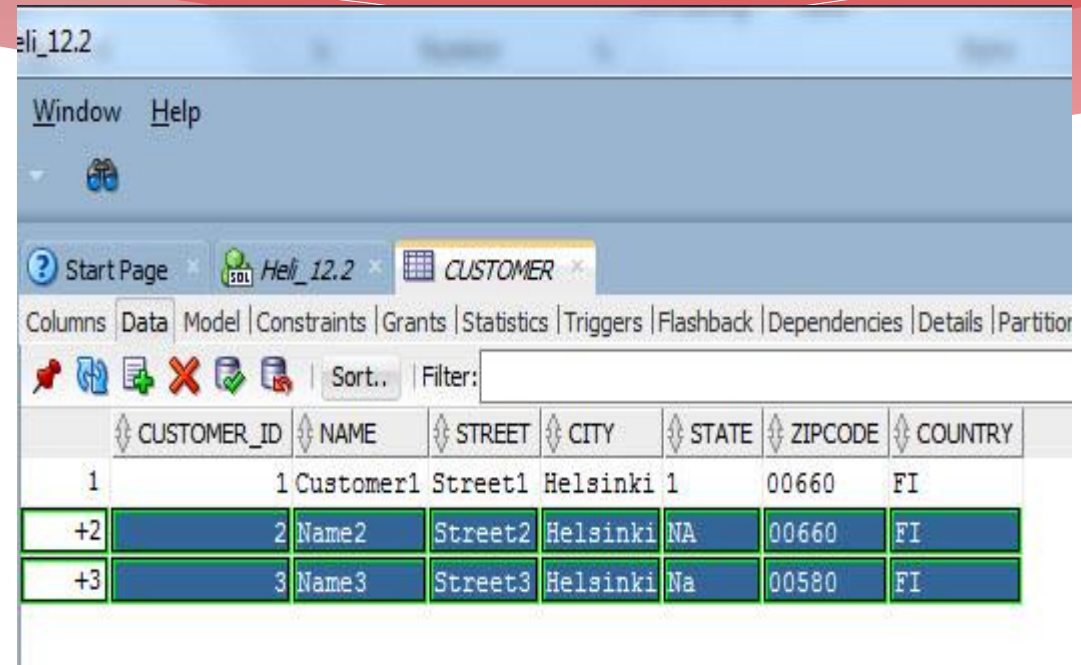
	A	B	C	D	E	F	G	H	I	J	K	L	M
1													
2													
3													
4		2	Name2	Street2	Helsinki	NA	00660	FI					
5		3	Name3	Street3	Helsinki	Na	00580	FI					
6													

Add data from Excel, Ctrl+V



The screenshot shows the SQL Server Enterprise Manager interface for a table named 'CUSTOMER'. The table has columns: CUSTOMER_ID, NAME, STREET, CITY, STATE, ZIPCODE, and COUNTRY. The first row contains data: 1, 1 Customer1, Street1, Helsinki, 1, 00660, FI. The next two rows are highlighted in green and contain null values for all columns.

CUSTOMER_ID	NAME	STREET	CITY	STATE	ZIPCODE	COUNTRY
1	1 Customer1	Street1	Helsinki	1	00660	FI
+2	(null)	(null)	(null)	(null)	(null)	(null)
+3	(null)	(null)	(null)	(null)	(null)	(null)

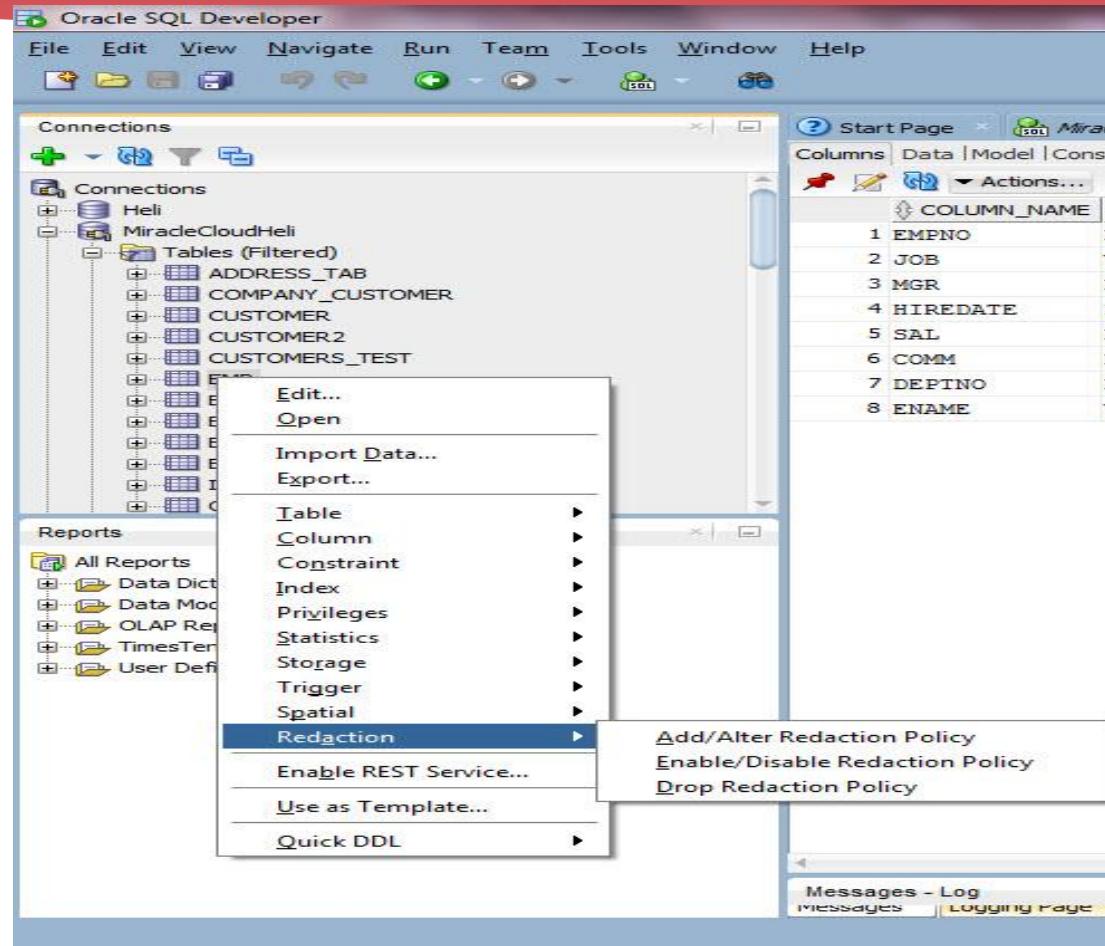


The screenshot shows the same SQL Server Enterprise Manager interface for the 'CUSTOMER' table. The first row is the same as in the previous screenshot. The next two rows are highlighted in green and contain new data: 2 Name2, Street2, Helsinki, NA, 00660, FI and 3 Name3, Street3, Helsinki, Na, 00580, FI.

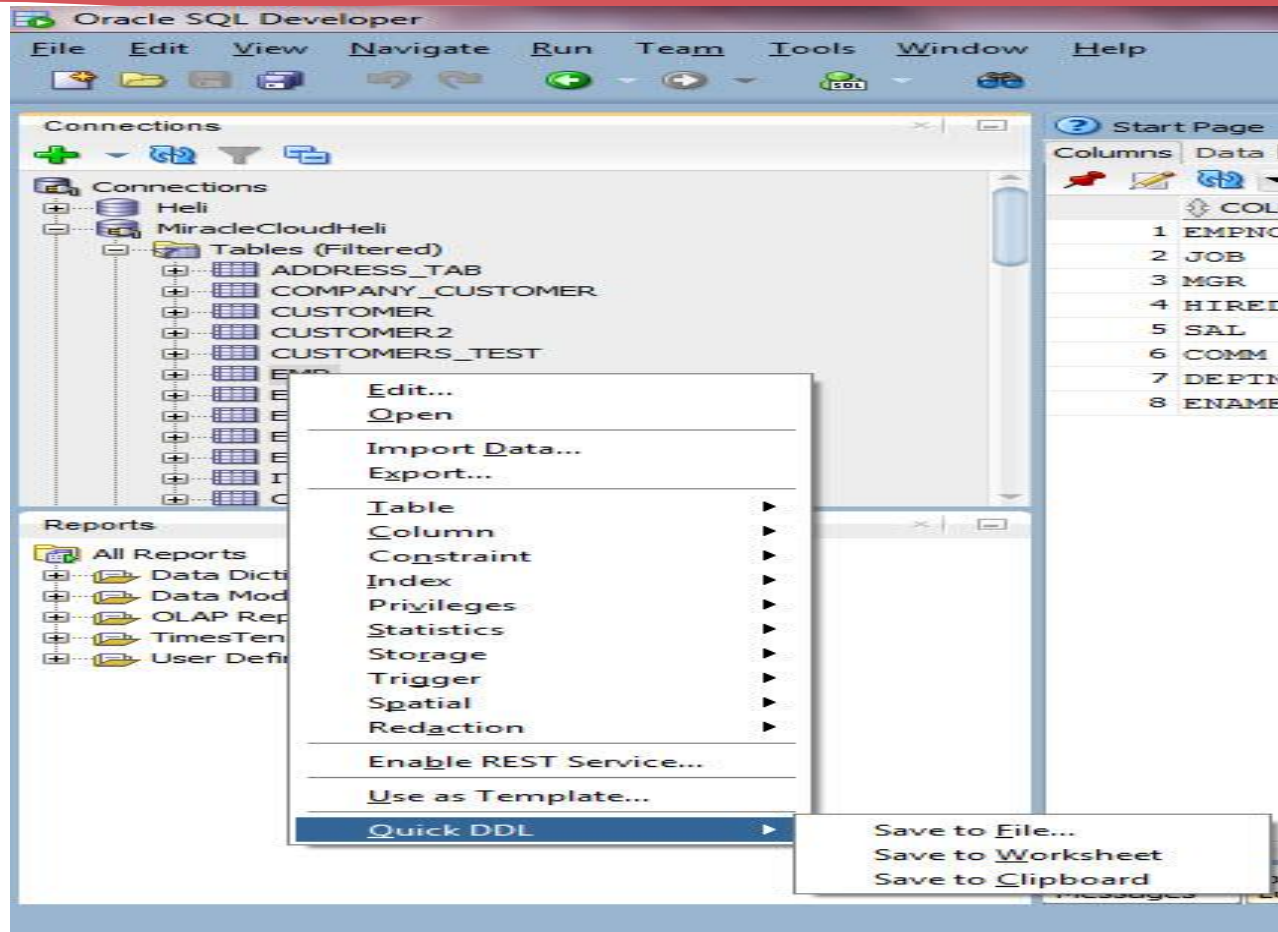
CUSTOMER_ID	NAME	STREET	CITY	STATE	ZIPCODE	COUNTRY
1	1 Customer1	Street1	Helsinki	1	00660	FI
+2	2 Name2	Street2	Helsinki	NA	00660	FI
+3	3 Name3	Street3	Helsinki	Na	00580	FI

6. Data Modeling

Redaction



Quick DDL



Indexes

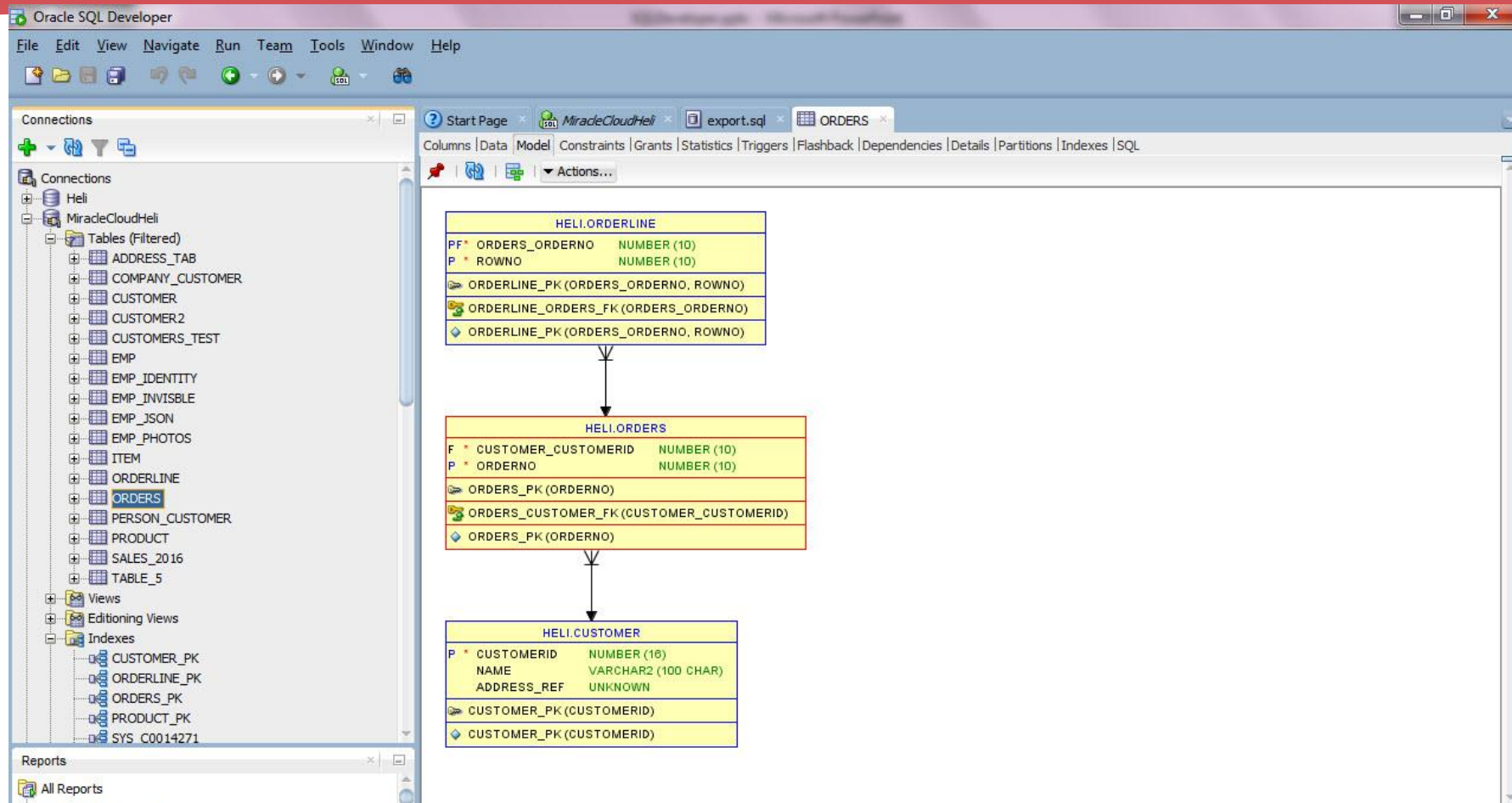
The screenshot shows the Oracle SQL Developer interface. The main window displays the 'Indexes' tab for the 'CUSTOMER_PK' index. The table below shows the index details:

	INDEX_OWNER	INDEX_NAME	TABLE_OWNER	TABLE_NAME	COLUMN_NAME	COLUMN_POSITION	DESCEND
1	HELI	CUSTOMER_PK	HELI	CUSTOMER	CUSTOMERID	1	ASC

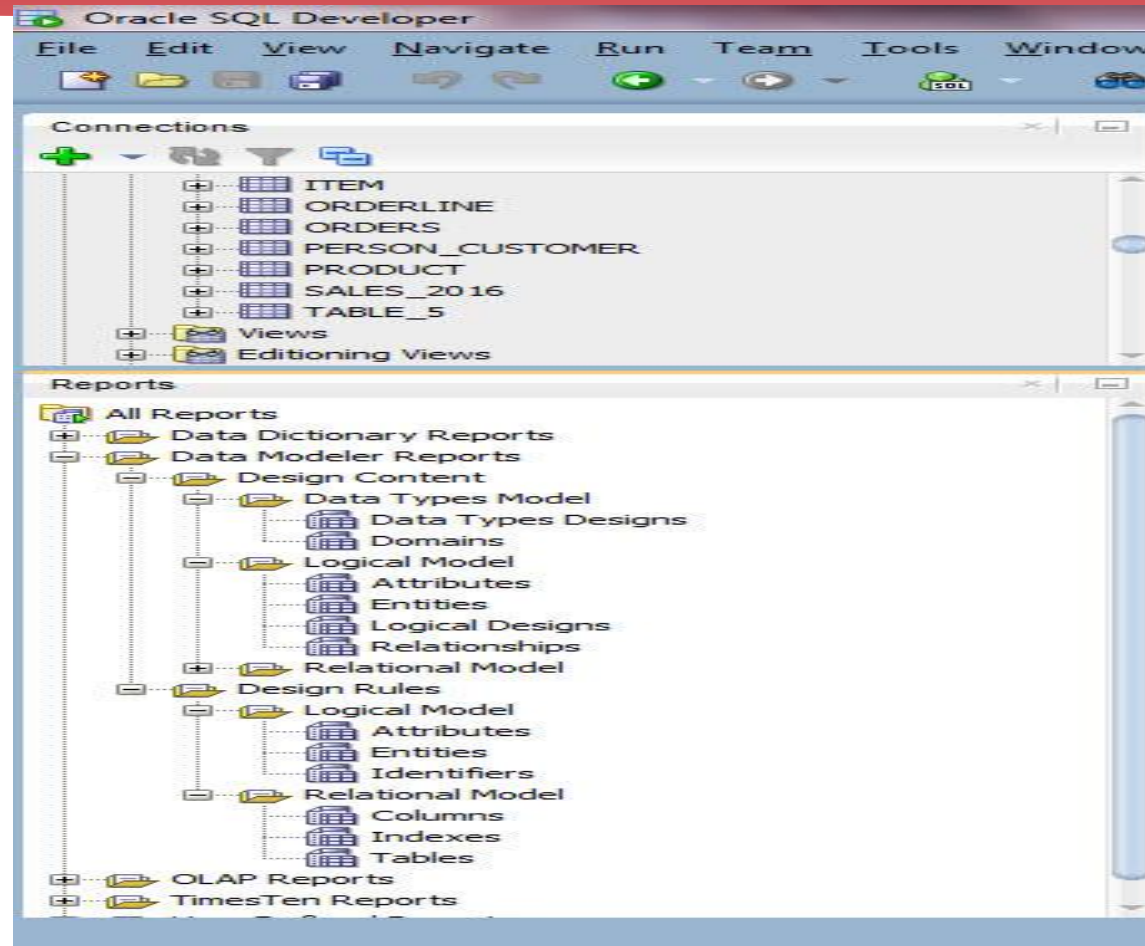
A context menu is open over the 'CUSTOMER_PK' index in the tree view, showing the following options:

- Edit...
- Open
- Export...
- Drop...
- Rebuild...
- Rename...
- Make Unusable...
- Coalesce...
- Compute Statistics...
- Rebuild Index Partition...
- Drop Index Partition...
- Use as Template...
- Quick DDL

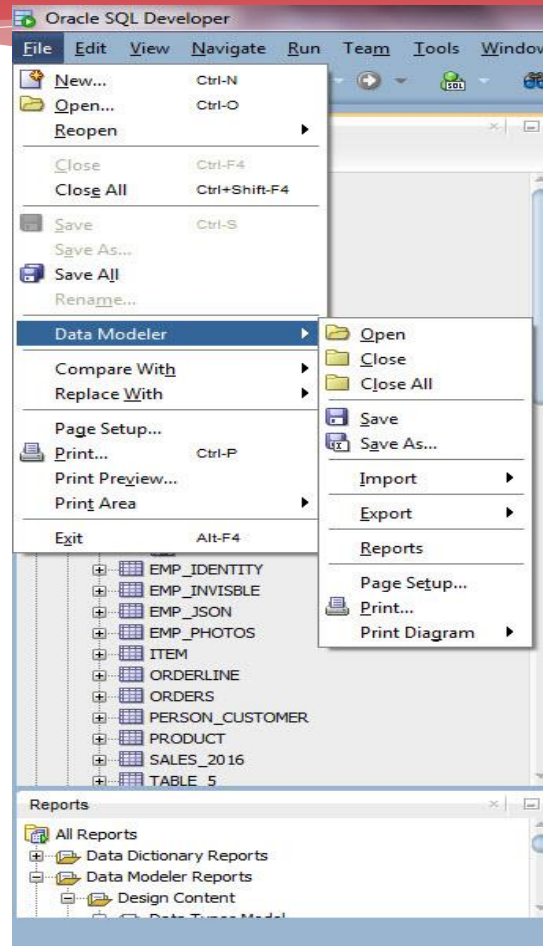
Table (Model)



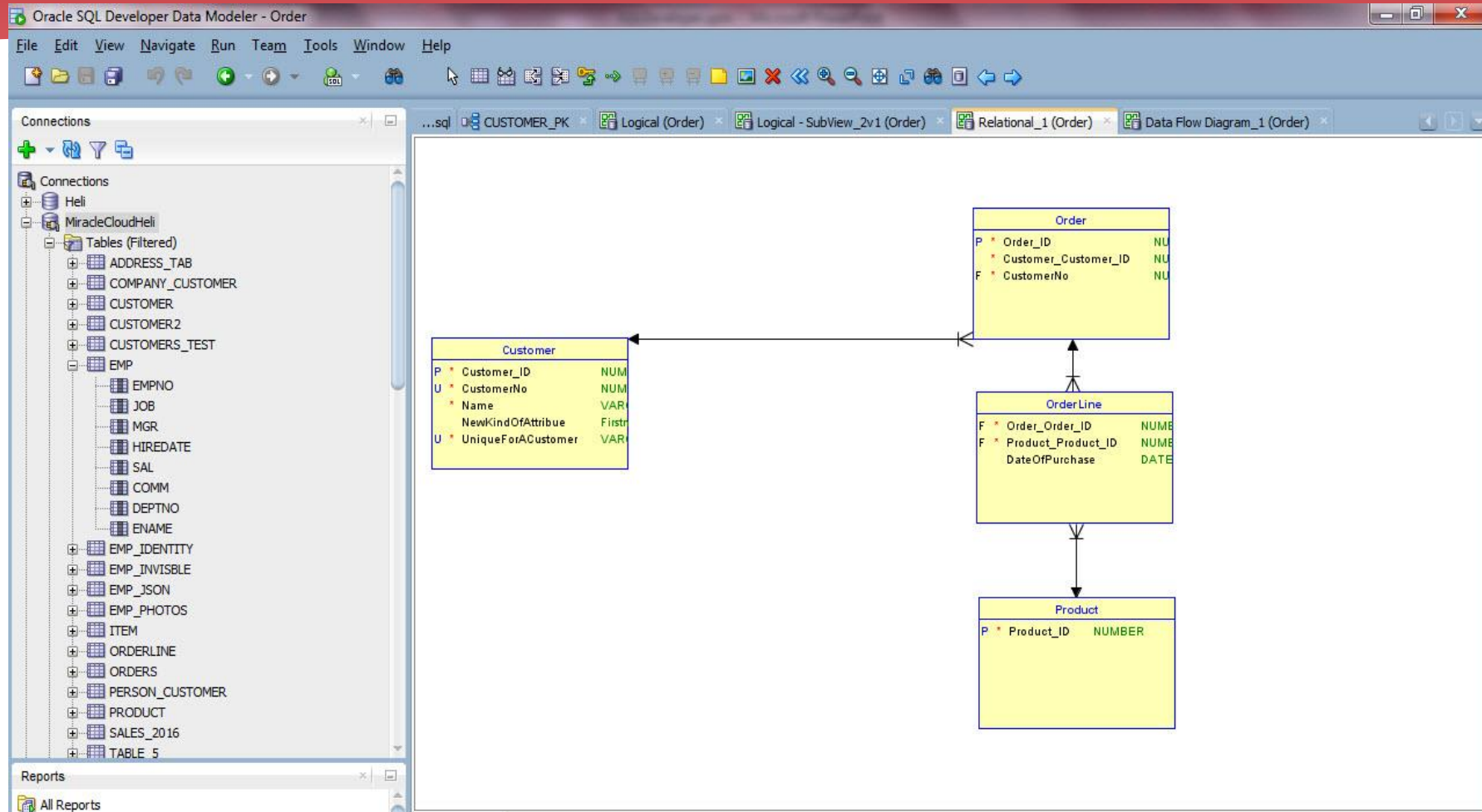
Data Modeler Reports from Reporting Repository



Data Modeler

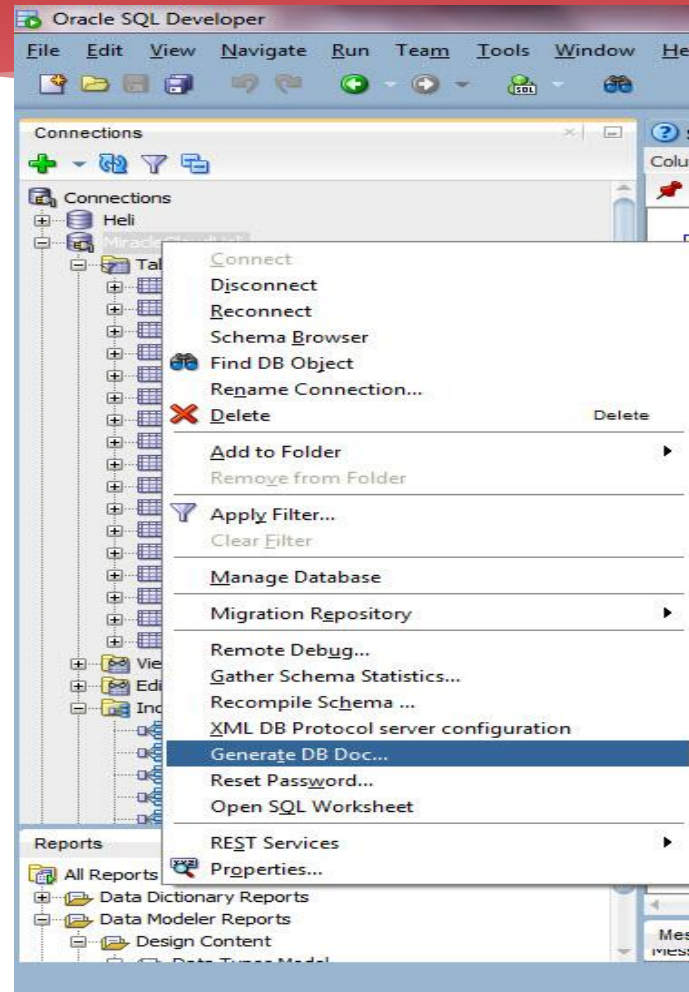


Data Modeler

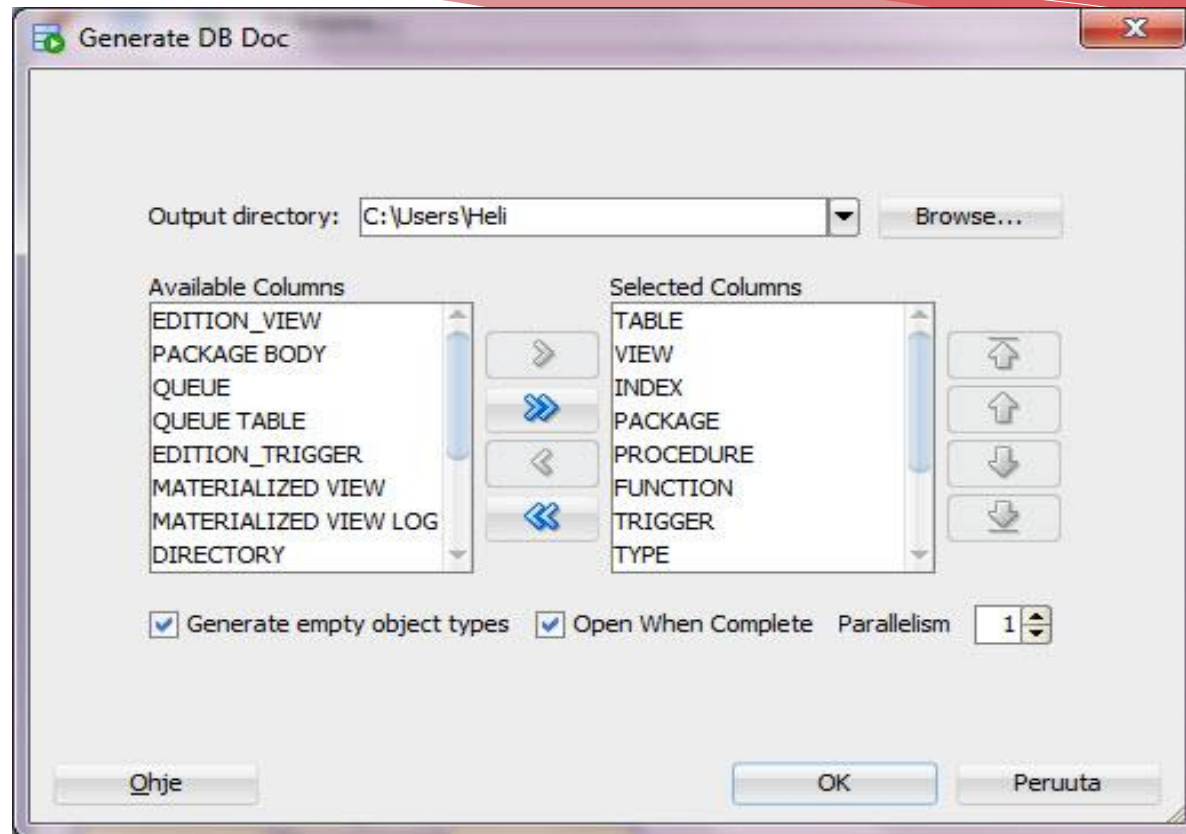


7. Documentation and Reports

Documentation



Documentation



Documentation

file:///C:/Users/Heli/index.html

HELI ADDRESS_TAB

Columns Constraints Grants Statistics Triggers Dependencies Details Partitions Indexes

COLUMN NAME	DATA TYPE	NULLABLE	DATA DEFAULT	COLUMN ID	COMMENTS
STREETNAME	VARCHAR2(100 BYTE)	Yes	null	1	null
HOUSENO	NUMBER(5,0)	Yes	null	2	null

Tables

- ADDRESS_TAB
- COMPANY_CUSTOMER
- CUSTOMER
- CUSTOMER2
- CUSTOMERS_TEST
- EMP
- EMP_IDENTITY
- EMP_INVISIBLE
- EMP_JSON
- EMP_PHOTOS
- ITEM
- ORDERLINE
- ORDERS
- PERSON_CUSTOMER
- PRODUCT
- SALES_2016
- TABLE_5

Data Dictionary

The screenshot displays the Oracle SQL Developer interface. The main window shows a table of National Language Support Parameters. The left sidebar contains a tree view of the database structure, including connections and reports. The top menu bar includes File, Edit, View, Navigate, Run, Team, Tools, Window, and Help. The status bar at the bottom indicates the current report is 'National Language Support Parameters'.

Parameter	Value
1 NLS_CALENDAR	GREGORIAN
2 NLS_CHARACTERSET	AL32UTF8
3 NLS_COMP	BINARY
4 NLS_CURRENCY	€
5 NLS_DATE_FORMAT	DD.MM.RRRR
6 NLS_DATE_LANGUAGE	FINNISH
7 NLS_DUAL_CURRENCY	€
8 NLS_ISO_CURRENCY	FINLAND
9 NLS_LANGUAGE	FINNISH
10 NLS_LENGTH_SEMANTICS	BYTE
11 NLS_NCHAR_CHARACTERSET	AL16UTF16
12 NLS_NCHAR_CONV_EXCP	FALSE
13 NLS_NUMERIC_CHARACTERS	,
14 NLS_SORT	FINNISH
15 NLS_TERRITORY	FINLAND
16 NLS_TIME_FORMAT	HH24:MI:SSXFF
17 NLS_TIMESTAMP_FORMAT	DD.MM.RRRR HH24:MI:SSXFF
18 NLS_TIMESTAMP_TZ_FORMAT	DD.MM.RRRR HH24:MI:SSXFF TZR
19 NLS_TIME_TZ_FORMAT	HH24:MI:SSXFF TZR

Data Dictionary

The screenshot shows the Oracle SQL Developer interface. The main window displays the Data Dictionary for the 'MiracleCloudHeli' database. The 'Invalid Objects' view is selected in the left-hand pane. The main grid lists the following objects:

Owner	Object_Type	Object_Name
1 HELI	Function	EMP_F_TO_POP_LINED
2 HELI	Function	EMP_F_TO_POP_PLINED
3 HELI	Function	EMP_FUNCTION_POPULATE_EMP
4 HELI	Function	TEST
5 HELI	Procedure	DYN1
6 HELI	Type	EMP_TYPE_REC
7 HELI2	Function	EMP_F_TO_POP_LINED
8 HELI2	Function	EMP_F_TO_POP_PLINED
9 HELI2	Function	EMP_FUNCTION_POPULATE_EMP
10 HELI2	Function	TEST
11 HELI2	Procedure	DYN1
12 HELI2	Type	EMP_TYPE_REC
13 SYS	Package Body	DBMS_DATAPUMP
14 SYS	Package Body	DBMS_DST
15 SYS	Package Body	DBMS_PLUGTS
16 SYS	Package Body	DBMS_IDE_TOOLKIT
17 SYS	Package Body	DBMS_ITTS
18 SYS	Package Body	KUPC\$QUEUE_INT
19 SYS	Package Body	KUPC\$QUEUE
20 SYS	Package Body	KUPD\$DATA
21 SYS	Package Body	KUPF\$FILE
22 SYS	Package Body	KUPV\$FT
23 SYS	Package Body	KUPV\$FT_INT

Database Administration

The screenshot displays the Oracle SQL Developer interface with the Alert Log window open. The window shows a list of log messages with columns for Id, Created on, and Message Text. The messages provide detailed information about the database instance, including its release version, system parameters, and configuration details.

Id	Created on	Message Text
1	119.04.2016 11:31:02,263000000	+02:00 Creating new log segment:
2	219.04.2016 11:31:02,273000000	+02:00 Oracle Database 12c EE High Perf Release 12.1.0.2.0 - 64bit ProductionWith the Part
3	319.04.2016 11:31:02,273000000	+02:00 ORACLE_HOME = /u01/app/oracle/product/12.1.0/dbhome_1
4	419.04.2016 11:31:02,273000000	+02:00 System name:Linux
5	519.04.2016 11:31:02,273000000	+02:00 Node name:mircloud01
6	619.04.2016 11:31:02,273000000	+02:00 Release:3.8.13-68.2.2.2.el6uek.x86_64
7	719.04.2016 11:31:02,274000000	+02:00 Version:#2 SMP Fri Jun 19 16:29:40 PDT 2015
8	819.04.2016 11:31:02,274000000	+02:00 Machine:x86_64
9	919.04.2016 11:31:02,274000000	+02:00 VM name:Xen Version: 4.3 (HVM)
10	1019.04.2016 11:31:02,274000000	+02:00 Using parameter settings in client-side pfile
11	1119.04.2016 11:31:02,274000000	+02:00 System parameters with non-default values:
12	1219.04.2016 11:31:02,274000000	+02:00 processes = 300
13	1319.04.2016 11:31:02,274000000	+02:00 filesystemio_options = "setall"
14	1419.04.2016 11:31:02,274000000	+02:00 resource_manager_plan = "ORACLE_CDB_PLAN"
15	1519.04.2016 11:31:02,274000000	+02:00 memory_target = 2896M
16	1619.04.2016 11:31:02,274000000	+02:00 control_files = "/u02/app/oracle/oradata/miracle1/control01.ctl"
17	1719.04.2016 11:31:02,274000000	+02:00 control_files = "/u03/app/oracle/fast_recovery_area/miracle1/control02
18	1819.04.2016 11:31:02,274000000	+02:00 control_file_record_keep_time= 30
19	1919.04.2016 11:31:02,274000000	+02:00 db_block_size = 8192
20	2019.04.2016 11:31:02,274000000	+02:00 compatible = "12.1.0.2.0"
21	2119.04.2016 11:31:02,274000000	+02:00 log_archive_format = "%t_%s_%r.dbf"
22	2219.04.2016 11:31:02,274000000	+02:00 db_files = 250
23	2319.04.2016 11:31:02,274000000	+02:00 cluster_database = FALSE
24	2419.04.2016 11:31:02,274000000	+02:00 db_create_file_dest = "/u02/app/oracle/oradata"
25	2519.04.2016 11:31:02,274000000	+02:00 db_recovery_file_dest = "/u03/app/oracle/fast_recovery_area"
26	2619.04.2016 11:31:02,275000000	+02:00 db_recovery_file_dest_size= 20G
27	2719.04.2016 11:31:02,275000000	+02:00 _catalog_foreign_restore = FALSE
28	2819.04.2016 11:31:02,275000000	+02:00 db_flashback_retention_target= 1440

Database Administration

Oracle SQL Developer

File Edit View Navigate Run Team Tools Window Help

Connections

Start Page MiradeCloudSys Locks by User

USERNAME	PID	SID	SERIAL	SPID	ORA	VLOCK	TYPE	LMODE	WAIT
1 oracle	7	240	33399	10658	(null)	FL	FL	RS	(null)
2 oracle	7	240	33399	10658	(null)	FL	FL	SRX	(null)
3 oracle	9	241	33901	10504	(null)	KD	KD	X	(null)
4 oracle	9	241	33901	10504	(null)	KT	KT	S	(null)
5 oracle	9	241	33901	10504	(null)	KT	KT	S	(null)
6 oracle	9	241	33901	10504	(null)	KT	KT	S	(null)
7 oracle	12	6	54814	10510	(null)	PW	PW	RX	(null)
8 oracle	13	243	37059	10512	(null)	REDO-LOG	REDO LOG	X	(null)
9 oracle	14	7	23469	10514	(null)	CF	CF	RS	(null)
10 oracle	14	7	23469	10514	(null)	RD	RD	1	(null)
11 oracle	14	7	23469	10514	(null)	RS	RS	RS	(null)
12 oracle	14	7	23469	10514	(null)	XR	XR	1	(null)
13 oracle	16	8	26271	10518	(null)	TEMPORARY SEGMENT	TEMPORARY SEGMENT	RX	(null)
14 oracle	21	247	10841	10528	(null)	FD	FD	X	(null)
15 oracle	45	280	21528	18703	HELI	AE	AE	S	(null)
16 oracle	50	25	17735	7695	SYS	AE	AE	S	(null)
17 oracle	51	276	37205	3984	HELI	AE	AE	S	(null)

Locks by user (Except type MR)

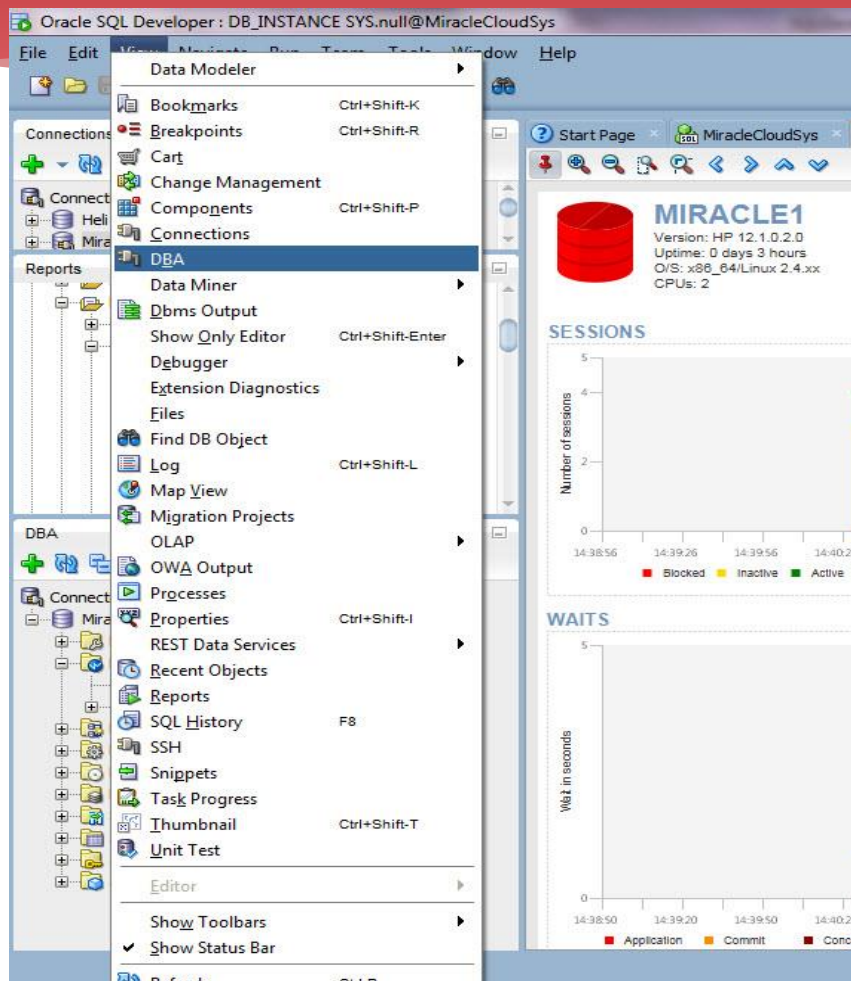
Database Administration, TOP SQL

The screenshot displays the Oracle SQL Developer interface. The main window shows a SQL script titled "Top SQL by CPU" with the following content:

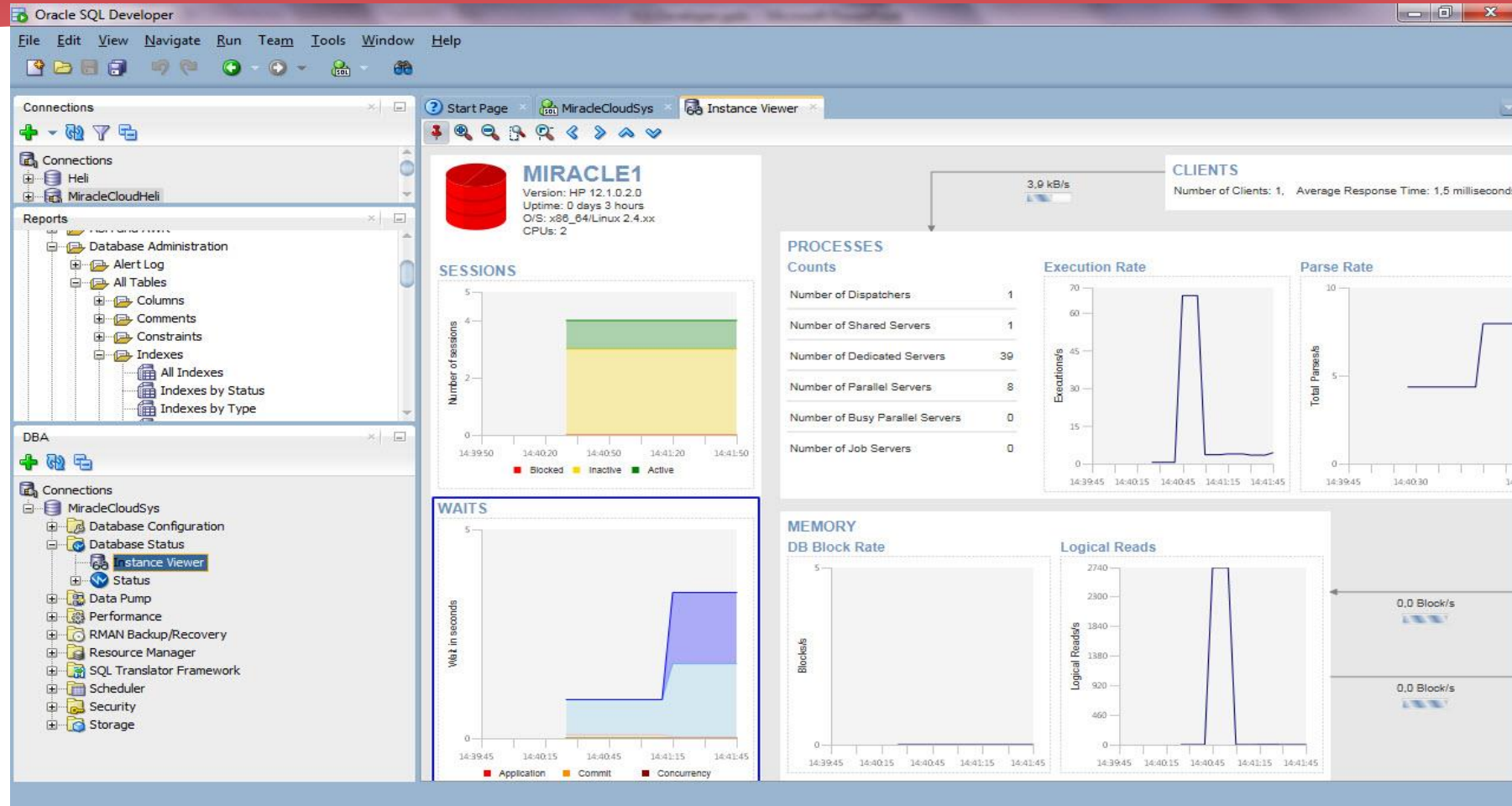
```
SQL
1 begin :1 := dbms_metadata.get_xml(:2 , :3 , :4 ); end;
2 SELECT /**+all_rows*/ SYS_XMLGEN(VALUE(KU$, XMLFORMAT.createFormat2('TABLE_I', '3')), 0 FROM SYS.KU$_FHTABLE_VIEW KU$ WHERE
3 SELECT /**+all_rows*/ SYS_XMLGEN(VALUE(KU$, XMLFORMAT.createFormat2('TABLE_I', '3')), 0 FROM SYS.KU$_HTABLE_VIEW KU$ WHERE N
4 SELECT DISTINCT 'SQLDEV:LINK:'||b.owner||':'||b.object_type||':'/**+||pad(' ',4*1)*/**+||b.object_name||':oracle.dbtools.rap
5 SELECT DISTINCT 'SQLDEV:LINK:'||owner||':'||object_type||':'/**+||pad(' ',4*1)*/**+||object_name||':oracle.dbtools.raptor.con
6 SELECT a.tablespace_name, 'SQLDEV:GAUGE:0:100:0:0'||nvl(ROUND(((c.bytes-nvl(b.bytes,0))/c.bytes)*100,2),0) percent_used, RC
7 select c.constraint_name,decode(c.constraint_type,'P','Primary_Key','U','Unique','R','Foreign_Key','C','Check',c.constraint
8 select * from ( SELECT o.OBJECT_NAME, o.OBJECT_ID, '' short_name, decode(bitand(t.property, 32), 32, 'YES', 'NO') partiti
9 select c.constraint_name,decode(c.constraint_type,'P','Primary_Key','U','Unique','R','Foreign_Key','C','Check',c.constraint
10 SELECT VALUE FROM V$PARAMETER WHERE NAME = 'compatible'
11 SELECT cols.column_name column_name, cols.position column_position FROM Dbc_constraints cons, Dba_cons_columns cols
12 select o.created,o.last_ddl_time,t.*,c.comments from (select OWNER,TABLE_NAME,TABLESPACE_NAME,CLUSTER_NAME,IOT_NAME,
13 select * from ( SELECT ao.OBJECT_NAME, ao.OBJECT_ID, '' short_name, DECODE(ao.STATUS, 'INVALID', 'TRUE', 'FALS
14 select o.created,o.last_ddl_time,t.*,c.comments from (select OWNER,TABLE_NAME,TABLESPACE_NAME,CLUSTER_NAME,IOT_NAME,
15 select o.created,o.last_ddl_time,t.*,c.comments from (select OWNER,TABLE_NAME,TABLESPACE_NAME,CLUSTER_NAME,IOT_NAME,
16 select o.created,o.last_ddl_time,t.*,c.comments from (select OWNER,TABLE_NAME,TABLESPACE_NAME,CLUSTER_NAME,IOT_NAME,
17 -- Was (with scalar subquery in the select clause) : -- --select * from (
18 select o.created,o.last_ddl_time,t.*,c.comments from (select OWNER,TABLE_NAME,TABLESPACE_NAME,CLUSTER_NAME,IOT_NAME,
19 select o.created,o.last_ddl_time,t.*,c.comments from (select OWNER,TABLE_NAME,TABLESPACE_NAME,CLUSTER_NAME,IOT_NAME,
20 select o.created,o.last_ddl_time,t.*,c.comments from (select OWNER,TABLE_NAME,TABLESPACE_NAME,CLUSTER_NAME,IOT_NAME,
21 select o.created,o.last_ddl_time,t.*,c.comments from (select OWNER,TABLE_NAME,TABLESPACE_NAME,CLUSTER_NAME,IOT_NAME,
22 SELECT /**+ RESULT_CACHE (SYSOBJ=TRUE) */ OWNER,CONSTRAINT_NAME,TABLE_NAME,OBJECT_TYPE#,SHARING FROM NO_COMMON_DATA(SYS."INT$
23 select o.created,o.last_ddl_time,t.*,c.comments from (select OWNER,TABLE_NAME,TABLESPACE_NAME,CLUSTER_NAME,IOT_NAME,
24 select o.created,o.last_ddl_time,t.*,c.comments from (select OWNER,TABLE_NAME,TABLESPACE_NAME,CLUSTER_NAME,IOT_NAME,
25 SELECT /**+all_rows*/ SYS_XMLGEN(VALUE(KU$, XMLFORMAT.createFormat2('INDEX_I', '3')), 0 FROM SYS.KU$_12_1_INDEX_VIEW KU$ WHE
26 SELECT * FROM NO_COMMON_DATA("SYS"."INT$INT$DBA_CONSTRAINTS")
27 SELECT count(*) FROM NO_COMMON_DATA(SYS."INT$INT$DBA_CONSTRAINTS") "INT$INT$DBA_CONSTRAINTS" WHERE 1=1 AND 1=1 AND ("INT$INT
28 begin dbms_utility.db_version(:1 , :2 ); end;
```

The interface also shows a tree view on the left with "Top SQL by CPU" selected under the "Top SQL" folder. The "DBA" folder is expanded at the bottom, showing "Performance", "RMAN Backup/Recovery", and "Resource Manager".

DBA



Instance Viewer



Instance Viewer, 4.2

TOP SQL

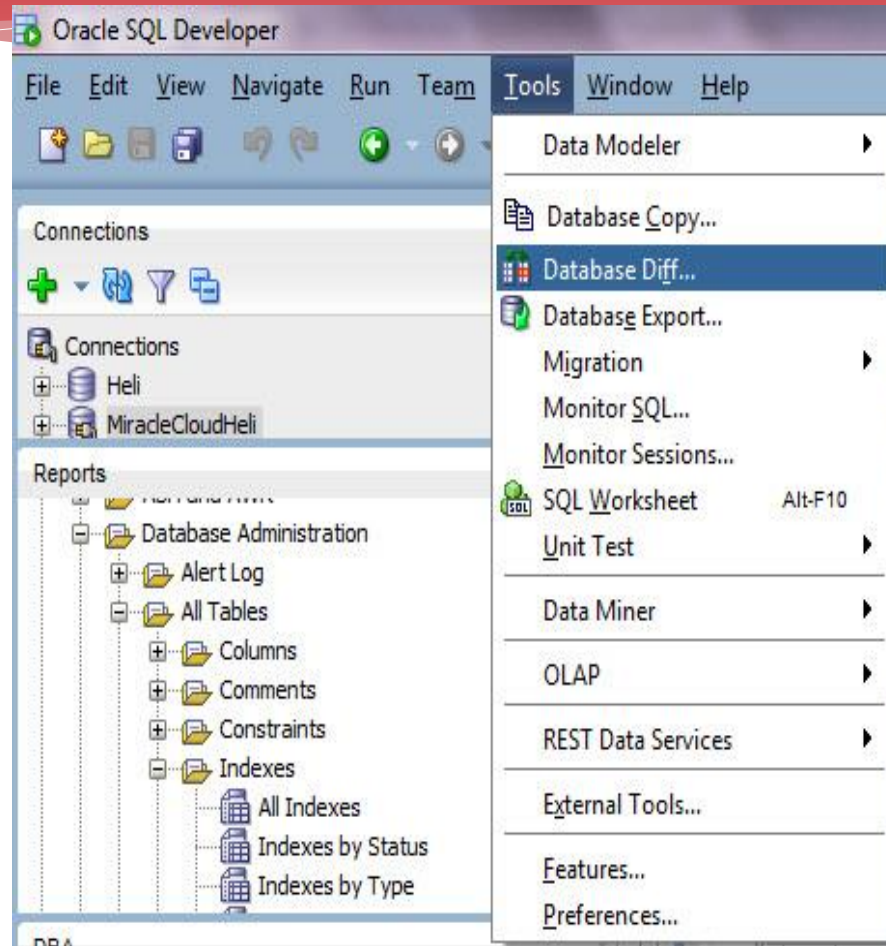
The screenshot displays the Oracle SQL Developer Instance Viewer interface for the database instance 'orcl12c'. The interface is divided into several sections:

- Database Information:** Shows 'orcl12c' as a 12.2.0.1.0 PRIMARY instance with 0 days 1 hour(s) uptime, running on O/S: x86_64/Linux 2.4.xx with 1 CPU.
- SESSIONS:** A bar chart showing the number of sessions over time, categorized by Blocked (red), Inactive (yellow), and Active (green).
- CLIENTS:** Shows 1 client with an average response time of 0.0 milliseconds.
- PROCESSES:** A table of process counts:

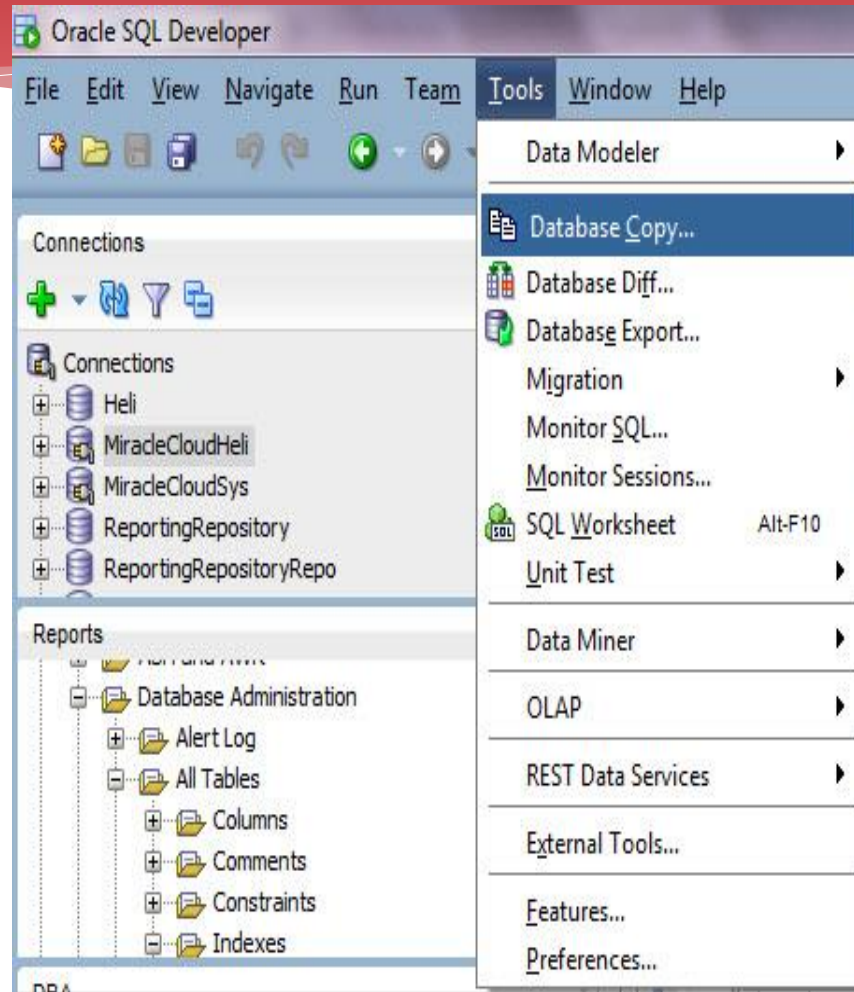
Process Type	Count
Number of Dispatchers	1
Number of Shared Servers	25
Number of Dedicated Servers	41
Number of Parallel Servers	4
Number of Busy Parallel Servers	0
Number of Job Servers	0
- TOP SQL:** A table of the most resource-intensive SQL queries:

#	SQL	CPU Secs	Disk Reads	Buffer Gets	Executions
1	WITH ACTIVE_SESSION_HISTORY AS (SELECT h.sql_id, h.sql_exec_id, nvl(m.px_qcsid, m.si...	14,8 s	10	821	19
2	select /*+ rule */ bucket, endpoint, col#, epvalue, epvalue_raw, ep_repeat_count, endpoint_enc f...	1,3 s	148	42,6K	20,5K
3	select a.total as MAX_BYTES, b.used as USED_BYTES from (select sum(user_bytes) total fro...	947,8 ms	95	87,1K	1
4	select /*+ rule */ bucket_cnt, row_cnt, cache_cnt, null_cnt, timestamp#, sample_size, minimum, ...	877,7 ms	137	78,8K	26,9K
5	select owner#, name, namespace, remoteowner, linkname, p_timestamp, p_obj#, nvl(property, 0), su...	653,9 ms	317	27,6K	1,3K
6	select policy#, action# from aud_object_opt\$ where object# = :1 and type = 2	637,5 ms	0	33,8K	3K
7	select STAT_1.value as STAT_1, STAT_779.value as STAT_779, STAT_780.value as STAT_7...	616,7 ms	0	378	6
8	select t.ts#, t.file#, t.block#, nvl(t.bobj#, 0), nvl(t.tab#, 0), t.intcols, nvl(t.clucols, 0), t.flags, t.pctfree\$, t.pct...	574,9 ms	103	16,1K	1,8K
- DBA:** A tree view of database configuration and status options.

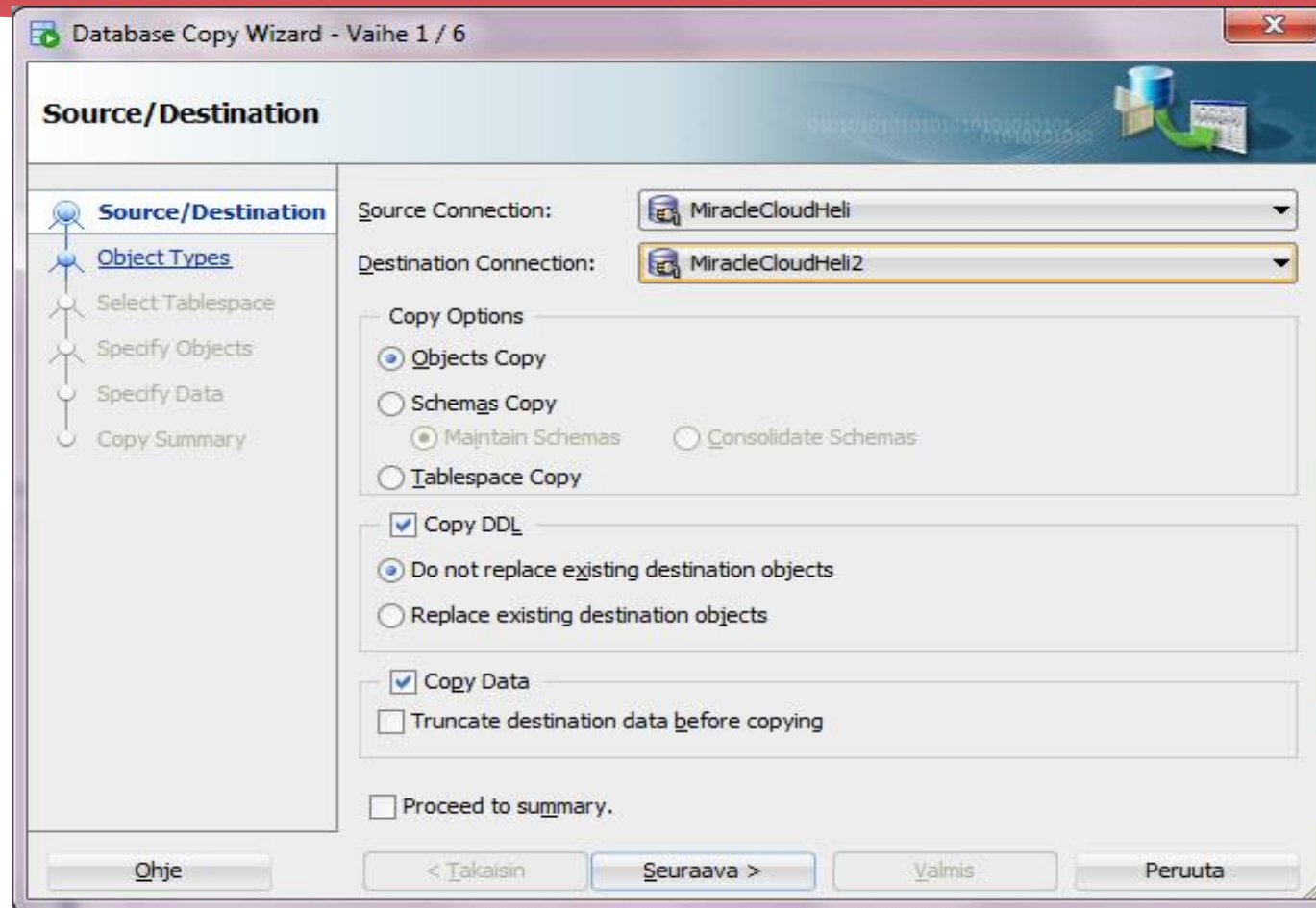
8. Database Copy and Diff



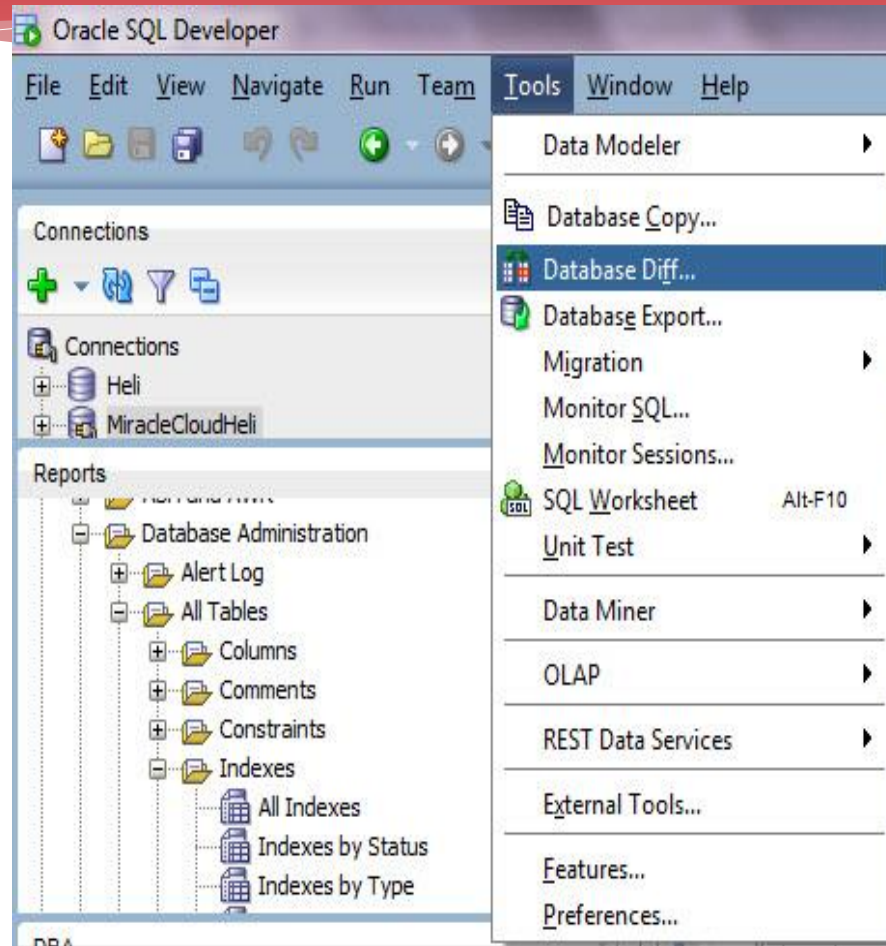
Database Copy



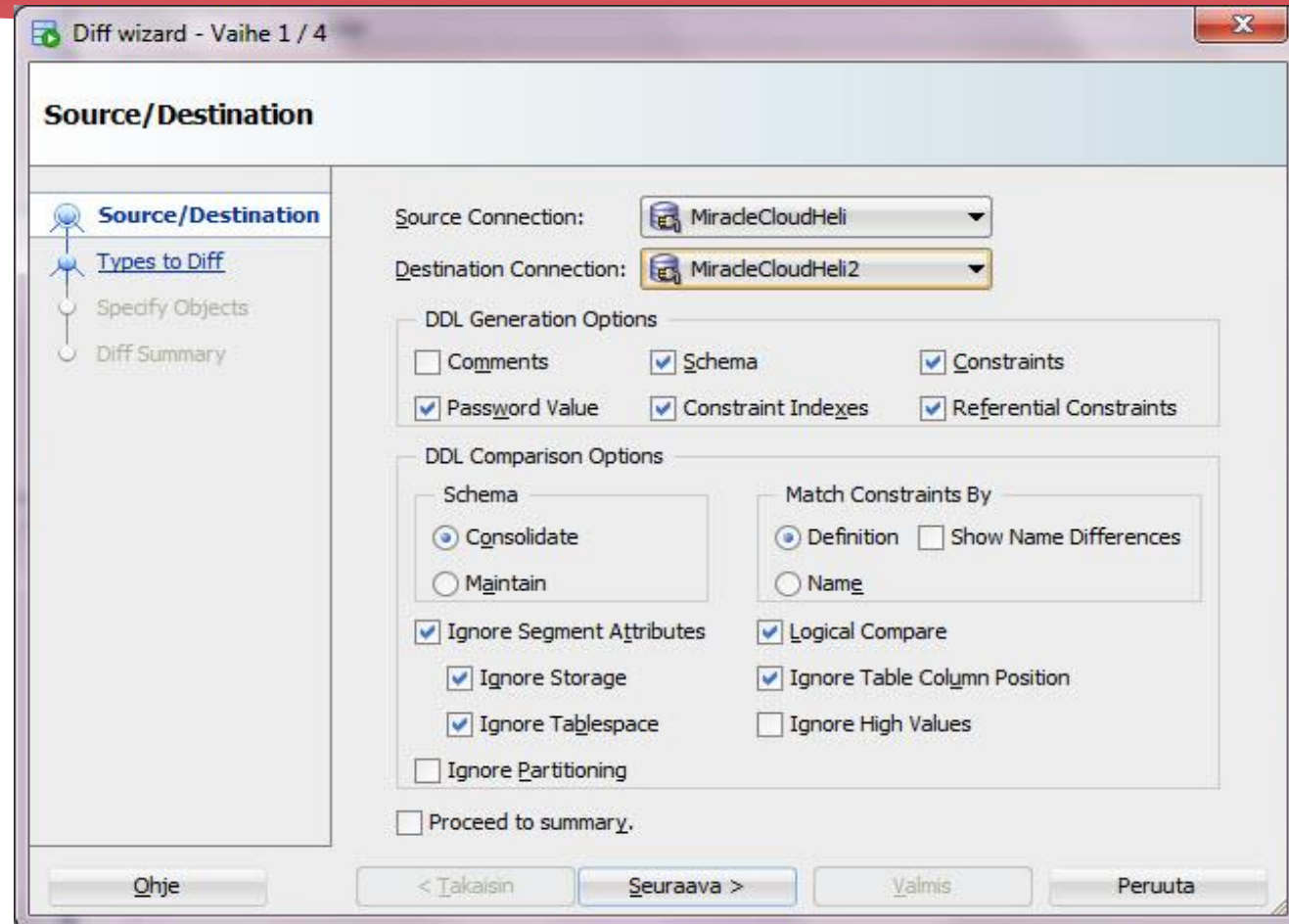
Database Copy



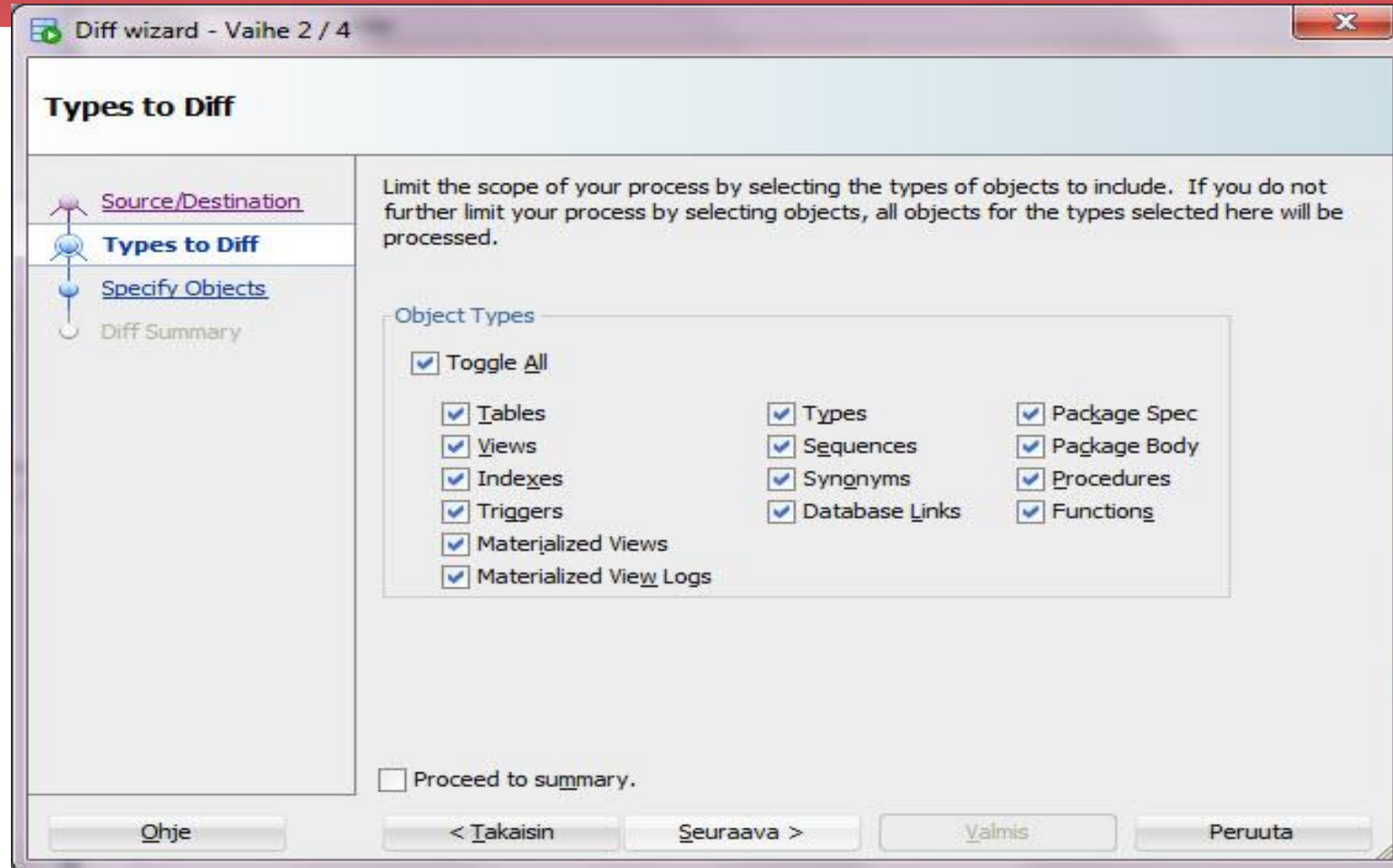
Database Diff



Database Diff



Database Diff



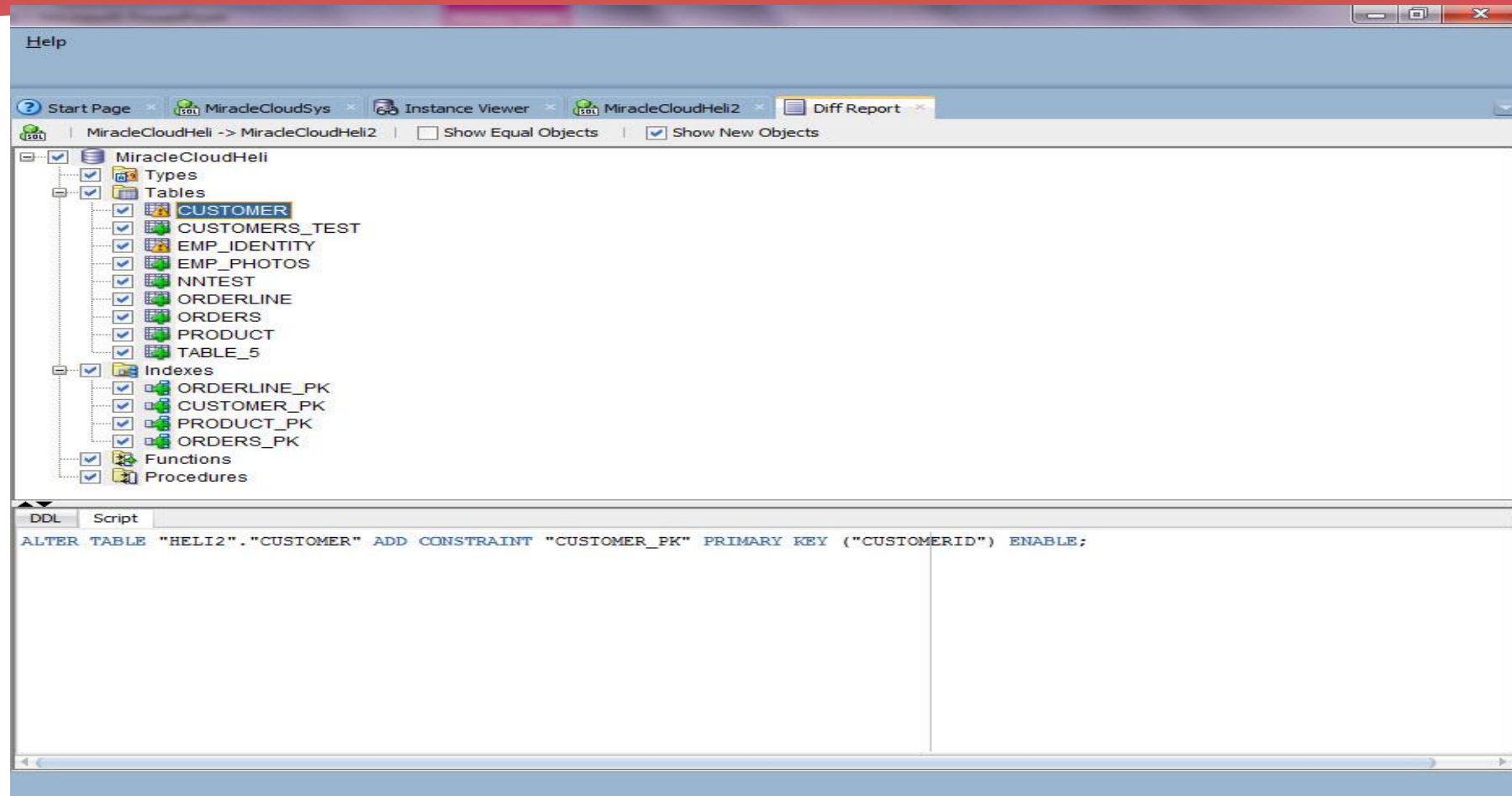
Database Diff

The screenshot displays the Oracle SQL Developer interface. The left pane shows a tree view of the 'MiracleCloudHeli' database schema, with the 'CUSTOMER' table selected. The right pane shows a 'Diff Report' window comparing the DDL for 'HELI' and 'HELI2'. The 'HELI' DDL includes a foreign key constraint 'CUSTOMER_PK' that references 'HELI'.'ADDRESS_TAB'. The 'HELI2' DDL does not include this constraint, which is highlighted in blue in the diff report.

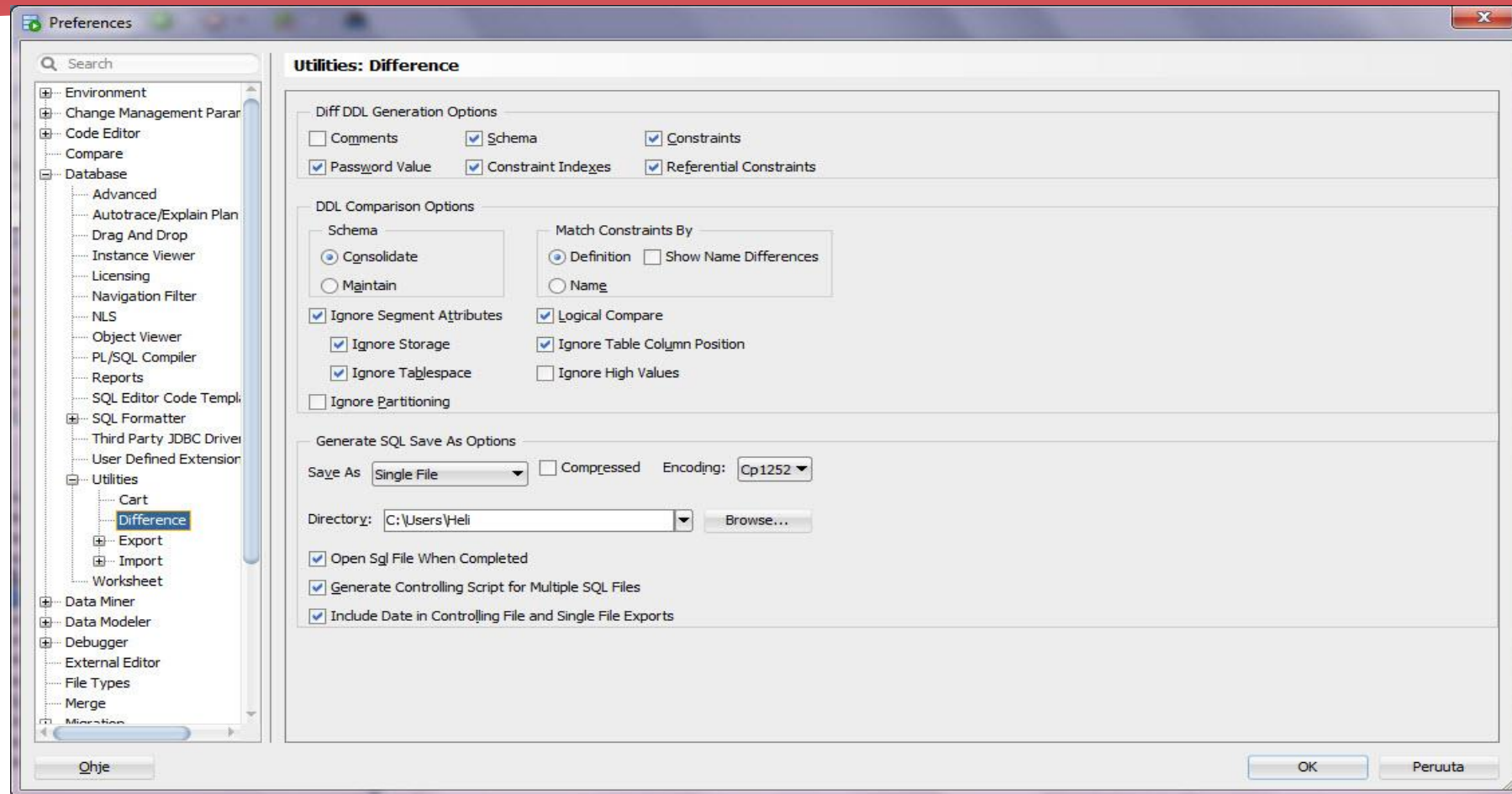
```
DDL Script (vain luku) (vain luku)
```

1	CREATE TABLE "HELI"."CUSTOMER"	1	CREATE TABLE "HELI2"."CUSTOMER"
2	("CUSTOMERID" NUMBER(16,0) NOT NULL ENABLE,	2	("CUSTOMERID" NUMBER(16,0) NOT NULL ENABLE,
3	"NAME" VARCHAR2(100 CHAR),	3	"NAME" VARCHAR2(100 CHAR),
4	"ADDRESS_REF" REF "HELI"."ADDRESS_TYPE",	4	"ADDRESS_REF" REF "HELI2"."ADDRESS_TYPE",
5	CONSTRAINT "CUSTOMER_PK" PRIMARY KEY ("CUSTOMERID") ENA	5	SCOPE FOR ("ADDRESS_REF") IS "HELI2"."ADDRESS_TAB"
6	SCOPE FOR ("ADDRESS_REF") IS "HELI"."ADDRESS_TAB"	6);
7);		

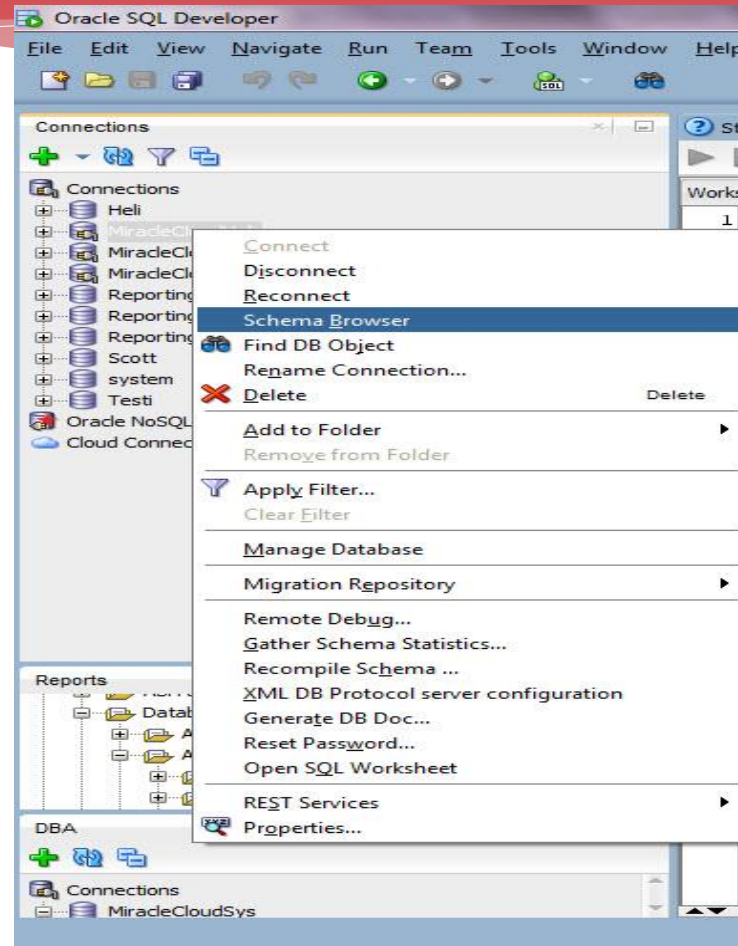
Database Diff



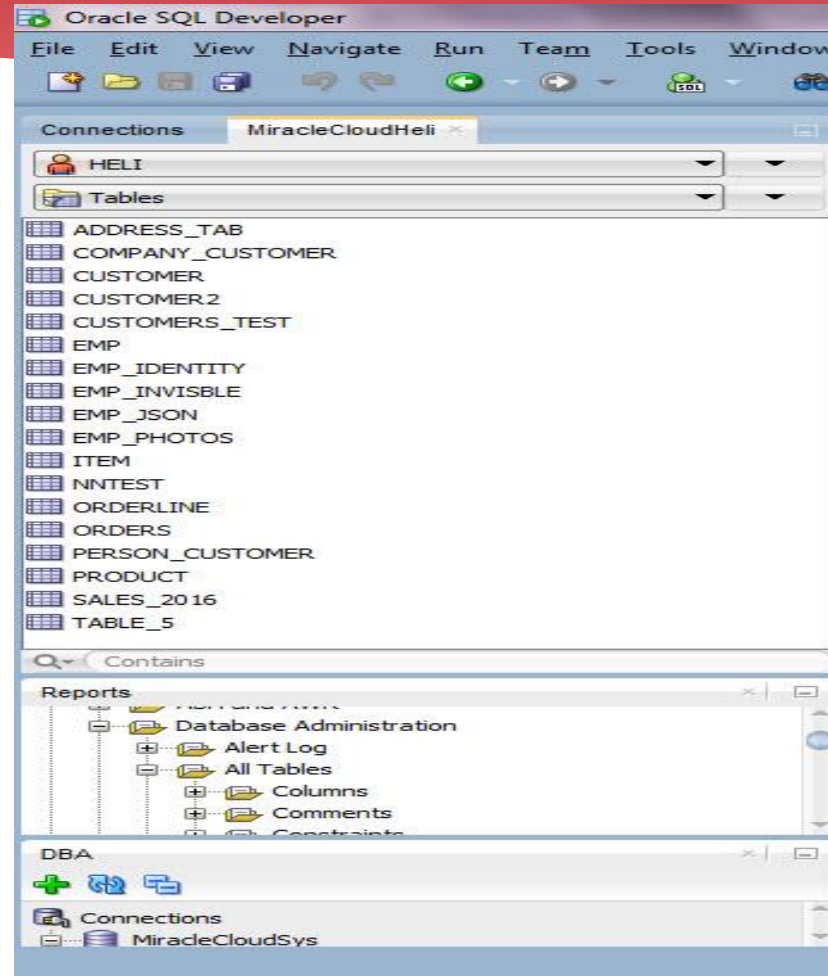
Preferences



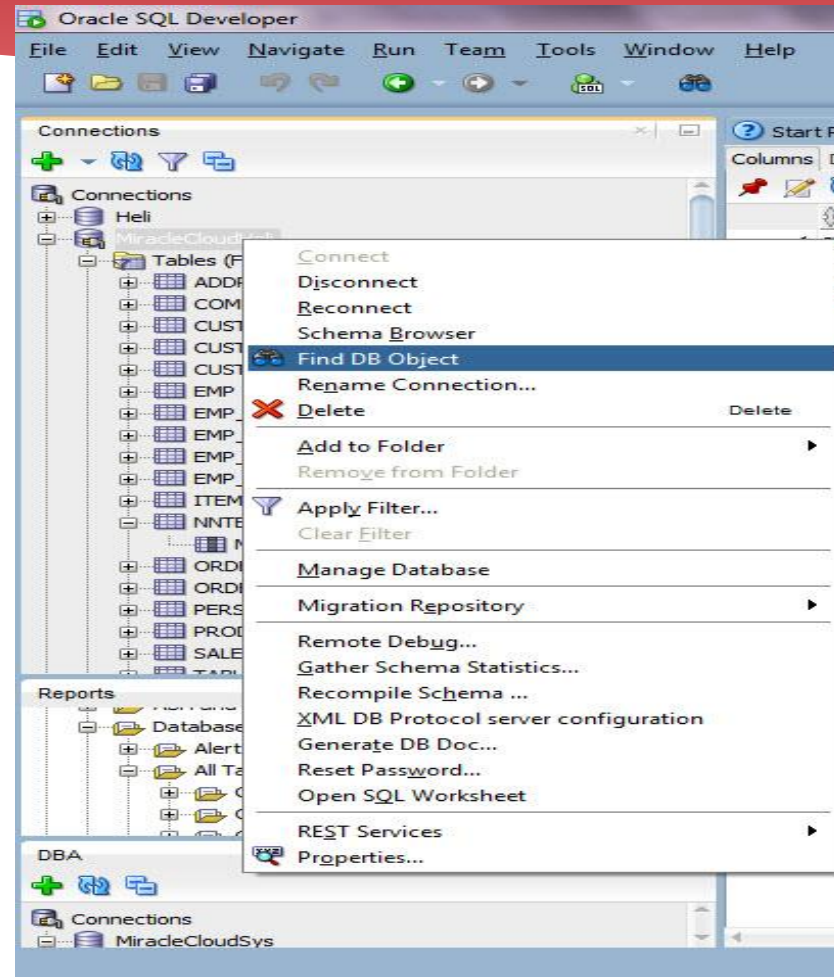
9. Schema Browser



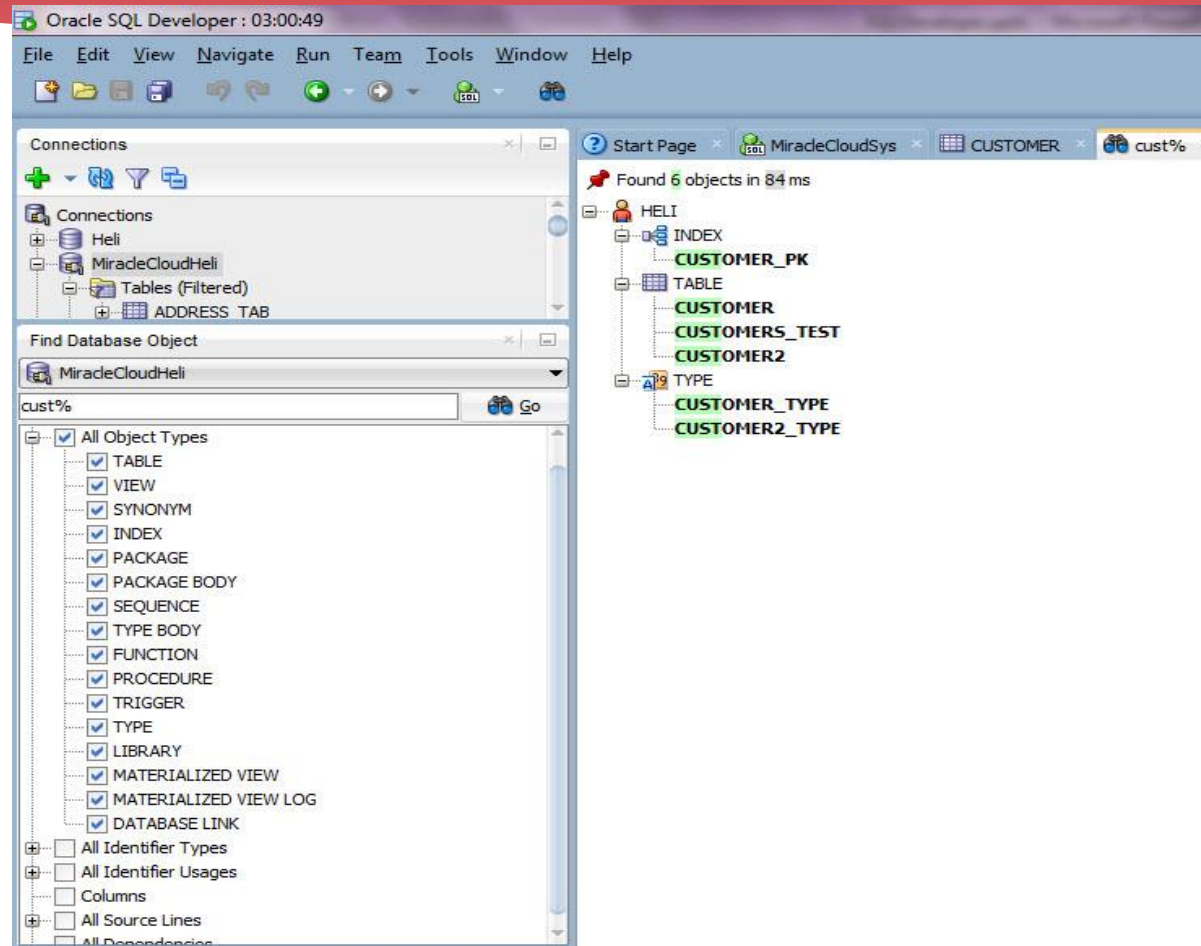
Schema Browser



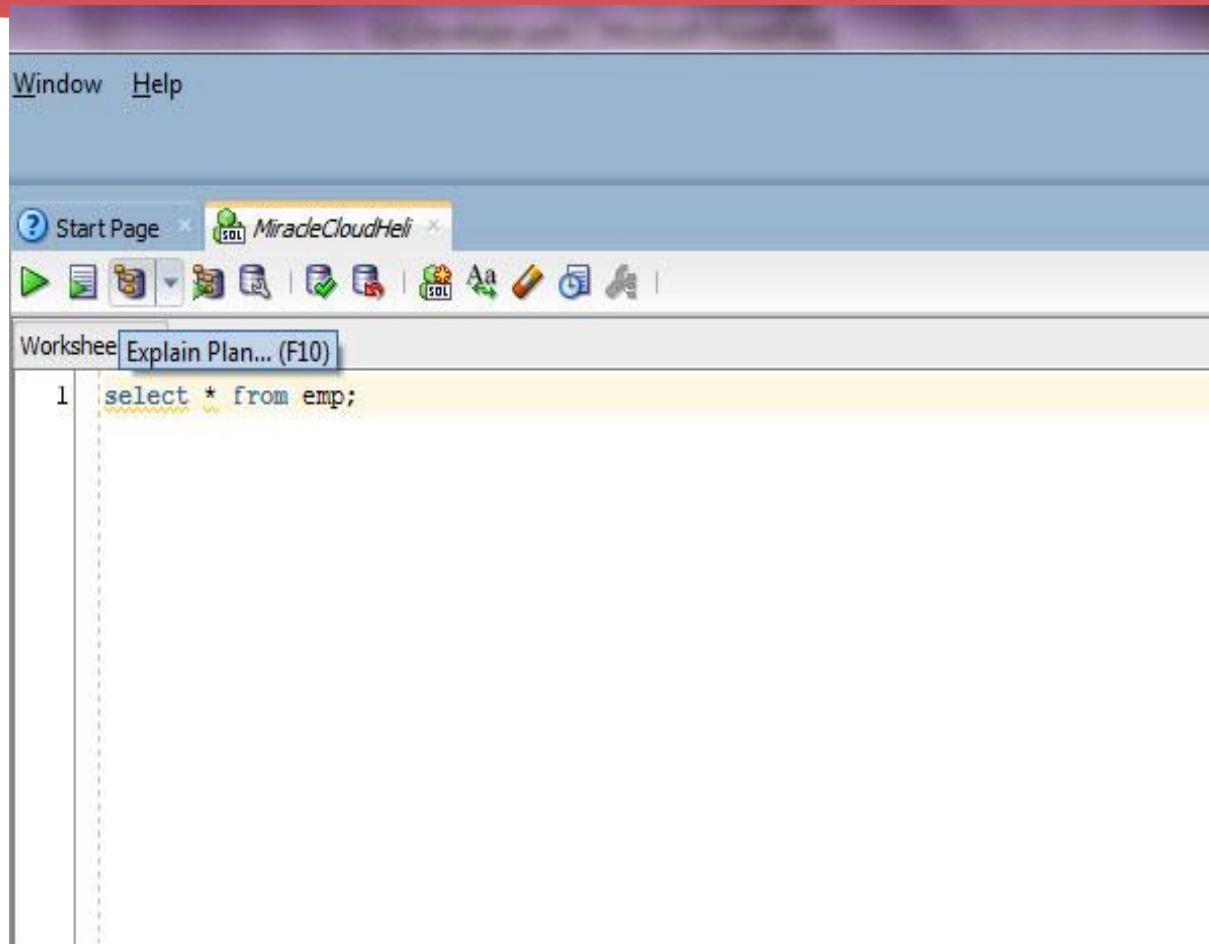
Find DB Object



Find DB Object



10. Explain Plan (F10)



Explain Plan (F10)

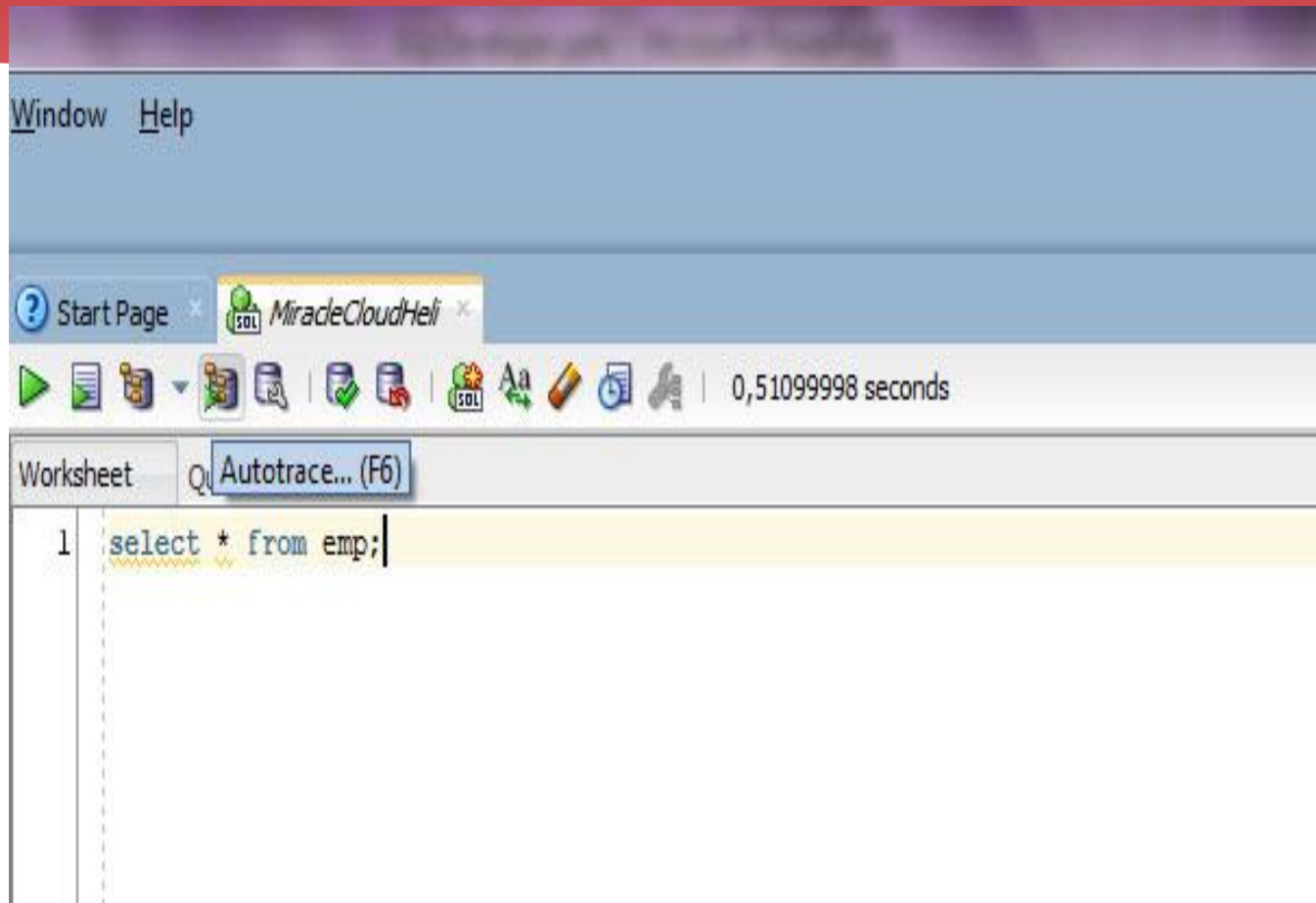
The screenshot displays the Oracle SQL Developer interface. The top toolbar shows the 'Explain Plan' button (F10). The main window contains a worksheet with the SQL query: `select * from emp;`. Below the worksheet, the 'Query Result' pane shows the 'Explain Plan' for the query. The plan is as follows:

OPERATION	OBJECT_NAME	CARDINALITY	COST
SELECT STATEMENT			3
TABLE ACCESS (FULL)	EMP	4	3

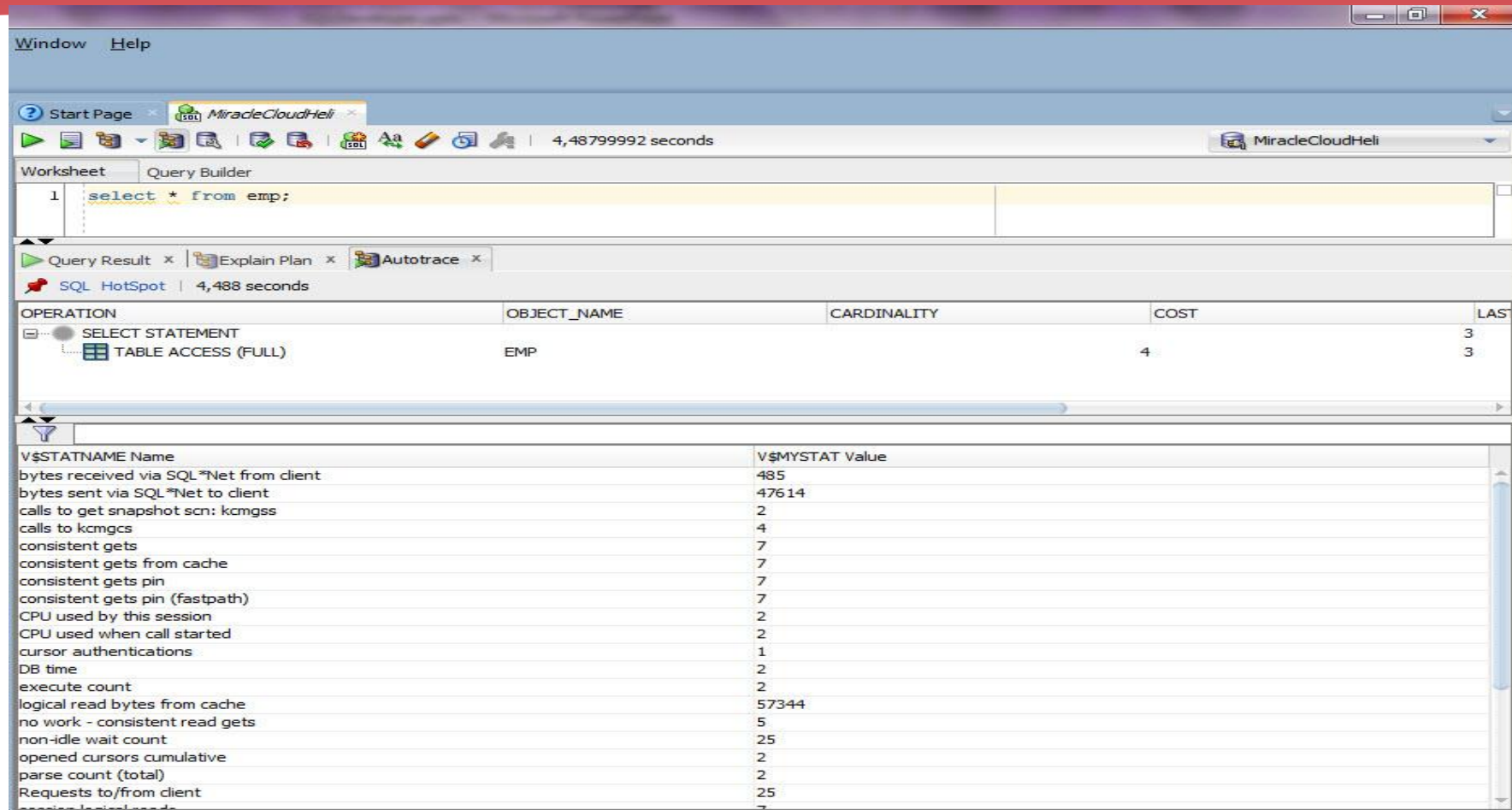
Below the table, the XML details of the plan are shown:

```
{info}
  info type="db_version"
  12.1.0.2
  info type="parse_schema"
  "HELI"
  info type="plan_hash_full"
  3634526668
  info type="plan_hash"
  3956160932
  info type="plan_hash_2"
  3634526668
  {hint}
  FULL(@"SEL$1" "EMP"@"SEL$1")
  OUTLINE_LEAF(@"SEL$1")
  ALL_ROWS
  DB_VERSION("12.1.0.2")
  OPTIMIZER_FEATURES_ENABLE("12.1.0.2")
  IGNORE_OPTIM_EMBEDDED_HINTS
```

Autotrace (F6)



Autotrace (F6)

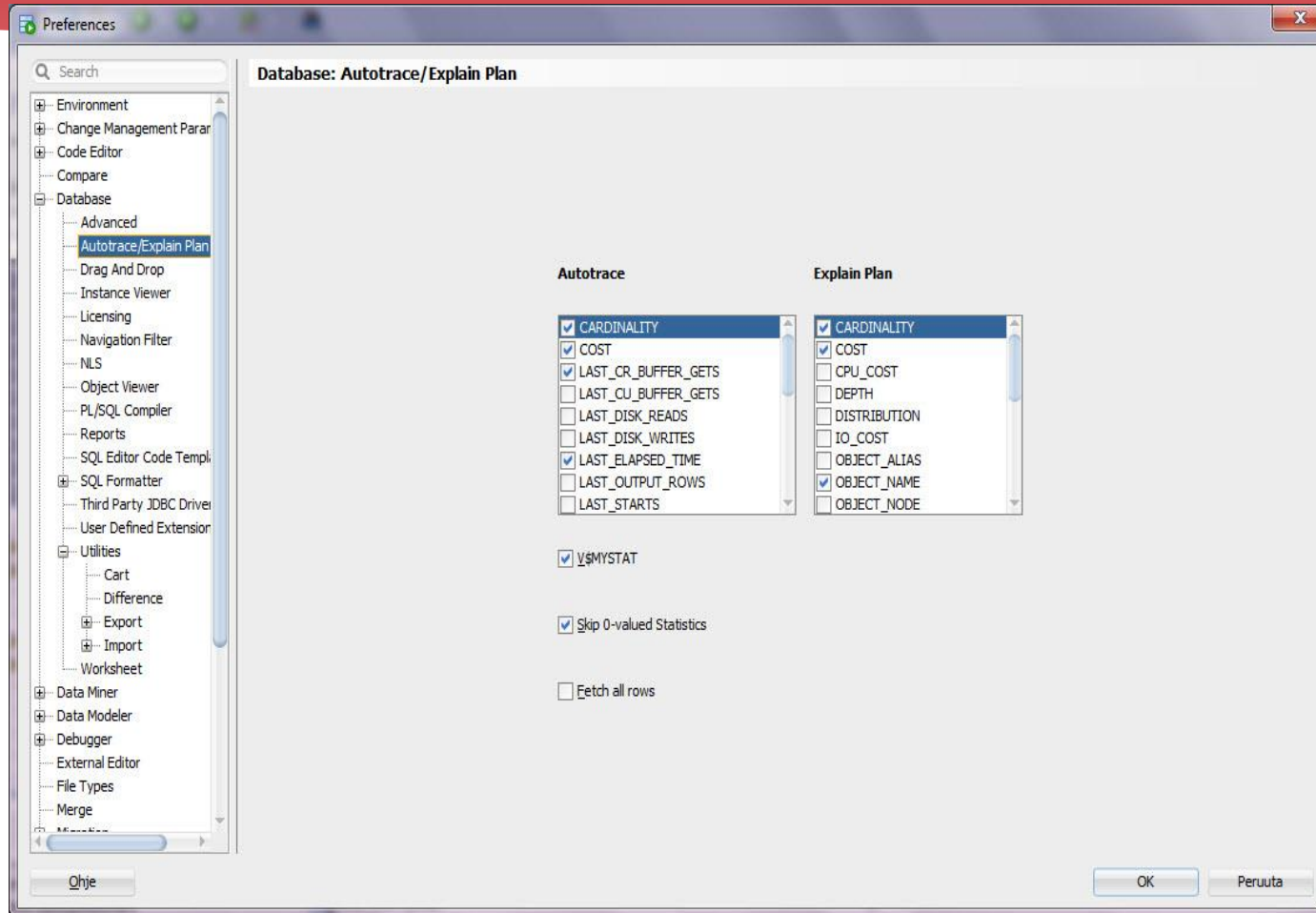


The screenshot shows the Oracle SQL Developer interface. The top toolbar includes a play button for executing the query. The main window displays the SQL query: `select * from emp;`. Below the query, the Autotrace results are shown in a table format.

OPERATION	OBJECT_NAME	CARDINALITY	COST	LAS
SELECT STATEMENT				3
TABLE ACCESS (FULL)	EMP		4	3

V\$STATNAME Name	V\$MYSTAT Value
bytes received via SQL*Net from client	485
bytes sent via SQL*Net to client	47614
calls to get snapshot scn: kcmgss	2
calls to kcmgcs	4
consistent gets	7
consistent gets from cache	7
consistent gets pin	7
consistent gets pin (fastpath)	7
CPU used by this session	2
CPU used when call started	2
cursor authentications	1
DB time	2
execute count	2
logical read bytes from cache	57344
no work - consistent read gets	5
non-idle wait count	25
opened cursors cumulative	2
parse count (total)	2
Requests to/from client	25

Preferences




Misc

Connection Color... Test or Production?

New / Select Database Connection

Connection Name	Connection Details
AMIShackathon	hackathon@//140.86....
MiracleBench	bench@//140.86.7.84:...
MiracleCloud	system@//140.86.7.8...
MiracleCloud2Heli2	Heli2@//140.86.7.84:1...
MiracleCloudHeli	heli@//140.86.7.84:15...
MiracleCloudPatrik	patrik@//140.86.7.84:...
MiracleCloudSys	sys@//140.86.7.84:15...
MiracleCloudSystem	system@//140.86.7.8...
Scott	scott@//localhost:152...
SYSTEM	system@//localhost:15...
VM_Scott	Scott@//localhost:152...
VM_sys	sys@//localhost:1521/...
VMbench	bench@//localhost:152...
VMbench2	bench2@//localhost:15...

Connection Name: MiracleCloudHeli
Username: heli
Password:

Save Password  Connection Color

Oracle

Connection Type: Basic Role: default

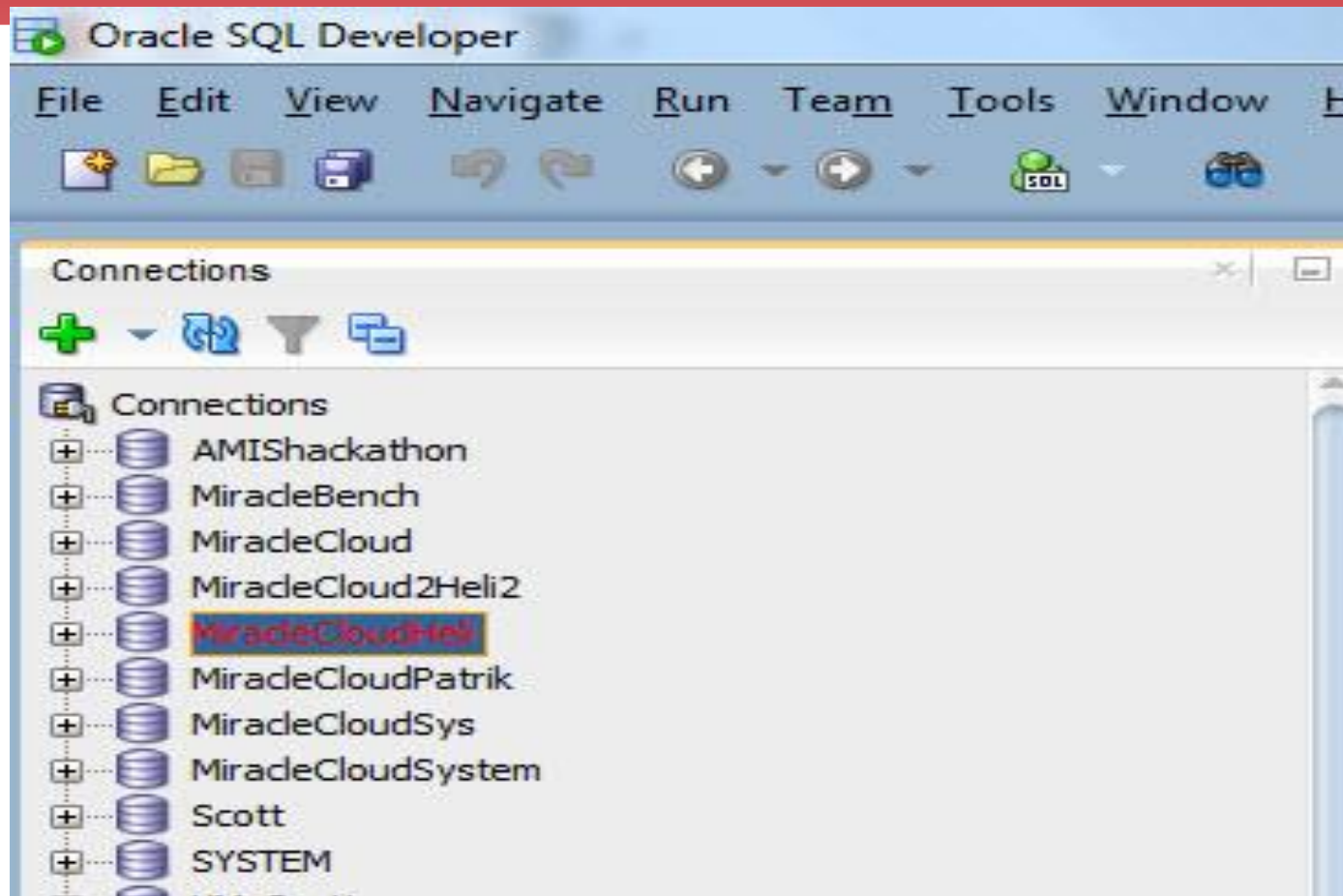
Hostname: 140.86.7.84
Port: 1521

SID
 Service name: PDB1.fimiracle.oracledcloud.internal

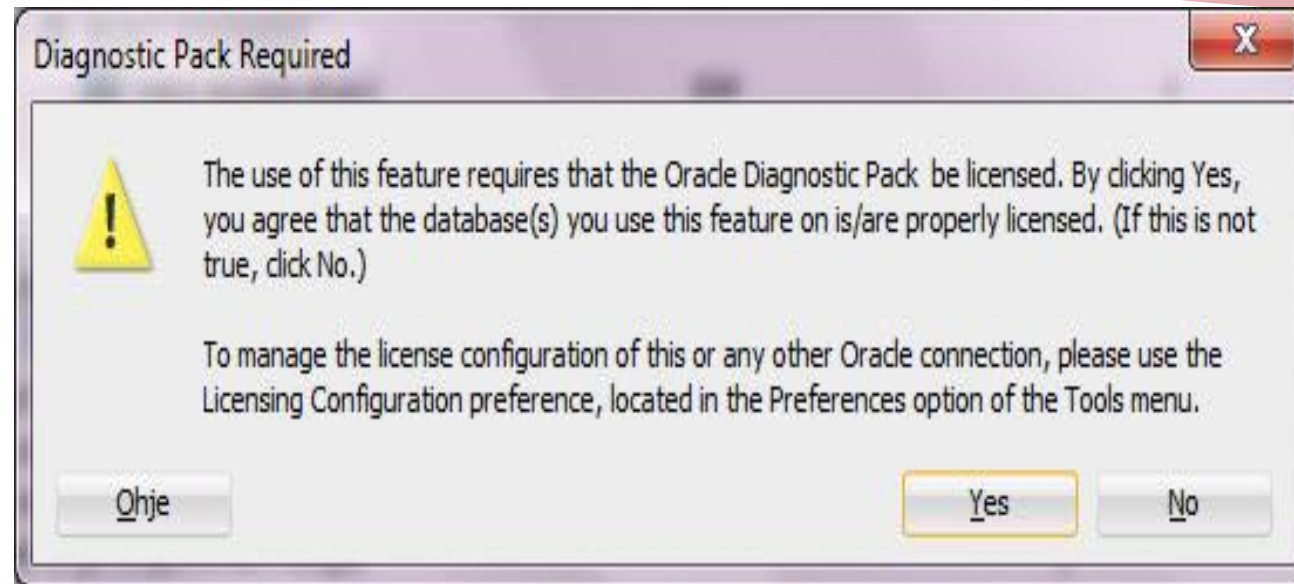
OS Authentication Kerberos Authentication

Status :

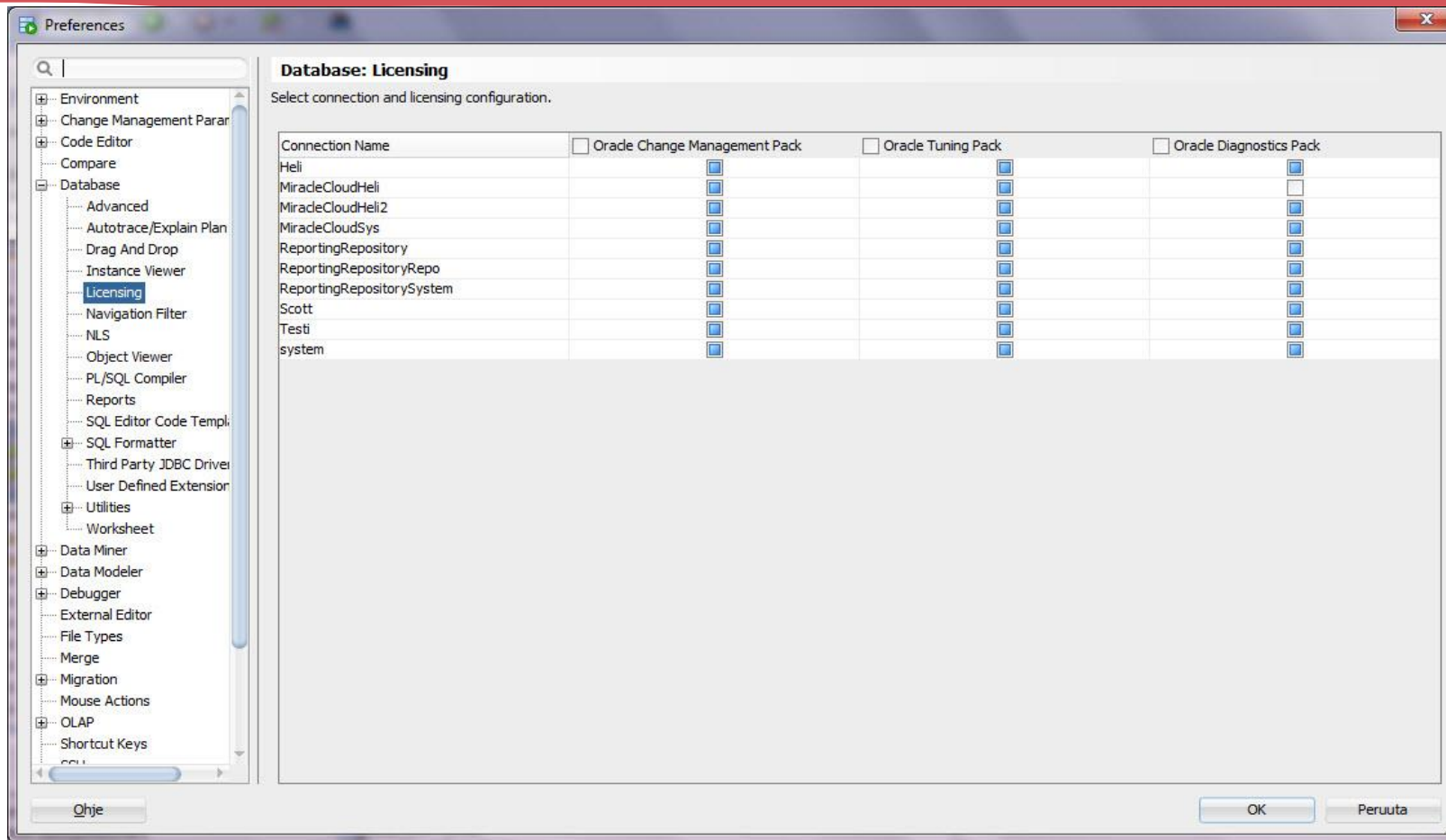
Connection Color... Test or Production?

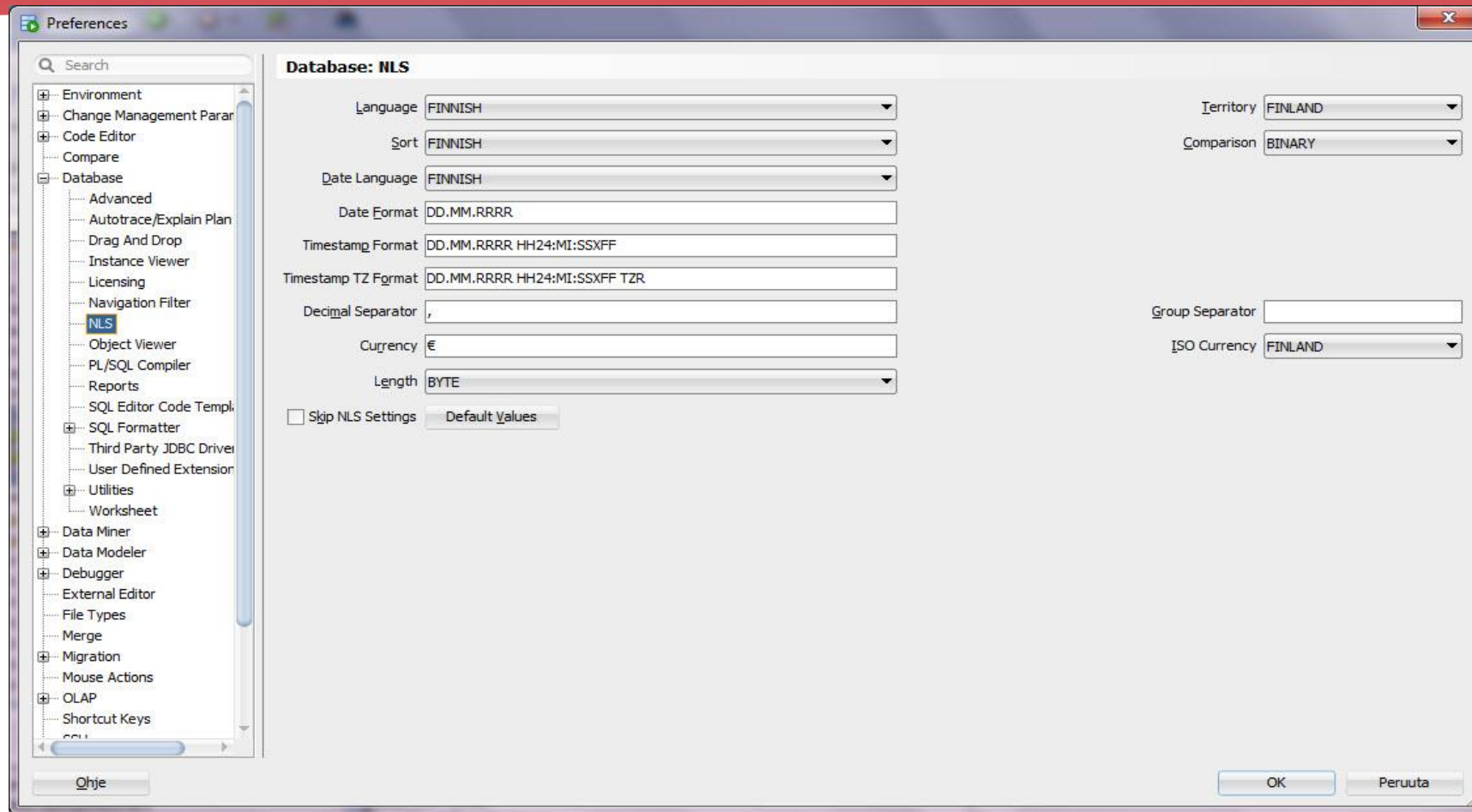


Licensing?

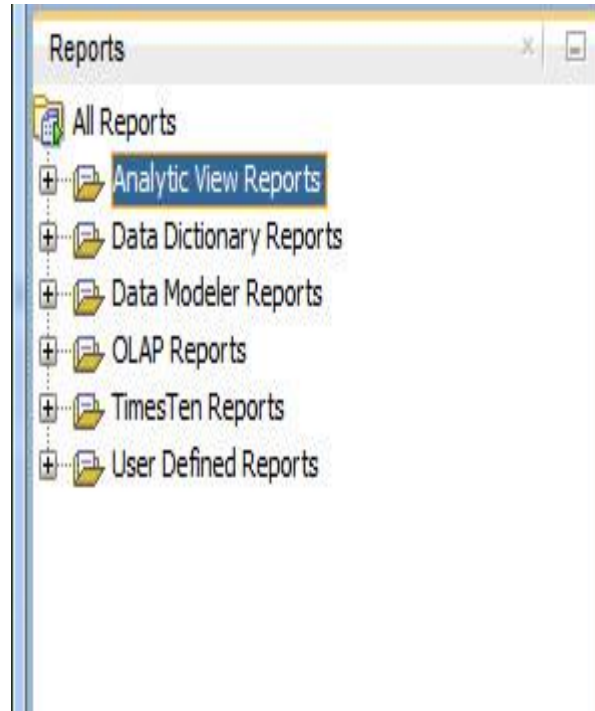
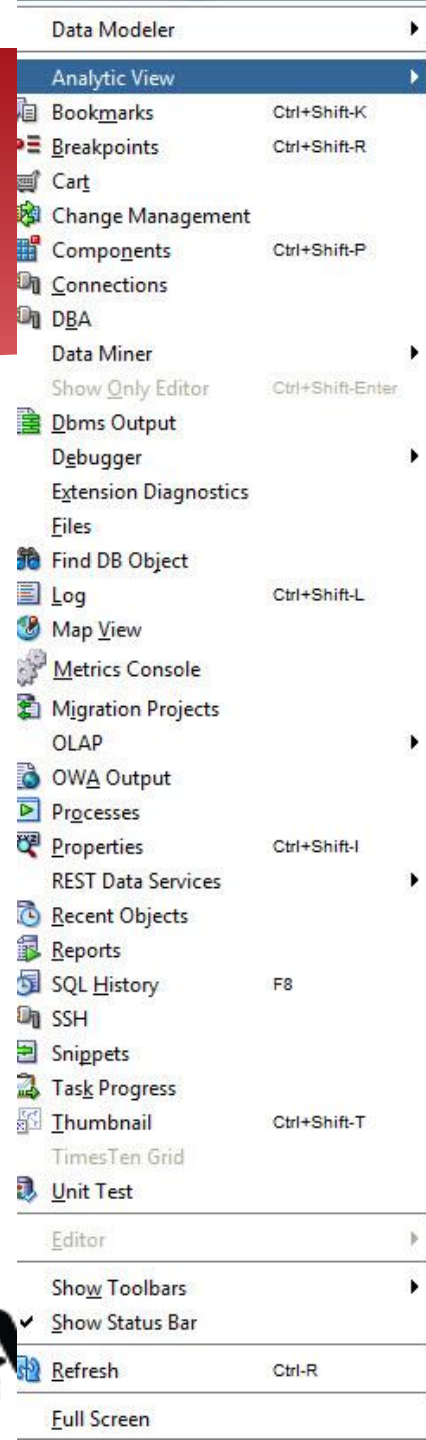


Preferences

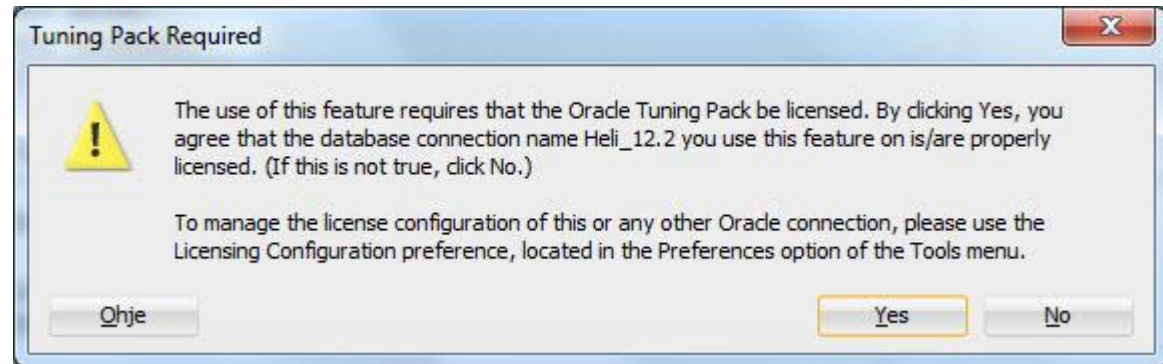
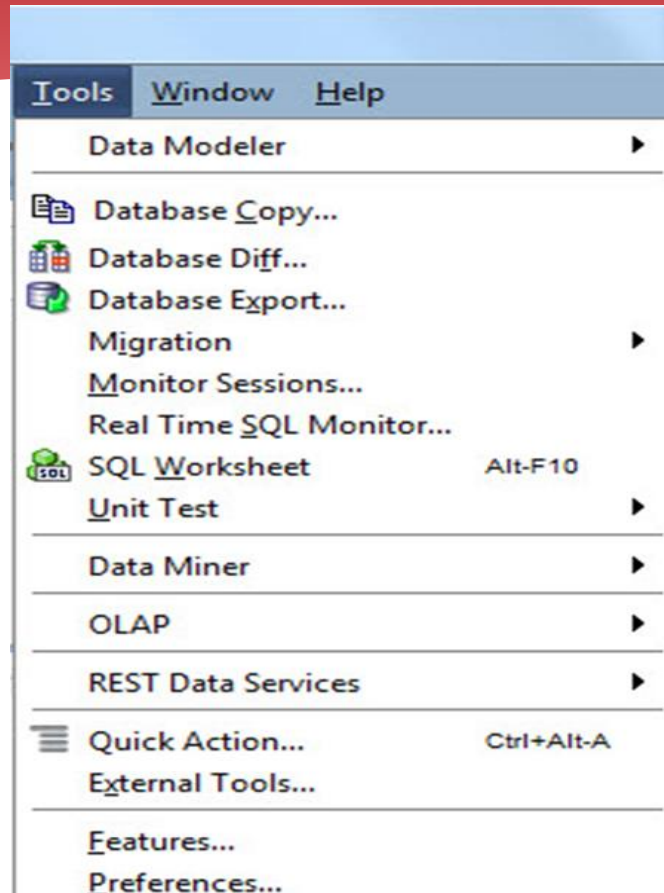




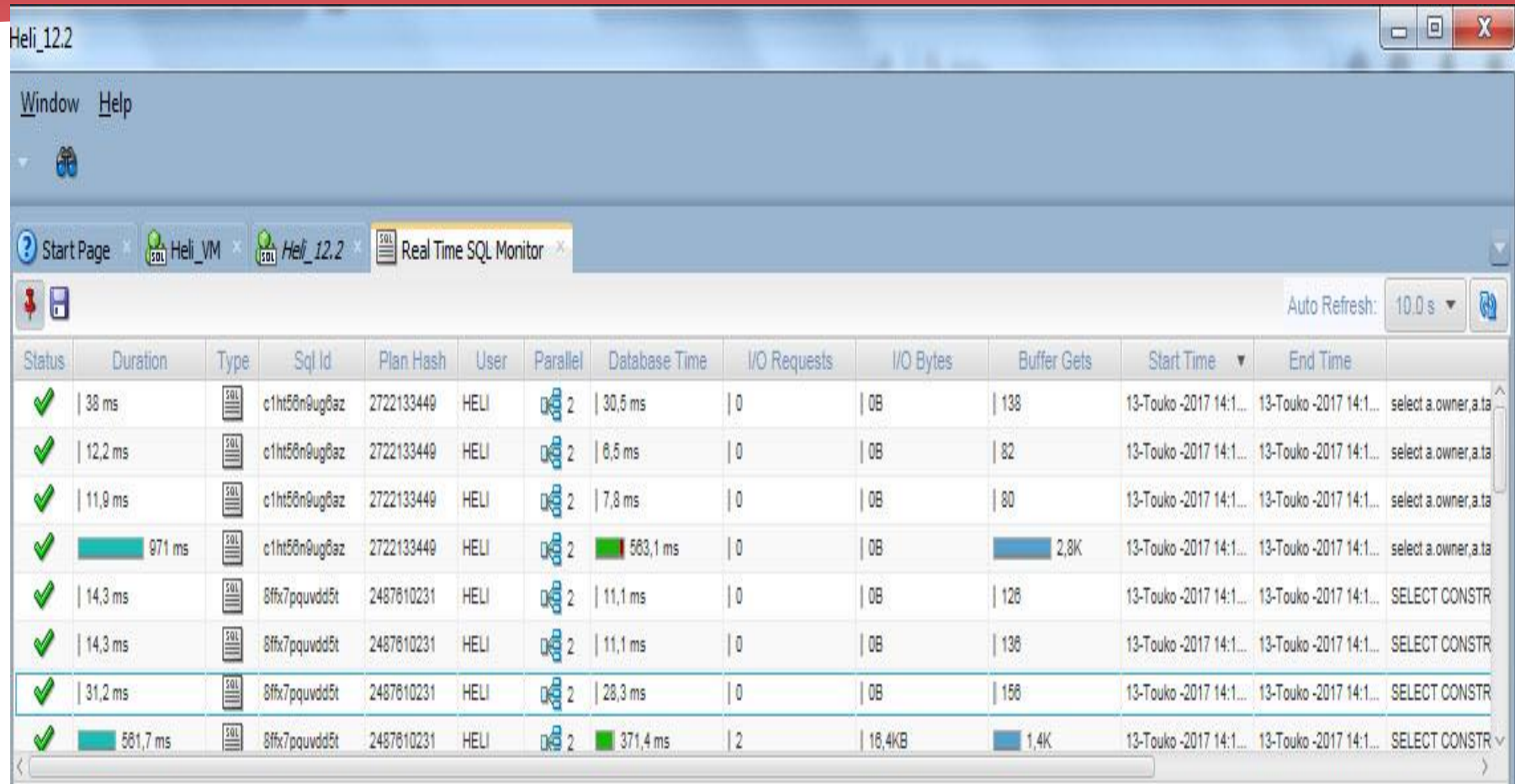
4.2: support for 12c rel 2, Analytic Views



4.2: Real Time SQL Monitor



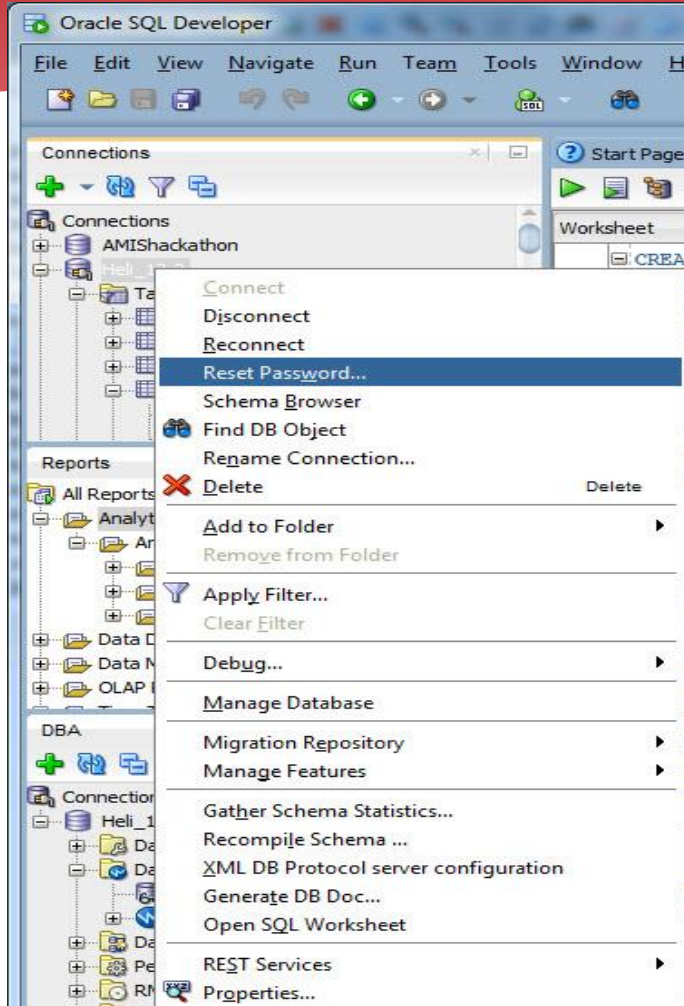
4.2: Real Time SQL Monitor



The screenshot shows the 'Real Time SQL Monitor' window. The window title is 'Heli_12.2'. The menu bar includes 'Window' and 'Help'. The toolbar shows 'Start Page', 'Heli_VM', 'Heli_12.2', and 'Real Time SQL Monitor'. The 'Auto Refresh' is set to '10.0 s'. The main area displays a table with the following columns: Status, Duration, Type, Sql Id, Plan Hash, User, Parallel, Database Time, I/O Requests, I/O Bytes, Buffer Gets, Start Time, End Time, and a partial column for the SQL text. The table contains 8 rows of data, with the 4th and 8th rows highlighted in blue.

Status	Duration	Type	Sql Id	Plan Hash	User	Parallel	Database Time	I/O Requests	I/O Bytes	Buffer Gets	Start Time	End Time	
✓	38 ms	SQL	c1ht56n9ug8az	2722133449	HELI	2	30,5 ms	0	0B	138	13-Touko -2017 14:1...	13-Touko -2017 14:1...	select a.owner,a.ta
✓	12,2 ms	SQL	c1ht56n9ug8az	2722133449	HELI	2	6,5 ms	0	0B	82	13-Touko -2017 14:1...	13-Touko -2017 14:1...	select a.owner,a.ta
✓	11,9 ms	SQL	c1ht56n9ug8az	2722133449	HELI	2	7,8 ms	0	0B	80	13-Touko -2017 14:1...	13-Touko -2017 14:1...	select a.owner,a.ta
✓	971 ms	SQL	c1ht56n9ug8az	2722133449	HELI	2	563,1 ms	0	0B	2,8K	13-Touko -2017 14:1...	13-Touko -2017 14:1...	select a.owner,a.ta
✓	14,3 ms	SQL	8fxf7pqvdd5t	2487610231	HELI	2	11,1 ms	0	0B	128	13-Touko -2017 14:1...	13-Touko -2017 14:1...	SELECT CONSTR
✓	14,3 ms	SQL	8fxf7pqvdd5t	2487610231	HELI	2	11,1 ms	0	0B	138	13-Touko -2017 14:1...	13-Touko -2017 14:1...	SELECT CONSTR
✓	31,2 ms	SQL	8fxf7pqvdd5t	2487610231	HELI	2	28,3 ms	0	0B	158	13-Touko -2017 14:1...	13-Touko -2017 14:1...	SELECT CONSTR
✓	561,7 ms	SQL	8fxf7pqvdd5t	2487610231	HELI	2	371,4 ms	2	16,4KB	1,4K	13-Touko -2017 14:1...	13-Touko -2017 14:1...	SELECT CONSTR

4.2: Reset Password



A dialog box titled 'Enter New Password' with a close button (X) in the top right corner. It contains four text input fields: 'Username:' with the value 'Heli', 'Current Password', 'New Password', and 'Confirm Password'. At the bottom, there are three buttons: 'Ohje', 'OK', and 'Peruuta'.

Feedback?

- * THAT Jeff Smith says HI to everybody!



- * Any feedback about SQL Developer, please let him know:
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THANK YOU!

QUESTIONS?

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