Workshop 2 - Introduction to SQL Developer and Oracle Data Modeler

1. Introduction to SQL Developer

Oracle SQL Developer is a graphical version of SQL*Plus that gives database developers a convenient way to perform basic tasks. You can browse, create, edit, and delete (drop) database objects; run SQL statements and scripts; edit and debug PL/SQL code; manipulate and export (unload) data; and view and create reports.

You can connect to any target Oracle database schema using standard Oracle database authentication. Once connected, you can perform operations on objects in the database. SQL Developer supports Oracle Database 10g, 11g, and 12*c* and will run on any operating system that supports Java

You can connect to schemas for selected third-party (non-Oracle) databases, such as MySQL, Microsoft SQL Server, Sybase Adaptive Server, Microsoft Access, and IBM DB2, and view metadata and data in these databases; and you can migrate third-party databases to Oracle

For the Developer

SQL Developer provides powerful editors for working with SQL, PL/SQL, Stored Java Procedures, and XML. Run queries, generate execution plans, export data to the desired format (XML, Excel, HTML, PDF, etc.), execute, debug, test, and document your database programs, and much more with SQL Developer.

For the Application Architect & Data Modeler

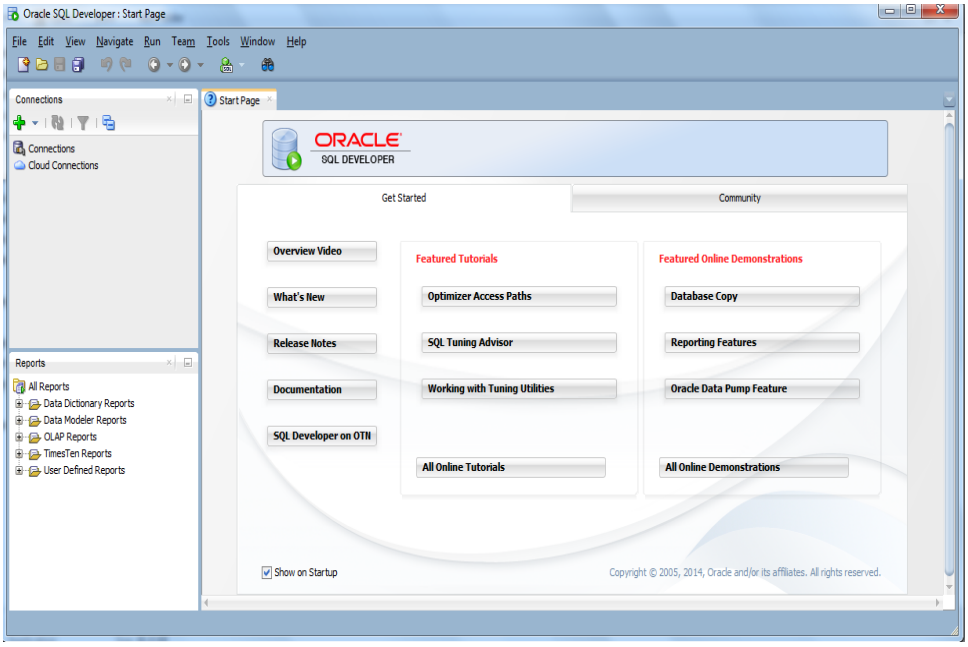
Oracle SQL Developer includes a complete data modeling solution with Oracle SQL Developer Data Modeler (SDDM) running inside the application (also available as a standalone and free installation.) SDDM supports:

- ✓ Logical, relational, physical, dimensional modeling
- ✓ Data Flow Diagrams
- ✓ DDL scripting
- ✓ Importing from data dictionaries, DDL scripts, Oracle Designer Repositories, and ERwin
- ✓ a Reporting Repository
- ✓ Versioning of your designs via Subversion
- ✓ Comparing models with generation of ALTER scripts
- ✓ a powerful search and reporting utility

Open the SQL Developer

From **Start** ------->**Databases**------->**sqldeveloper** **(click on sqldeveloper)**

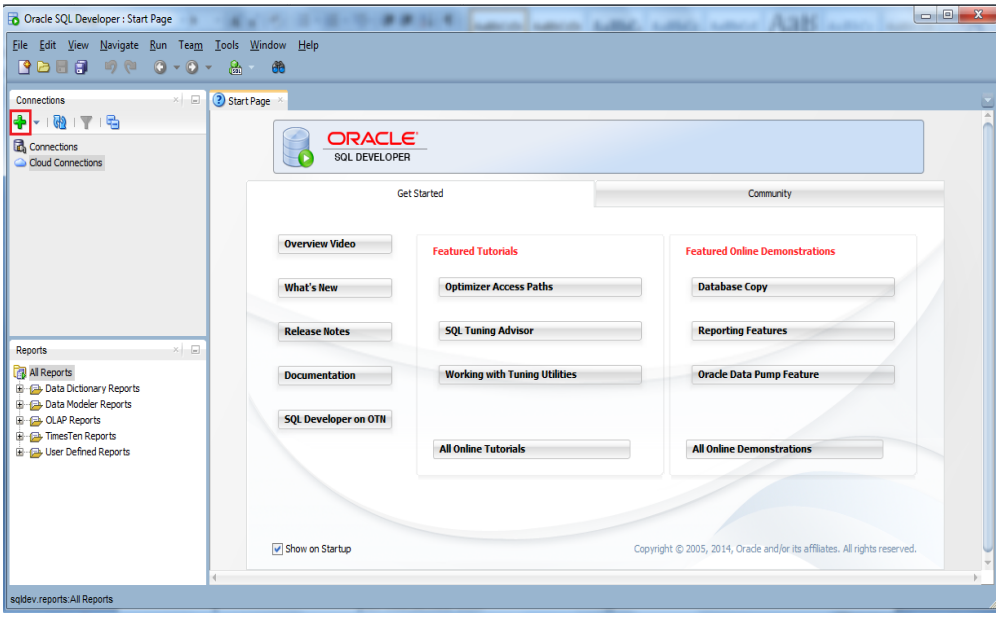
You will see following startup screen after opening the SQL Developer



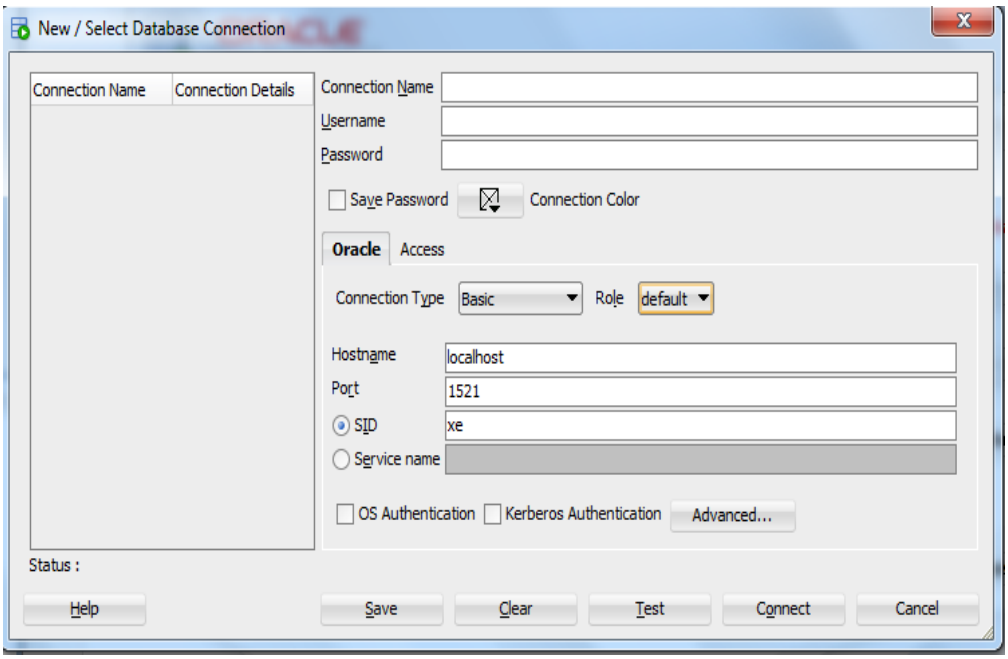
How to make a new database connection

A **connection** is a SQL Developer object that specifies the necessary information for connecting to a specific database as a specific user of that database. You must have at least one database connection (existing, created, or imported) to use SQL Developer.

Click on plus green button to create a New connection



You will see following screen



Enter following information

Connection Name: *(Londonmet)*

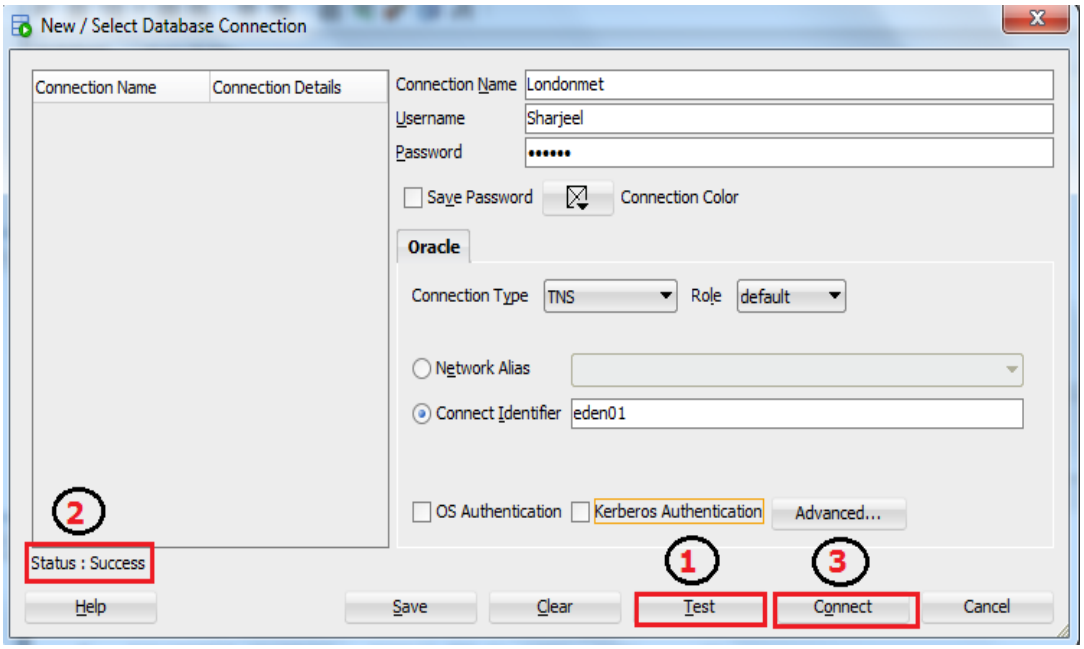
Username : *(enter your username)*

Connection Type : *(TNS)* *-----select from given options*

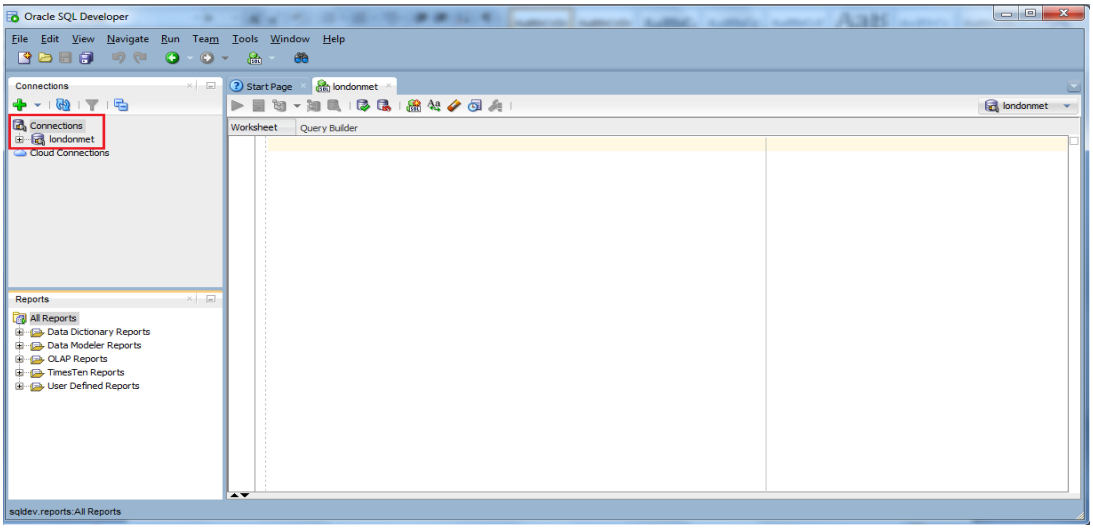
Connect Identifier: *eden01*

and first click on **test** to test the connection. You will see **Status : Success** in left bottom if all credentials are correct then click on **connect** to connect with database

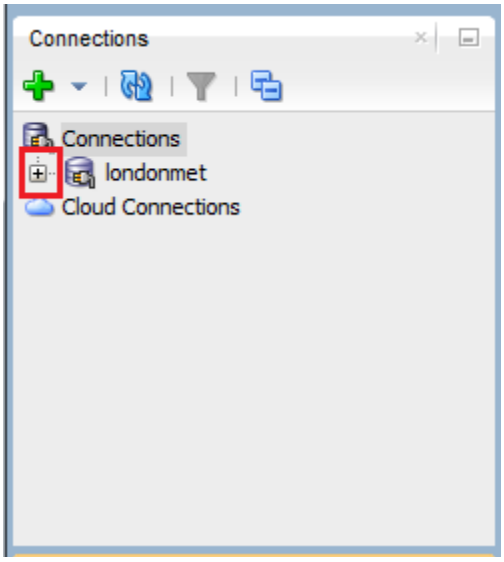
Reminder: You have to enter **your** username and password



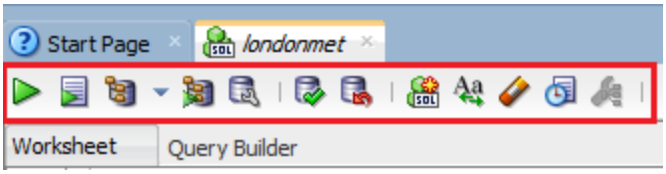
You will see following screen after successful connection



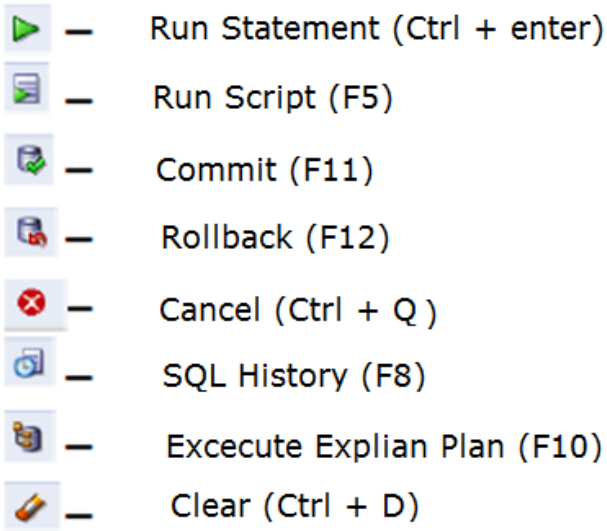
Click on plus sign to expand the Londonmet connection (name, you choose during creating a new connection)



SQL toolbar

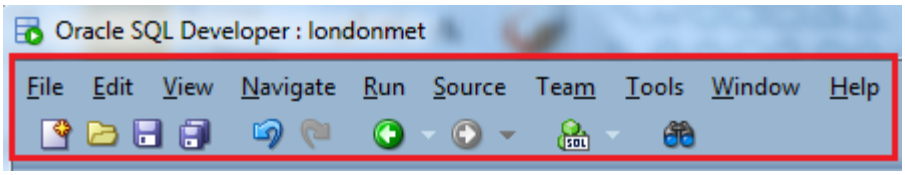


Short keys



SQL developer menus

This explains menu items that are specific to SQL Developer. We are not explaining all.



You can use **shortcut keys** to access menus and menu items: for example:

Alt+F for the File menu

Alt+E for the Edit menu

Alt+H for Help

Edit menu

Extended Paste: Displays the Paste dialog box, in which you select a clipboard item (from potentially many) to be pasted into the current location.

Duplicate Selection: When you have selected text while editing a function or procedure, creates a copy of the selected text at the current location.

Paste Special: When you have selected text while editing a function or procedure, wraps the selected text.

View menu

Contains options that affect what is displayed in the SQL Developer interface.

Data Modeler: Lets you display the Browser and Thumbnail Diagram panes of the Data Modeler(built-in designer tool) in SQL Developer

Breakpoints: Displays the Breakpoints pane, which shows breakpoints, both system-defined and user-defined

Components: Displays the Component Palette: Configure Component Palette dialog box.

Debugger: Displays panes related to debugging

Connections: Displays the Connections navigator.

DBA: Displays the DBA navigator

Data Miner: Lets you display the Data Miner Navigator, Workflow Jobs, Workflow Property Inspector, and Component Palette.

DBMS Output: Displays the output of DBMS_OUTPUT package statements

Files: Displays the Files navigator, which is marked by a folder icon. You can use the Files navigator to browse, open, edit, and save files that are accessible from the local system.

Find DB Object: Displays the Find Database Object pane

Map View: Displays the Map View pane

Recent Objects: Displays a pane with names of recently opened objects. You can click a name in the list to go to its editing window.

Reports: Displays the Reports navigator

SQL History: Displays information about SQL statements that you have executed. You can select statements and append them to or overwrite statements on the worksheet

Tools menu

Data Modeler: Starts the Data Modeler in SQL Developer if it not already active; otherwise, contains the commands **About Data Modeler**, **Design Rules**, and **General Options** (user preferences).

Migration: Displays the Migration Submenu, which contains commands related to migrating third-party databases to Oracle.

Unit Test: Displays the Unit Test Submenu, which contains commands related to unit testing.

Data Miner: Enables you to show the Data Miner navigator and drop the Data Miner repository. (For information about Data Miner, click **Help**, then **Data Mining**).

SQL Developer working area

SQL developer working area has three main parts

SQL Worksheet

You can use the SQL Worksheet to enter and execute SQL, PL/SQL, and SQL*Plus statements. You can specify any actions that can be processed by the database connection associated with the worksheet, such as creating a table, inserting data, creating and editing a trigger, selecting data from a table, and saving that data to a file.

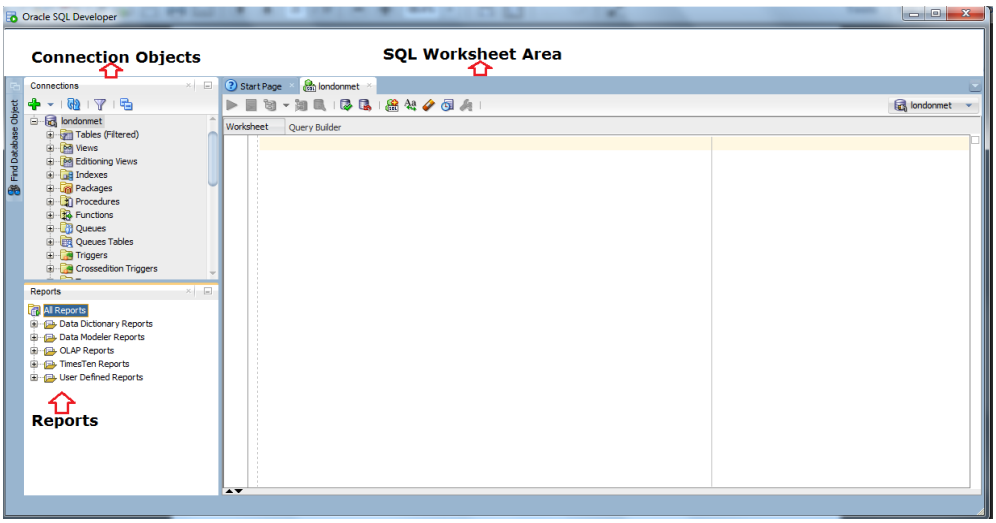
Connection Objects

You can use to create new database connections and can get access to database objects

Reports:

SQL Developer provides many reports about the database and its objects. You can also create your own user-defined reports. If this tab is not visible, select **View** and then **Reports**

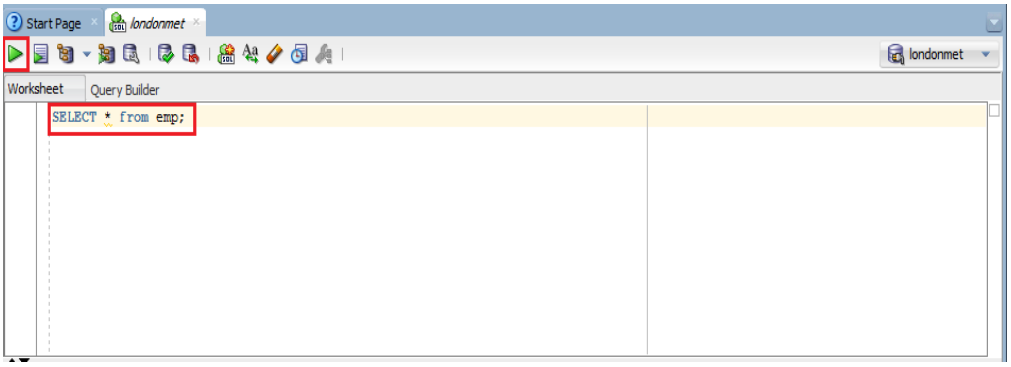
Three main parts of SQL developer GUI



SQL Worksheet

How to run query

Type SQL query and click on **Run Statement** button to execute the query



Statement execution results

You will see executed query result

Query Result

SQL | All Rows Fetched: 14 in 0.019 seconds

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7369	SMITH	CLERK	7902	17-DEC-80	800	(null)	20
2	7499	ALLEN	SALESMAN	7698	20-FEB-81	1600	300	30
3	7521	WARD	SALESMAN	7698	22-FEB-81	1250	500	30
4	7566	JONES	MANAGER	7839	02-APR-81	2975	(null)	20
5	7654	MARTIN	SALESMAN	7698	28-SEP-81	1250	1400	30
6	7698	BLAKE	MANAGER	7839	01-MAY-81	2850	(null)	30
7	7782	CLARK	MANAGER	7839	09-JUN-81	2450	(null)	10
8	7788	SCOTT	ANALYST	7566	19-APR-87	3000	(null)	20
9	7839	KING	PRESIDENT	(null)	17-NOV-81	5000	(null)	10

2. Introduction to Oracle Data Modeler

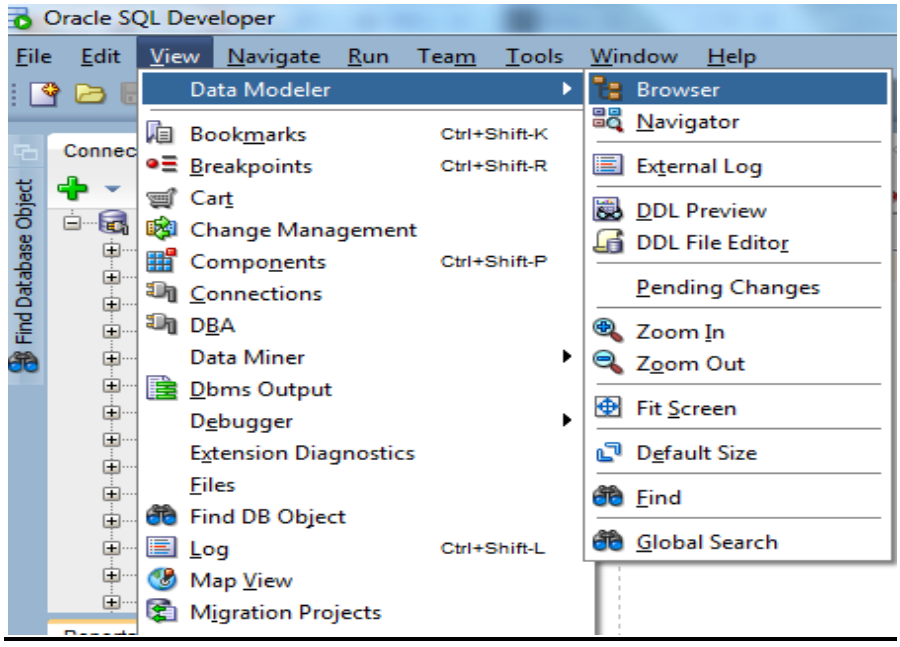
Oracle SQL Developer Data Modeler is a new, graphical data modeling tool that facilitates and enhances communication between data architects, database administrators, application developers and users, and simplifies the data modeling development process itself. Using SQL Developer Data Modeler users can create, browse and edit, logical, relational, physical, multi-dimensional, and data type models. The generation of DDL scripts improves productivity and promotes the use of standards.

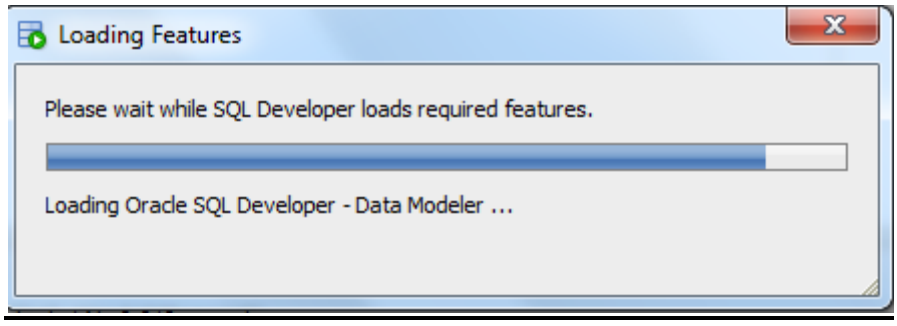
How to open Oracle SQL Developer Data Modeler

Oracle SQL Developer Data Modeler is a standalone solution that is also shipped in SQL Developer as an extension. The user interface of the Modeler is folded into SQL Developer.

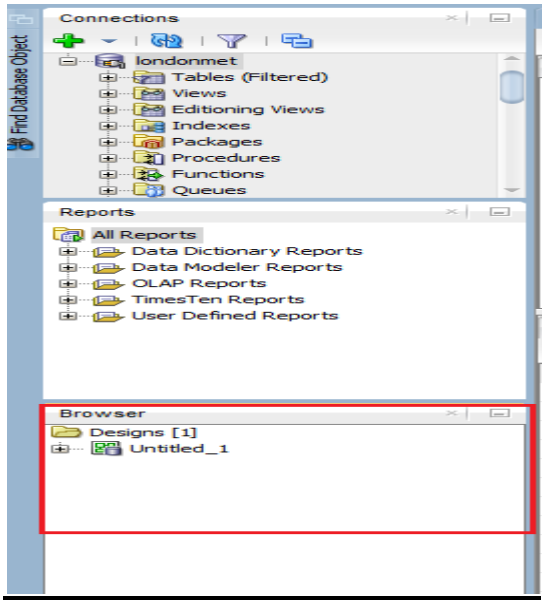
Open or activate the Modeler inside of SQL Developer

1. Go to the View menu
2. Expand the Data Modeler menu
3. Select the 'Browser'

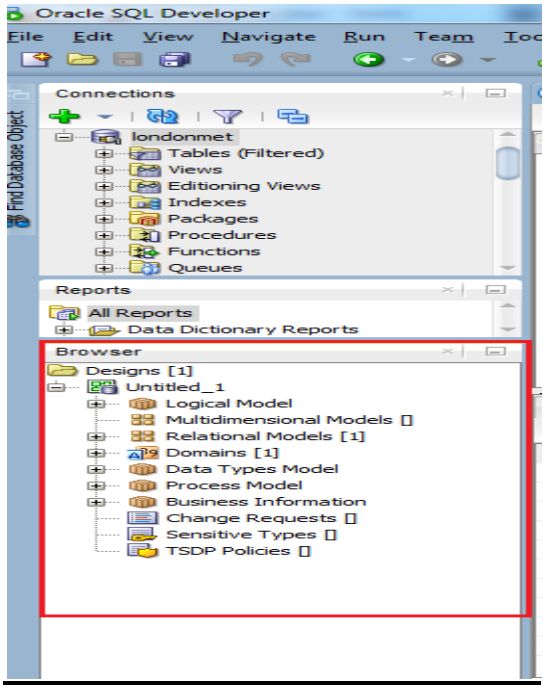




Now , a Browser object appears on the bottom left corner ,expand Untitled_1



You will now see expanded screen as follow



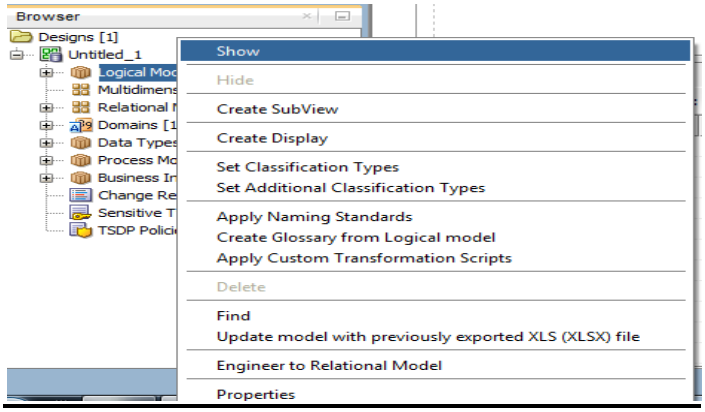
Next we will look at following menu options available at newly created design **Untitled_1**

a) Logical Models
b) Relational Model
c) Process Model

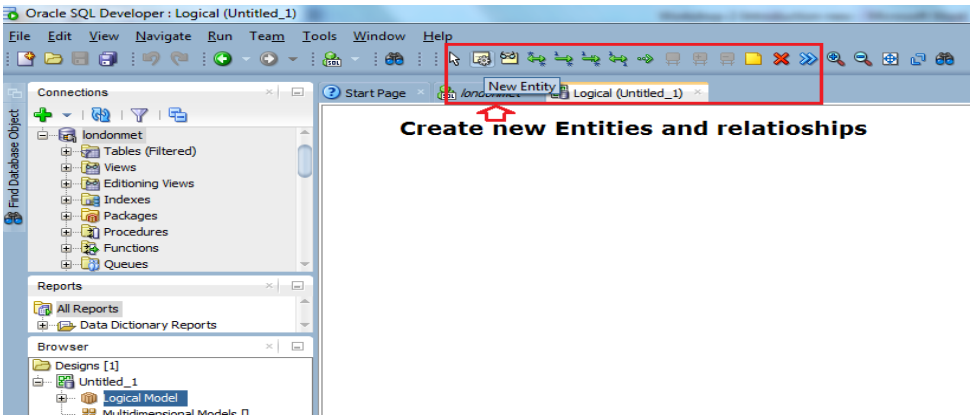
a) Logical Models

The logical model in SQL Developer Data Modeler includes standard logical modeling facilities, such as drawing entities, attributes and relationships, plus the following key features:

Right click on Logical Model and select show to enable the tool bar for creating entities

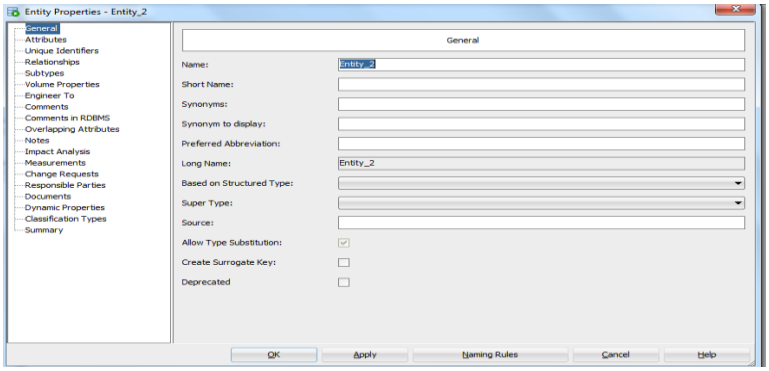


The image below illustrates a logical model selection area where can create entities ,attributes and their relationships



Create an Entity

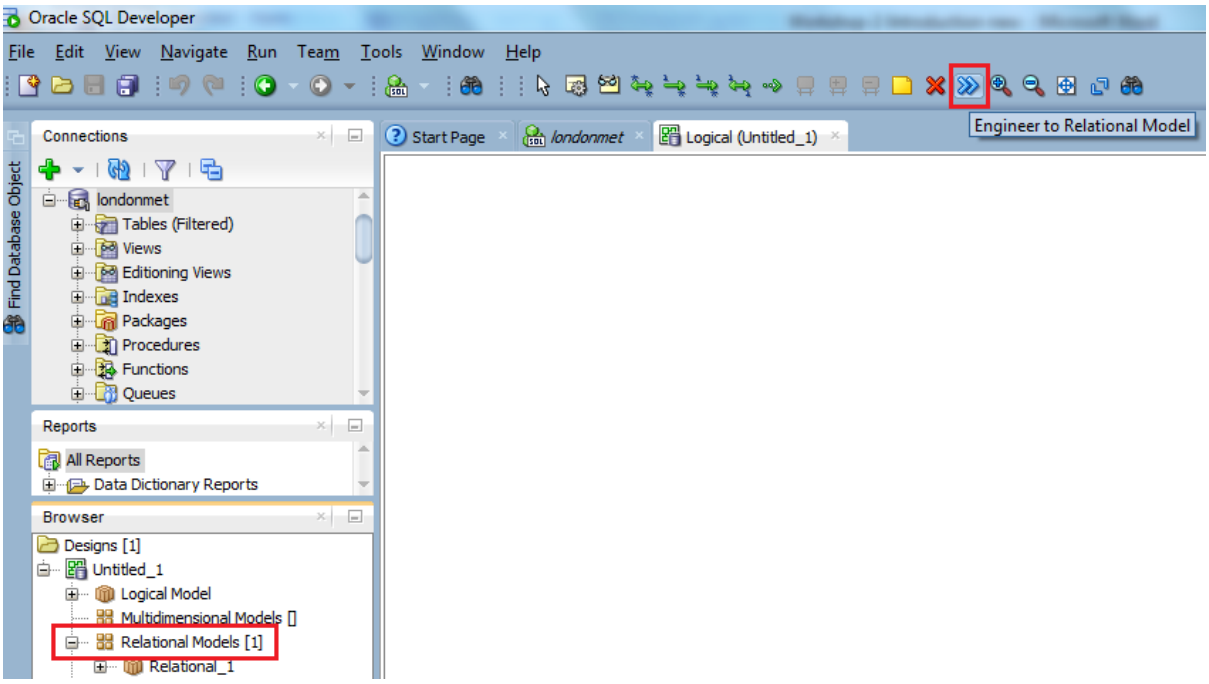
Select a new entity icon  then click on main working area to create an Entity.(we will discuss this in detail using case study later)



b) Relational Model

The SQL Developer Data Modeler relational model is an intermediate model between the logical model and the physical models. It supports relational design decisions independent of the constraints of the target physical platform(s). All many-to-many relationships and all supertype/sub-types entity hierarchies are resolved during forward engineering (transformation) of the logical model, or part of it, to a relational model

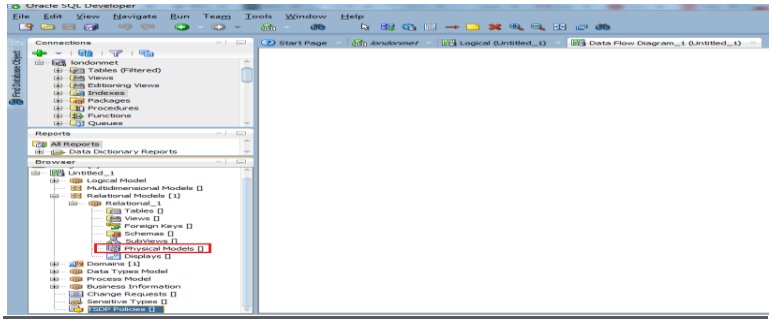
SQL Developer Data Modeler supports most Oracle physical objects. It exposes many elements of an object's structure and definition (for example, partitions and subpartitions) in the object browser. Users can access these through the property dialogs invoked directly from the browser without having to open intermediate dialogs. SQL Developer Data Modeler also provides easy access to related definitions; for example, partition properties for local indexes, which are directly accessed from the dialog of the related table partition.



Physical Model

A physical model describes a database in terms of Oracle Database objects (tables, views, triggers, and so on) that are based on a relational model. Each relational model can have one or more physical models.

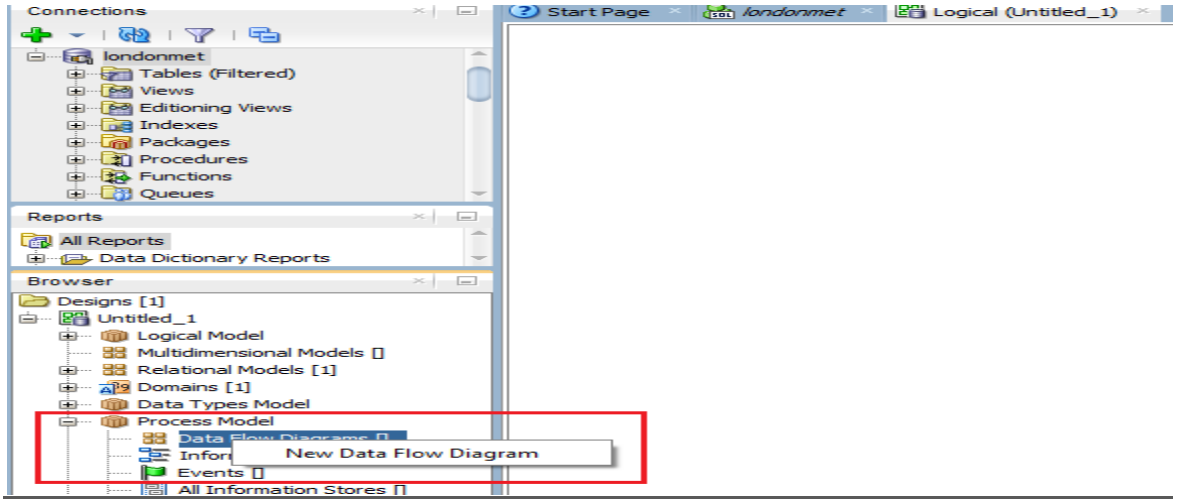
Expand Relational Models[1] and then expand Relational_[1] where you will see Physical Models [] option



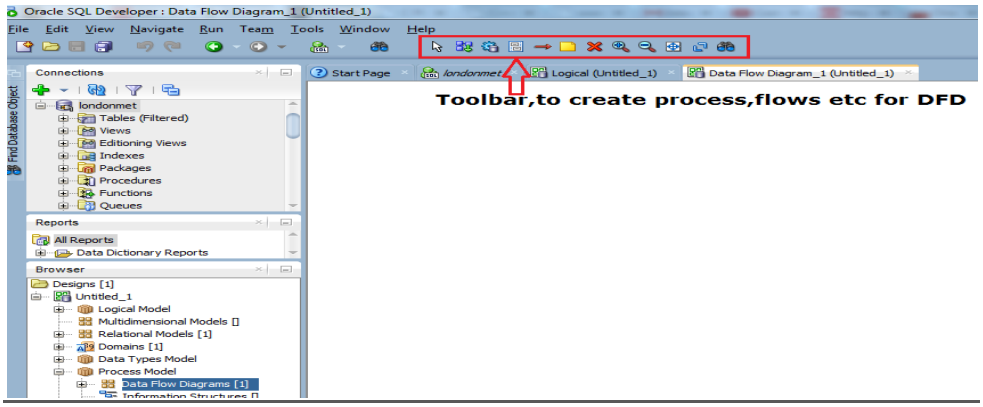
c) Process Model

The process model represents a functional area of an information structures system. The process model, embodied graphically in one or more data flow diagrams, is an analysis technique used to capture the flow of inputs through a system (or group of processes) to their resulting output. The model shows the flow of information through a system, which can be an existing system or a proposed system.

Expand the Process Model and right click on Data flow diagrams to create new DFD (we will discuss details about DFD in next workshop with case study)



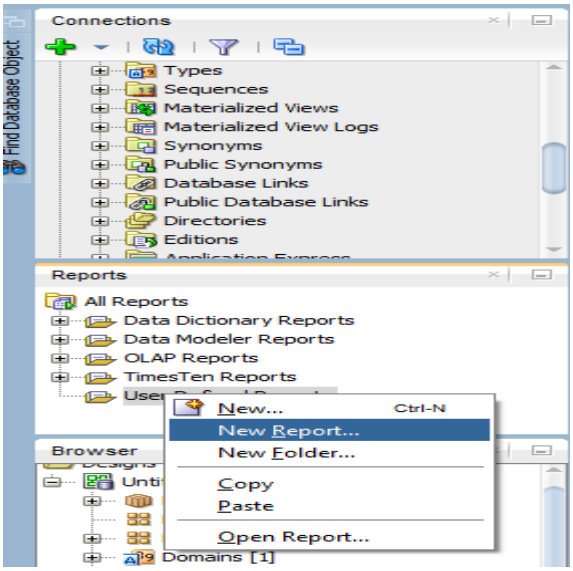
Once you have created the **New Data Flow Diagram** and here you can select and create **New processes, information stores** and **flows using the tools bar icons**



Reports

Oracle SQL Developer reports enable you to view information about (and information stored in) Oracle Database. In addition to the standard database reports offered in SQL Developer, you can create your own reports.

Right click on **User Defined Reports** and Select **New Report** under **Reports** section



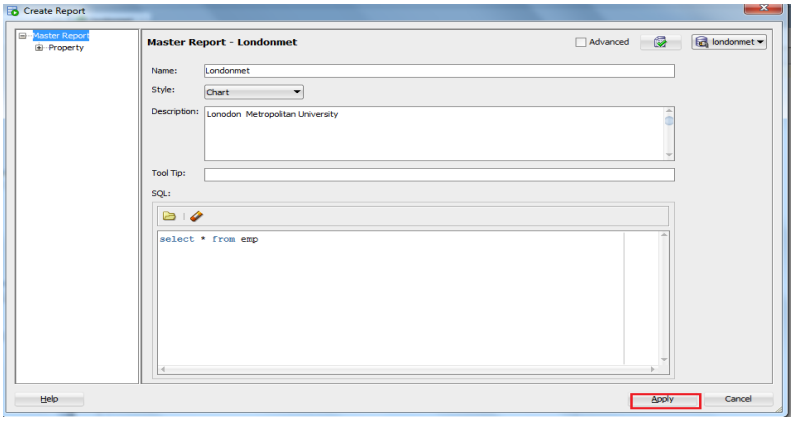
Enter following information to generate a report.

Name: Londonmet

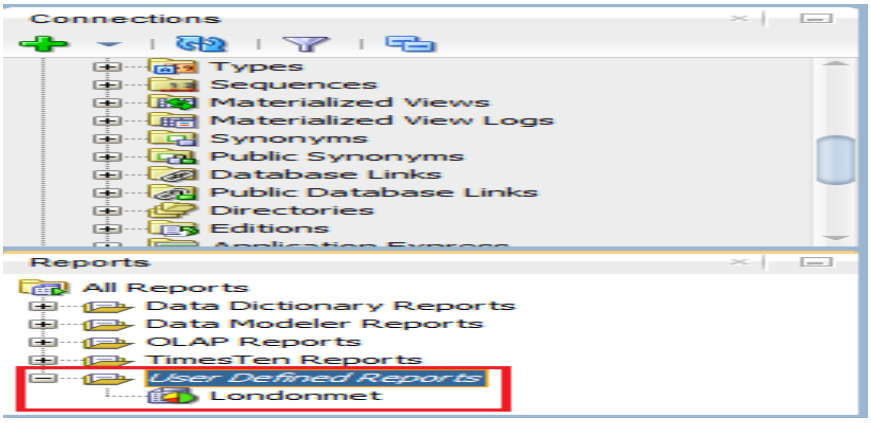
Style : Chart (select from different options)

SQL: Write a query (report will be generated based on query)

Then click **apply**



New genrated report,**Londonmet**, icon can be seen under ***User Defined Reports***



Double click on Londonmet to view a generated report