Practices for Lesson 19: Altering an Existing Design

Chapter 19

Practice 19-1: Re-Engineer the HR Schema

Task

Perform the following tasks in Oracle SQL Developer Data Modeler:

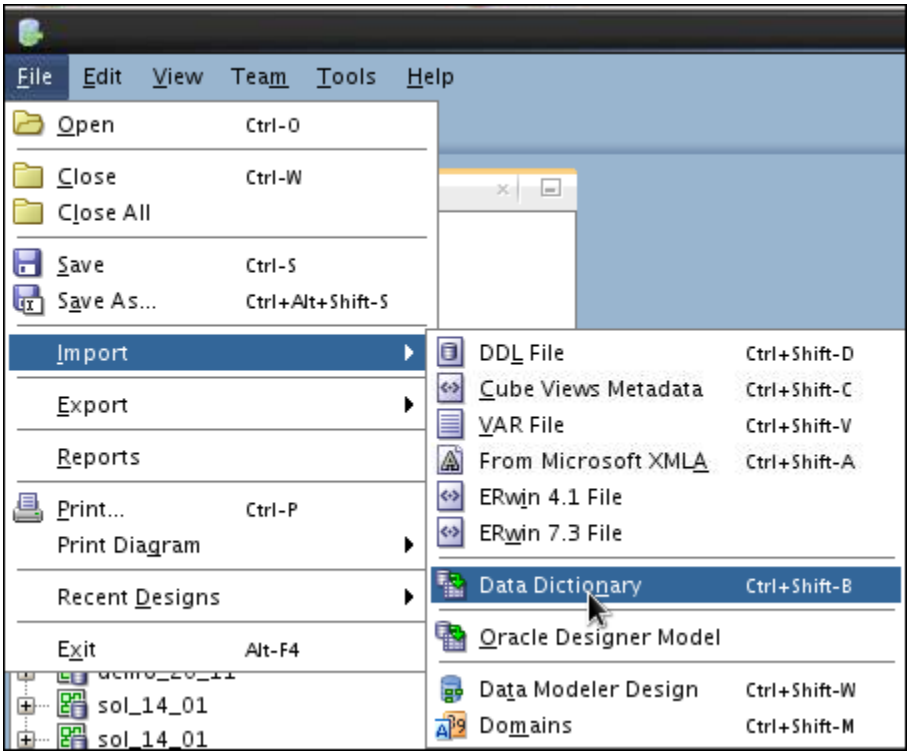
1. Import all the tables in the `hr` schema from the data dictionary.
2. Reverse engineer to create a logical model.
3. Add the `DEPENDENTS` entity with the following attributes: `ID`, `Name`, and `Birthdate`. Create a relationship between `EMPLOYEES` and `DEPENDENTS`. ID is the unique identifier. You may import the `domains.xml` file from the solutions directory, and use the domains in the file as the data types for some of your new attributes.
4. Add `COST CENTER` to the `DEPARTMENTS` entity.
5. In the `EMPLOYEES` entity, move `HIRE_DATE` above the `EMAIL` attribute.
6. Create a `1:N` relationship between `EMPLOYEES` and `DEPENDENTS`.
7. Forward engineer to a new relational model.
8. Compare the relational model with what is currently in the database.
   Hint: Run the import from the data dictionary.
9. Preview the DDL. Were the correct `ALTER` statements generated?

Solution 19-1: Re-Engineer the HR Schema

The following is one possible solution to this practice.

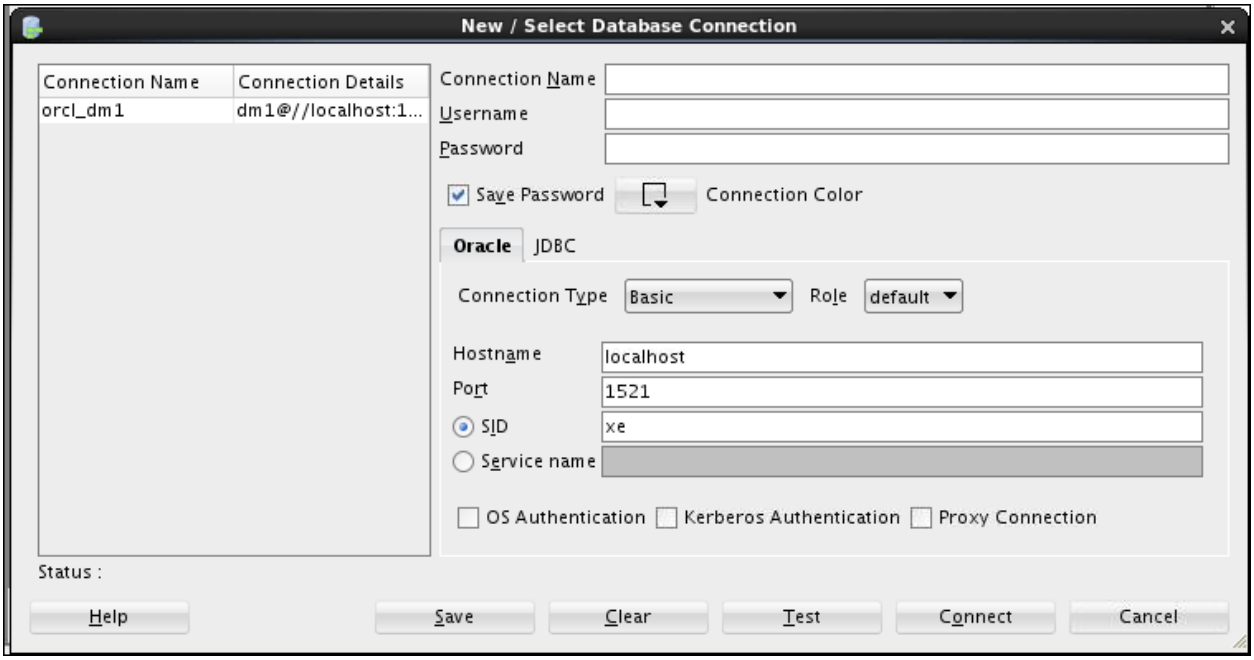
1. Close all open models.

2. Select **File > Import**, and then select **Data Dictionary**. The **Data Dictionary Import Wizard** dialog box is displayed.



Note: If you created other database connections earlier in this course, those connections (such as `orcl_dm1`, which you created in practice 10-2) will also be displayed. In this practice, you will create and use new database connections; however, if you created the `hr_orcl` database connection earlier in the course using the same properties as in the following step 4, you can use that database connection and proceed with step 5.

3. Create a database connection to your database. Click **Add**. The **New / Select Database Connection** dialog box is displayed.



4. Enter the following:

   a. **Connection Name:** `hr_orcl`

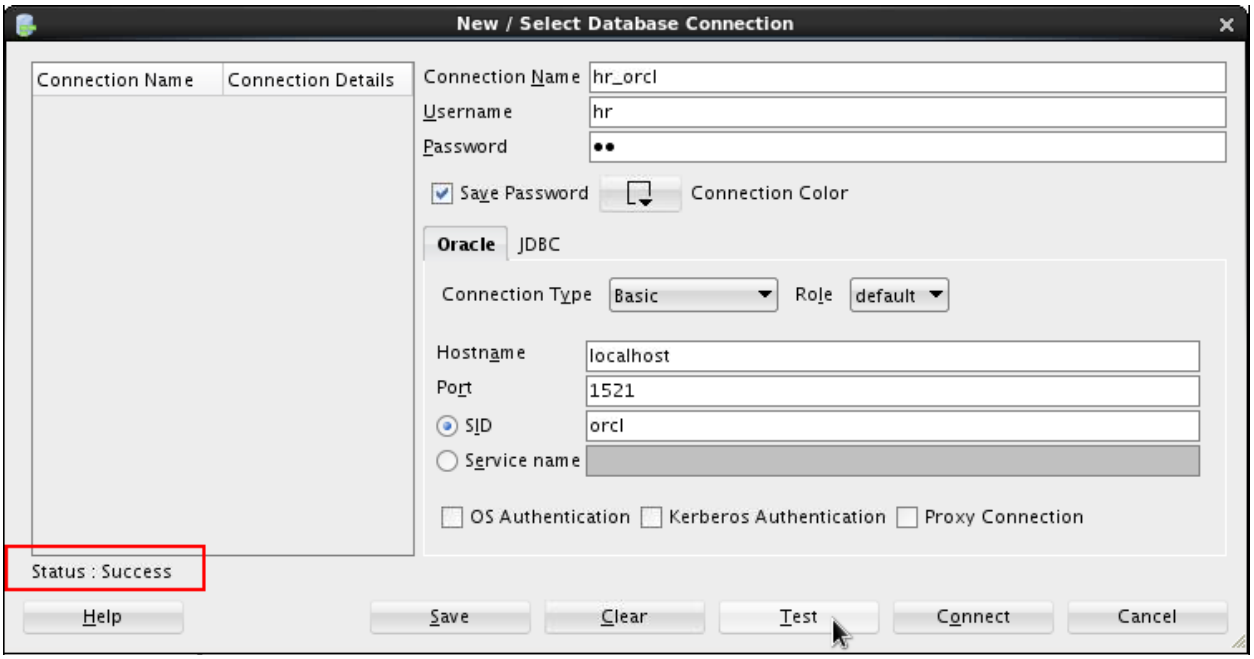
   b. **User Name:** `hr`

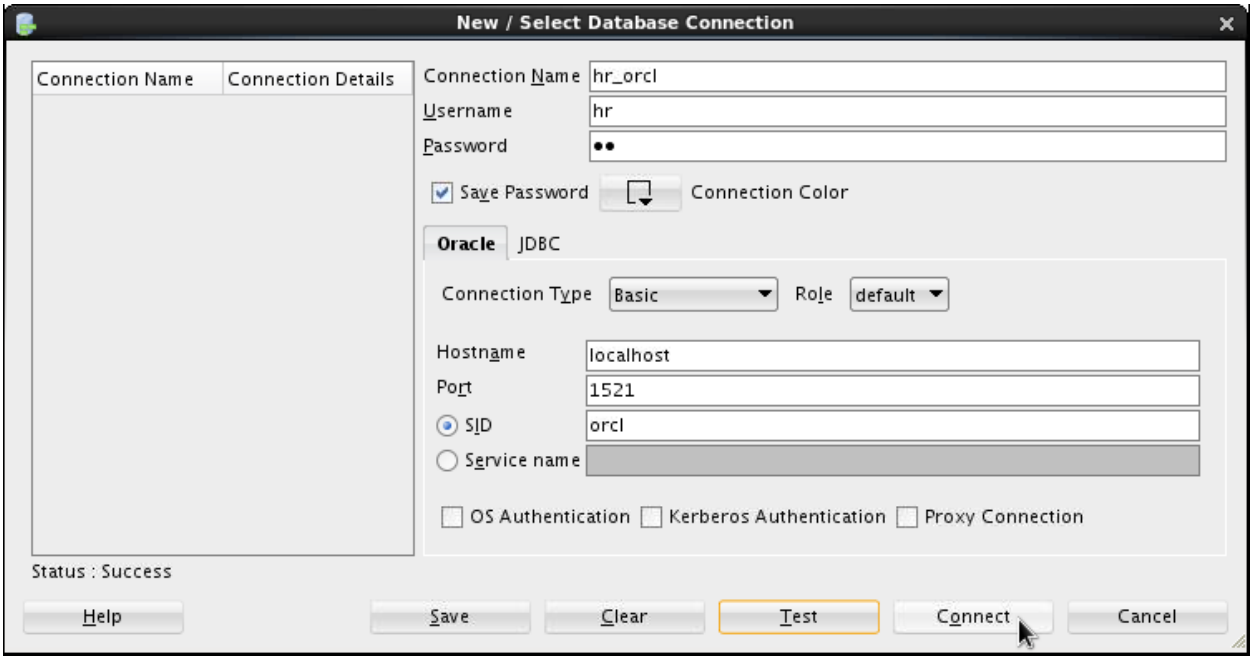
   c. **Password:** `hr`

   d. Select the **Save Password** check box.

   e. **SID:** `orcl`

5. Click **Test** to test your new connection. If the connection is valid, **Status: Success** is displayed at the bottom left corner of the dialog box. Then click **Connect** to connect to the database.

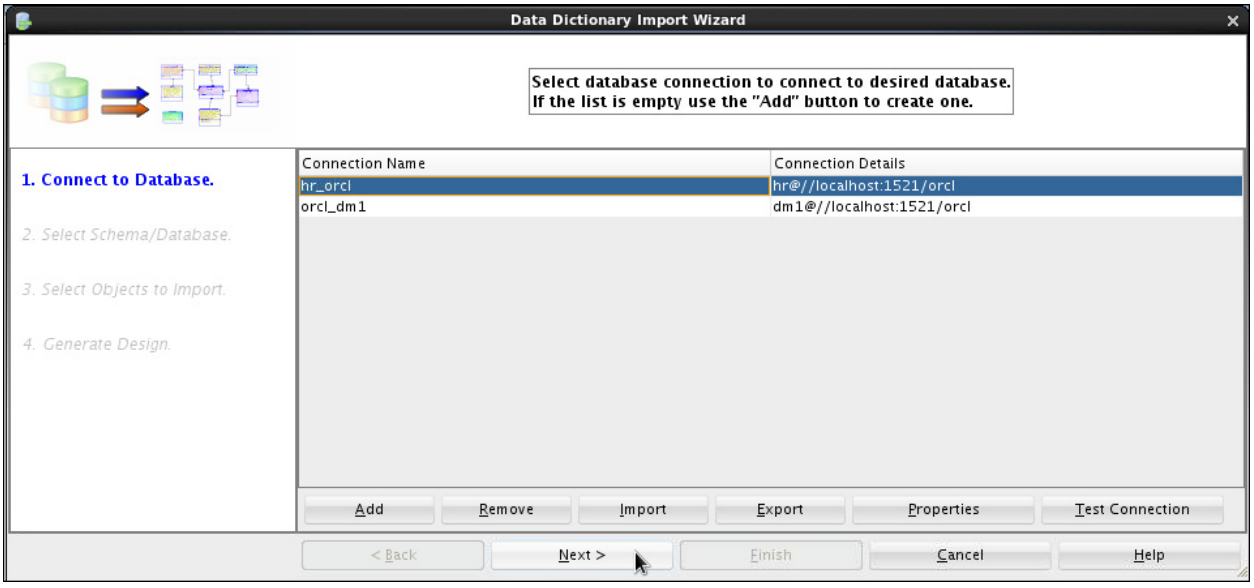




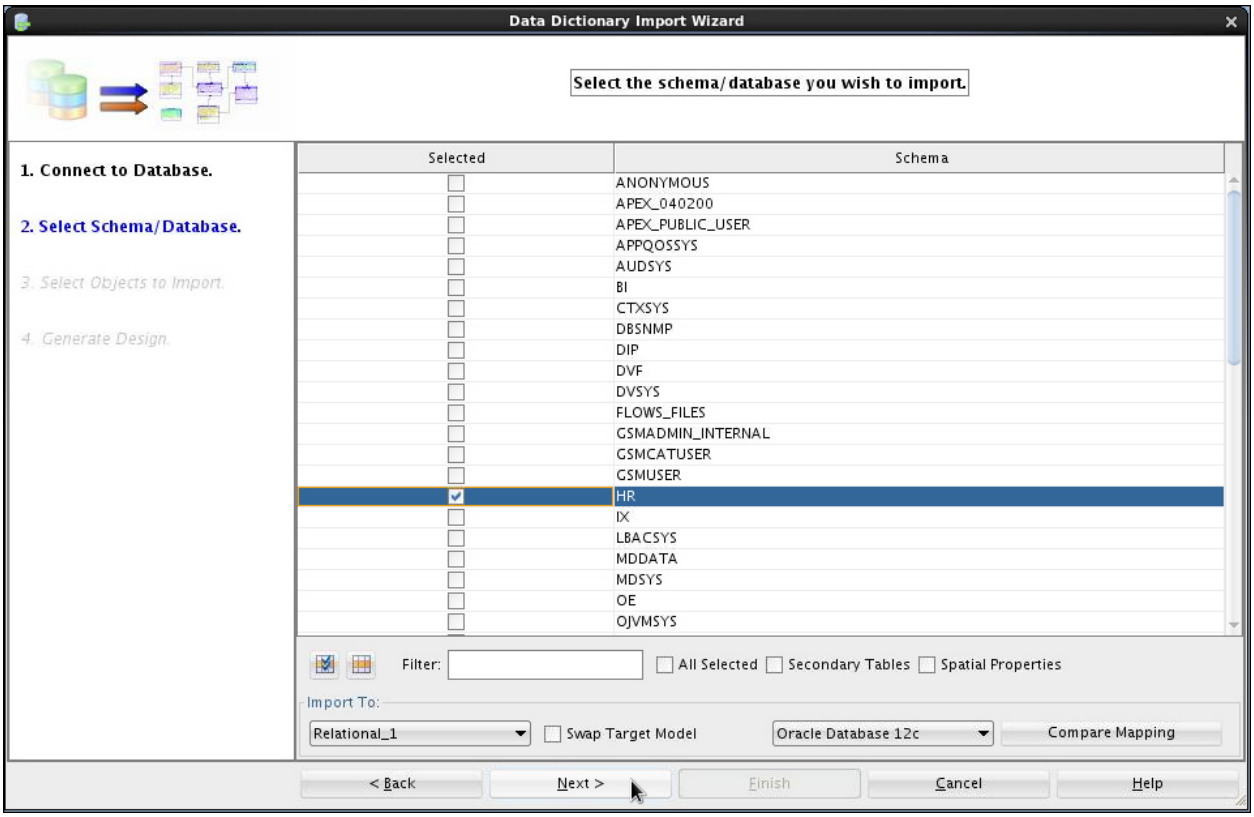
6. Select the `hr_orcl` connection that you just created, and then click **Next**.

   Note: If you select another schema that the `HR` user does not have access to, you will see no objects when you click **Next**.

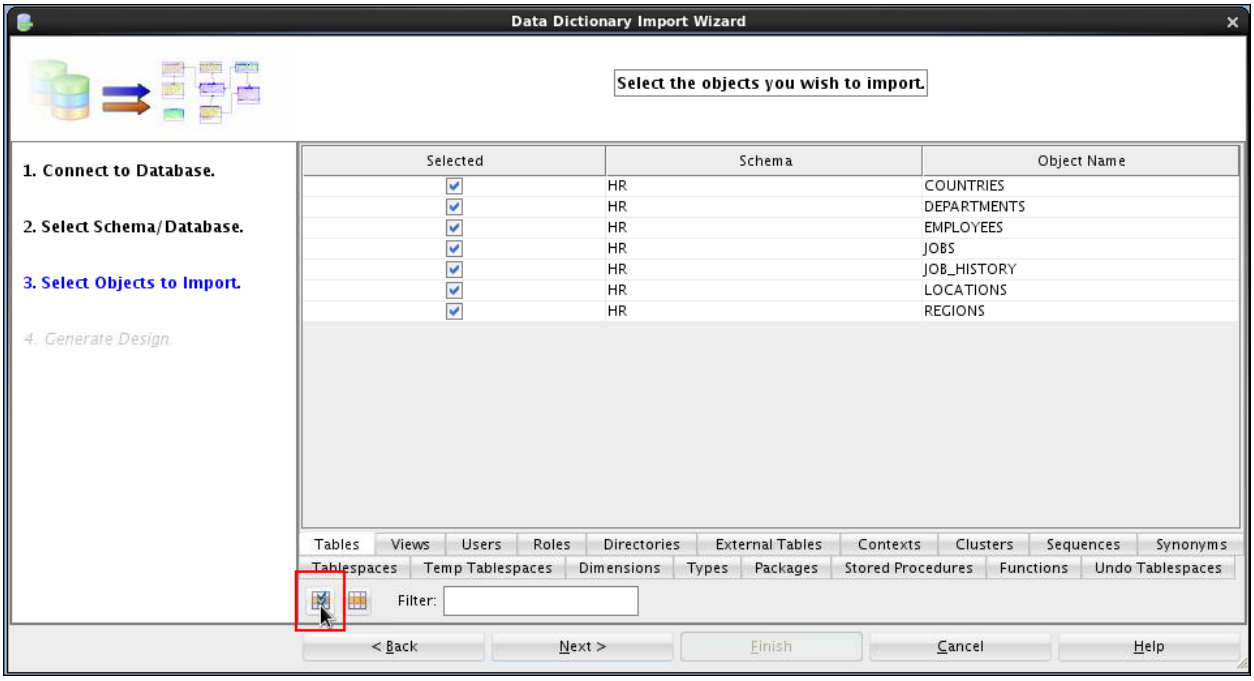
   Note: If you have completed all of the earlier practices, you might see some additional database connections displayed.



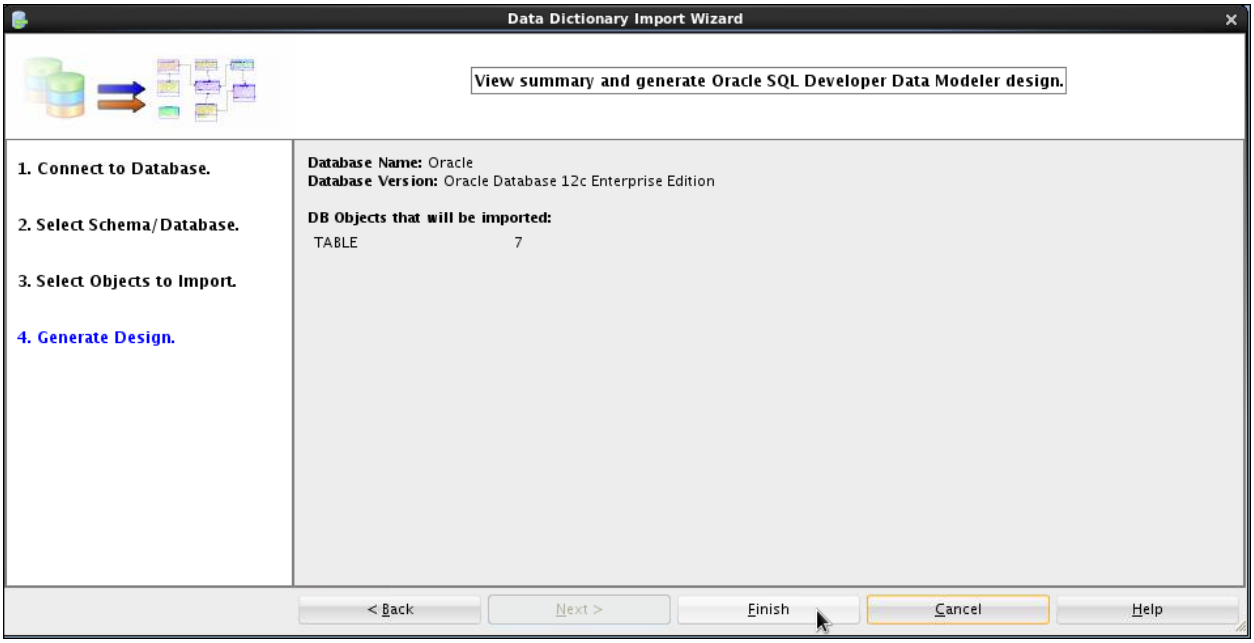
7. Select the `HR` schema from the list of available schemas and click **Next**.



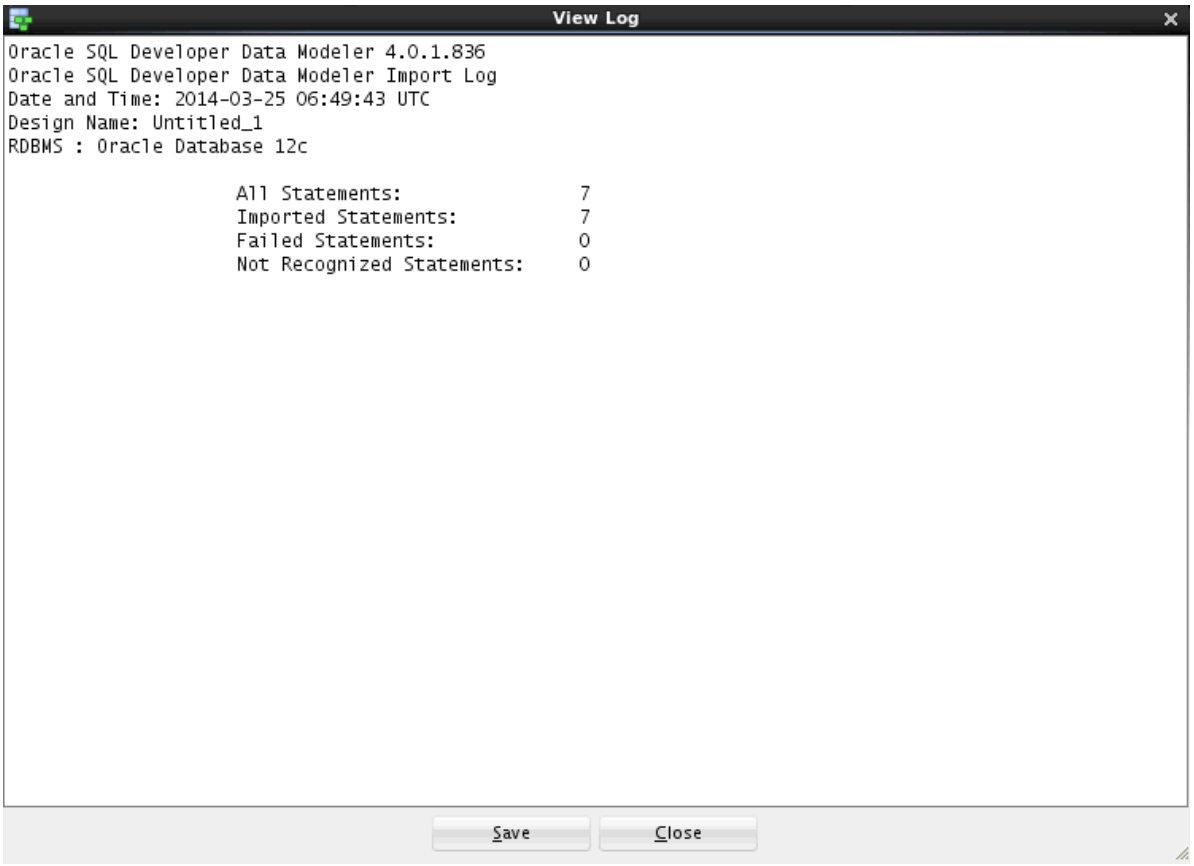
8. Click the **Select All** icon  to select all the HR tables, and then click **Next**.



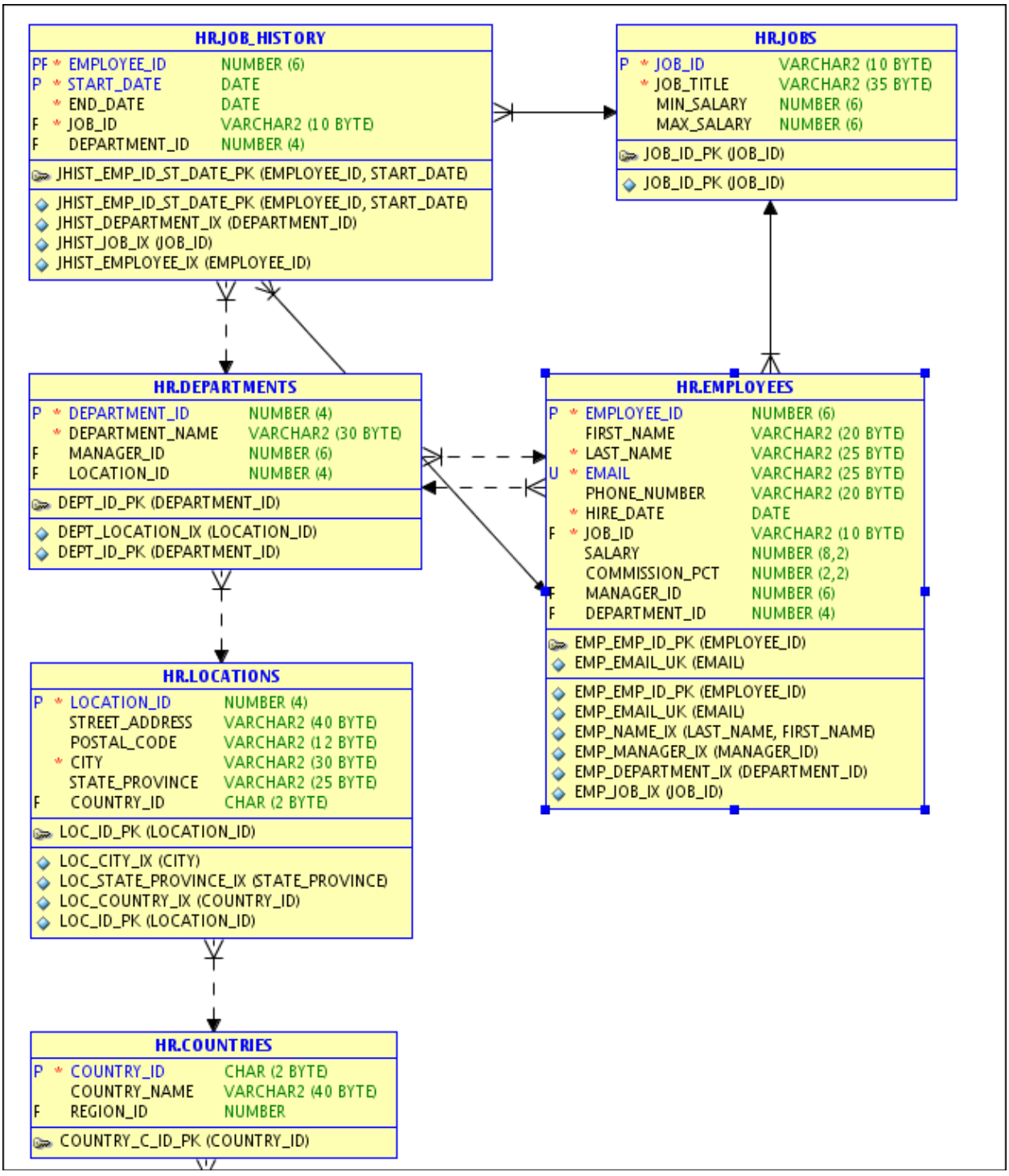
9. A summary of all the objects that will be imported is displayed. Click **Finish**.



10. Seven tables were imported successfully. Click **Close**.

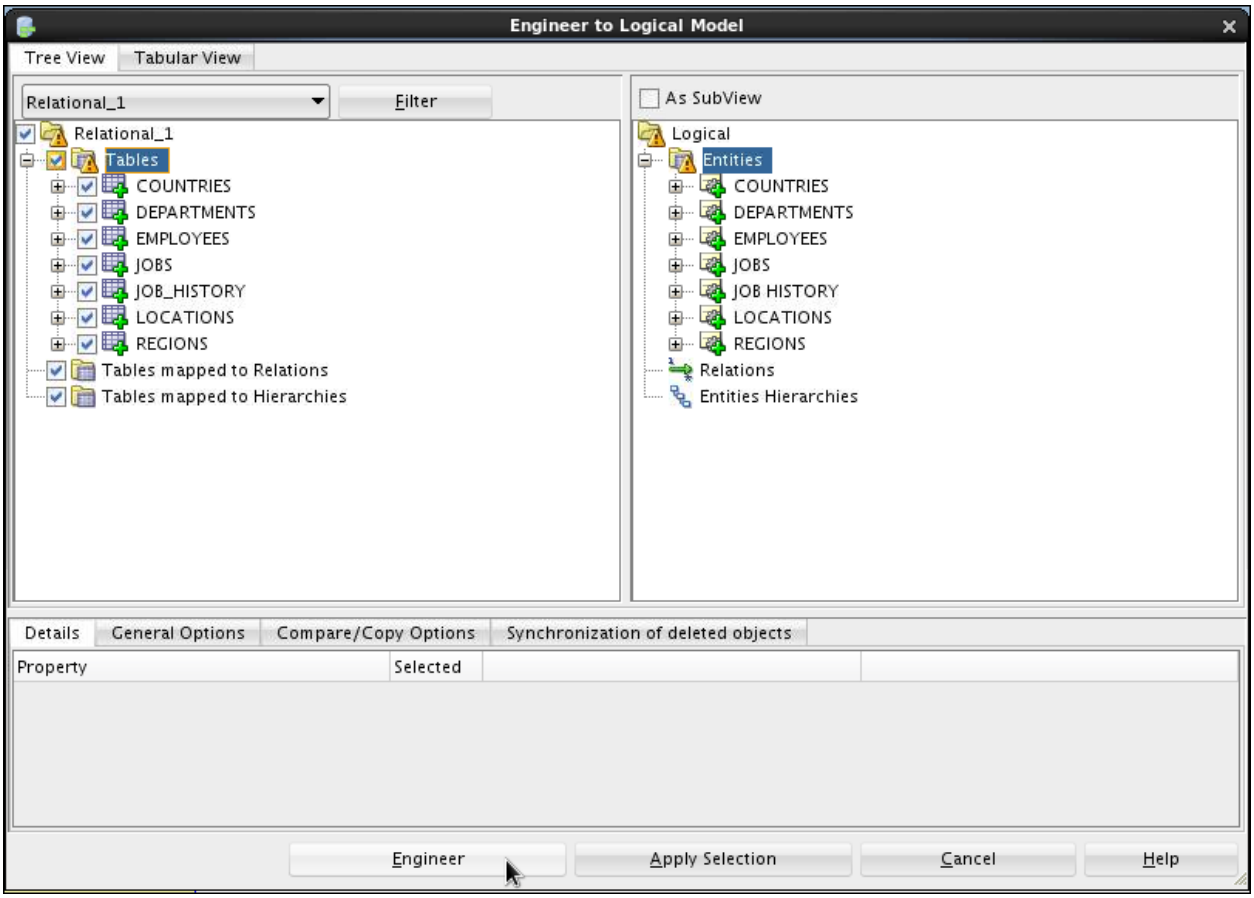


11. Your relational model is displayed. The following is a portion of the relational model.

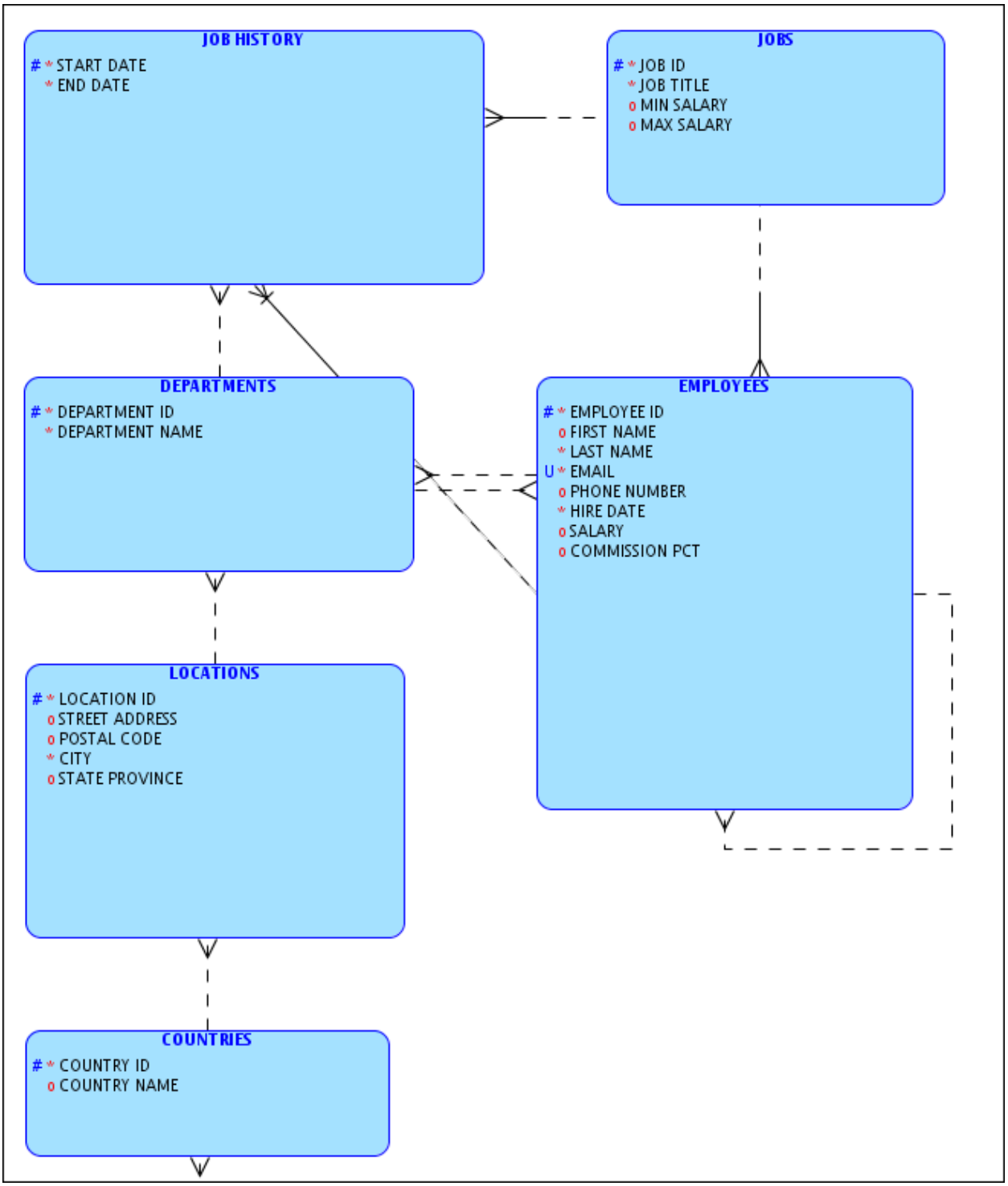


12. You can now reverse engineer to create the logical model. Click the **Engineer to Logical Model**  icon.

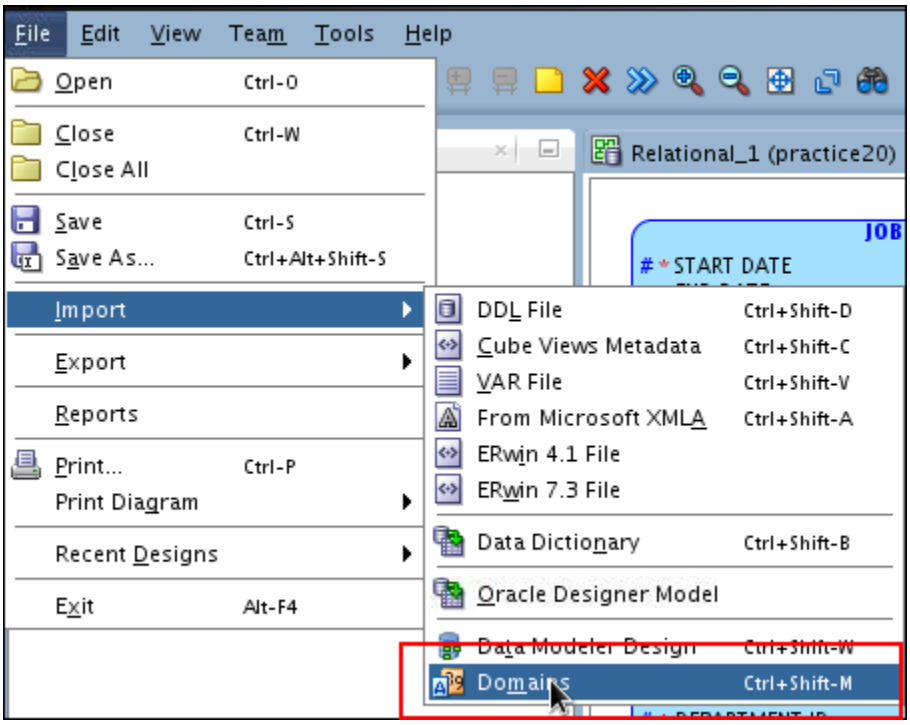
13. Expand the **Tables** node to see the mapping. Click **Engineer**.



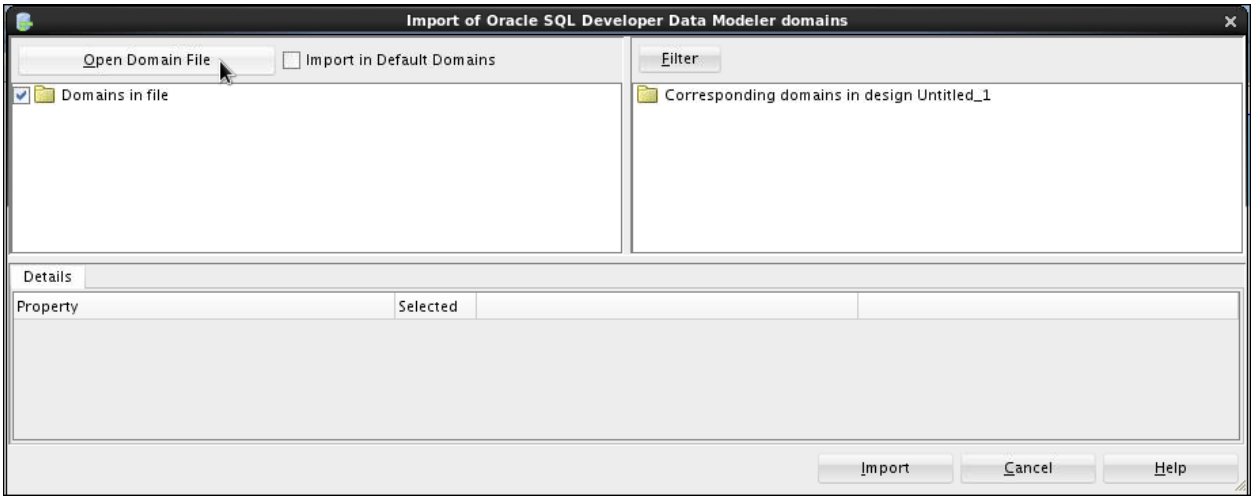
14. Your logical model is displayed. Save your design. Select **File > Save As** and then provide a name for your design such as `practice19.dmd`, and then click **Save**.



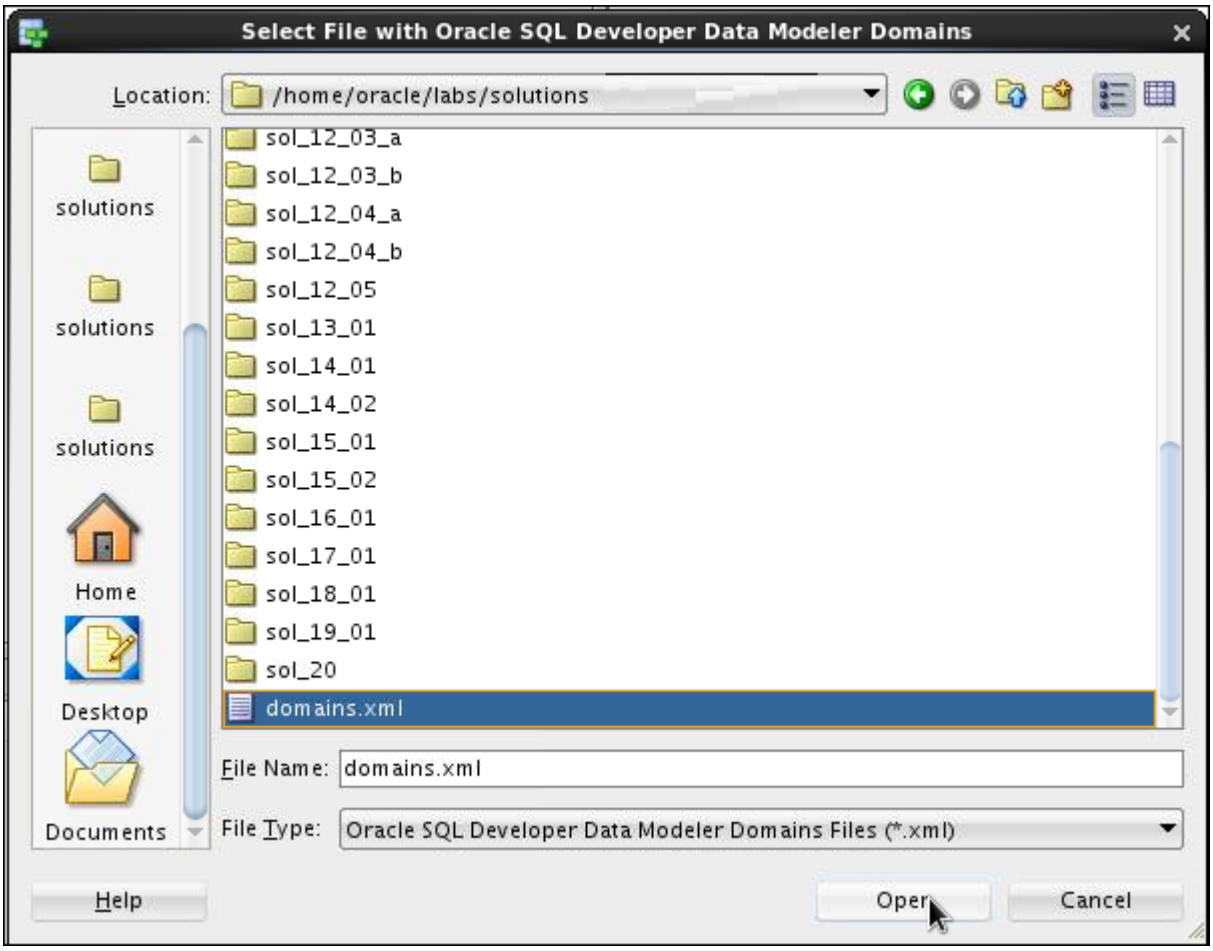
15. You want to create some attributes that use the domains contained in the `domains.xml` file in the `/home/oracle/labs/solutions` directory. You need to import this domain file. Select **File > Import > Domains**. The **Import of Oracle SQL Developer Data Modeler domains** dialog box is displayed.



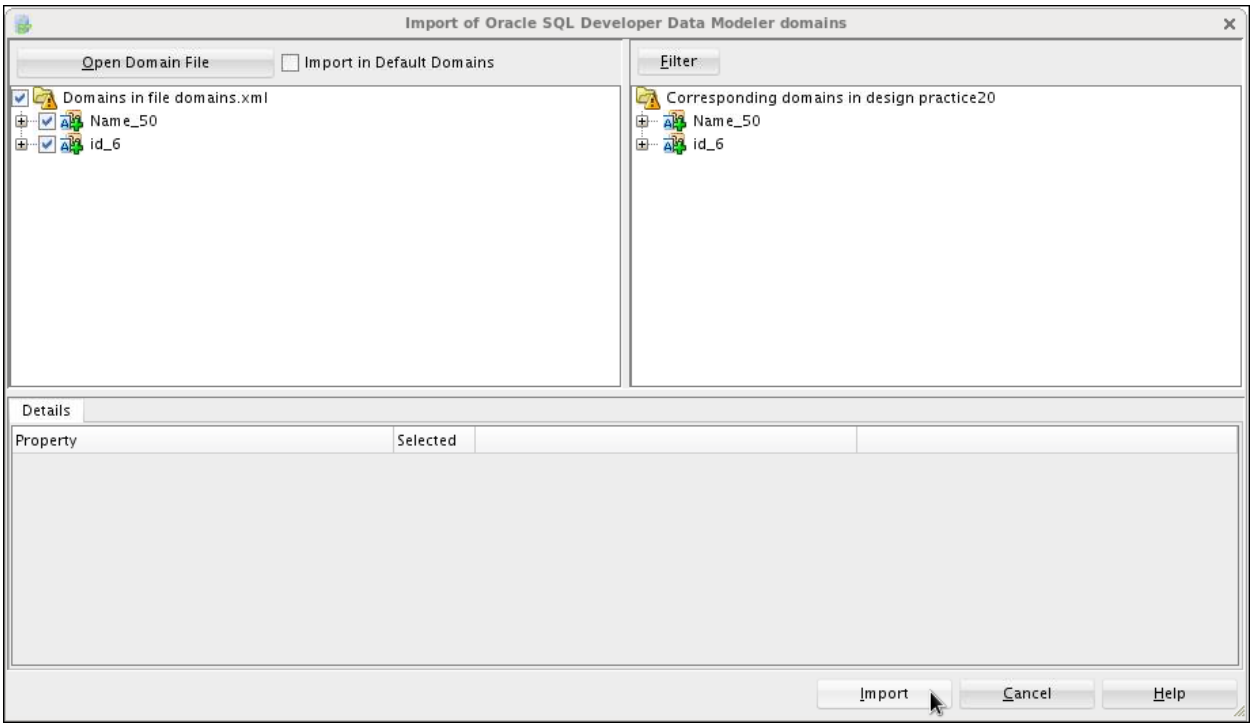
16. Click **Open Domain File**. The **Select File with Oracle SQL Developer Data Modeler Domains** dialog box is displayed.



17. Select the `domains.xml` file in the `/home/oracle/labs/solutions` directory, and then click **Open**.

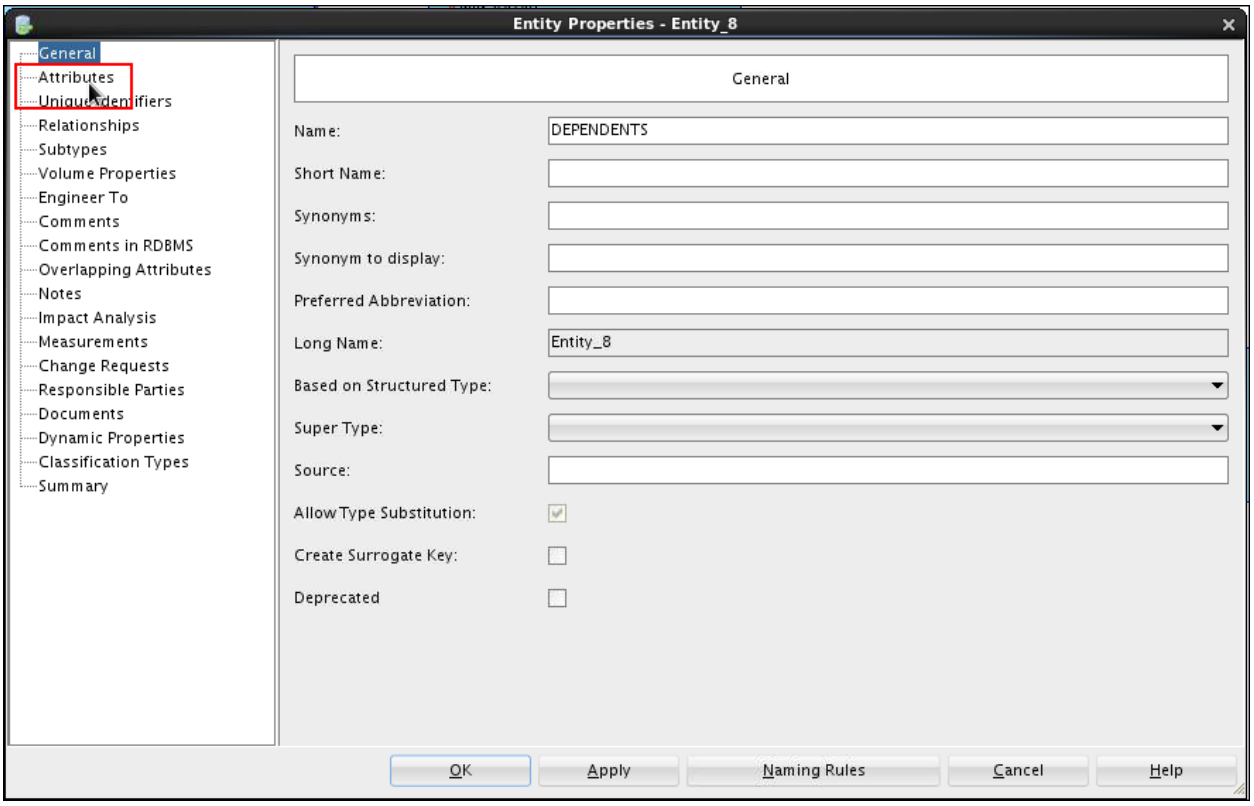


18. The list of domains in the XML file is displayed. Click **Import**.



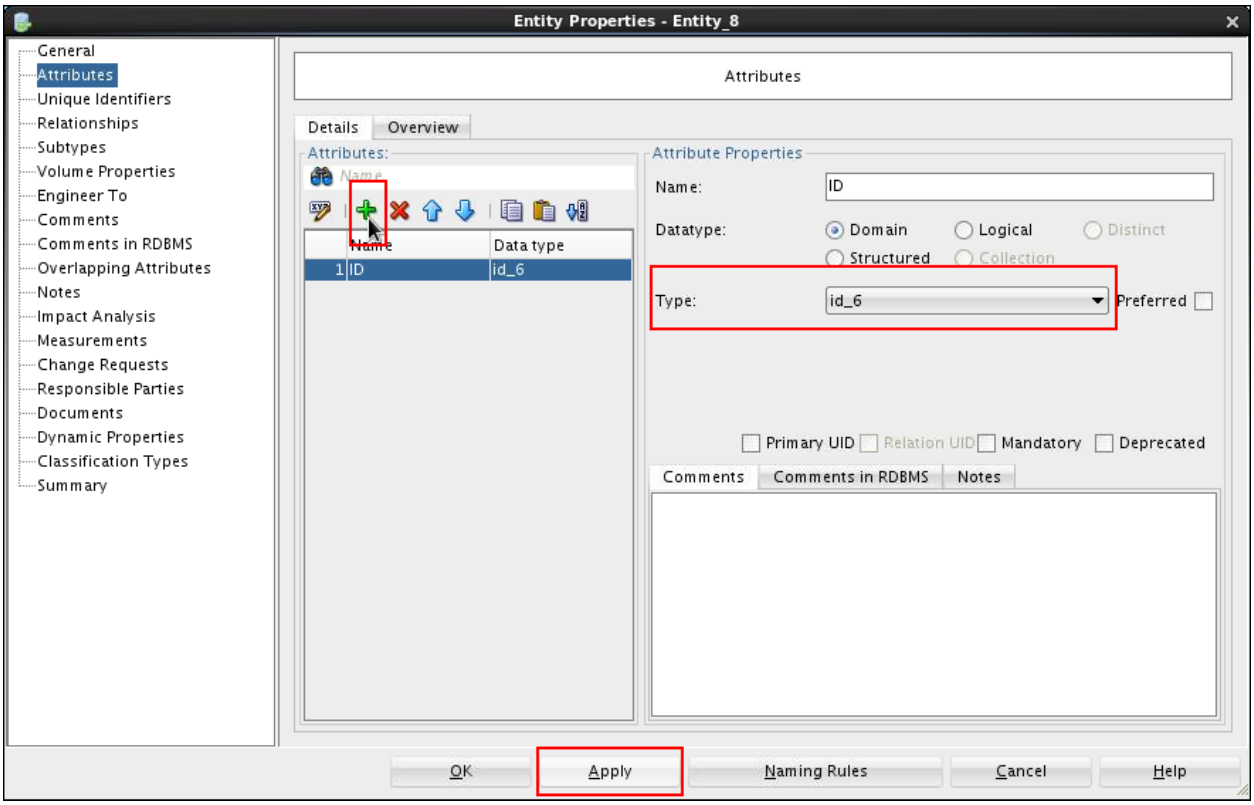
19. Now you will create a new entity. Click the **New Entity**  icon, and then click in the white space of the diagram.

20. Enter `DEPENDENTS` for the **Name**, and then select the **Attributes** property in the left navigator.

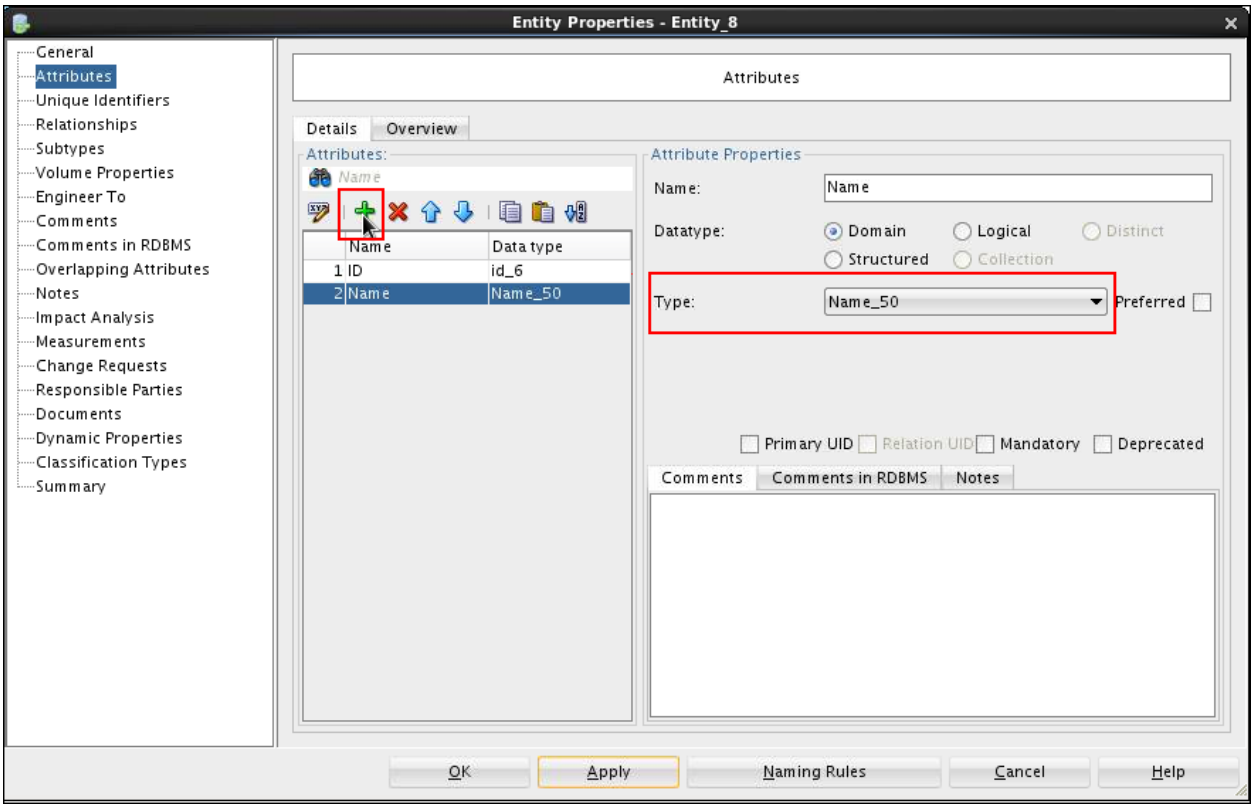


21. Click the **Add**  icon in the **Attributes** region.

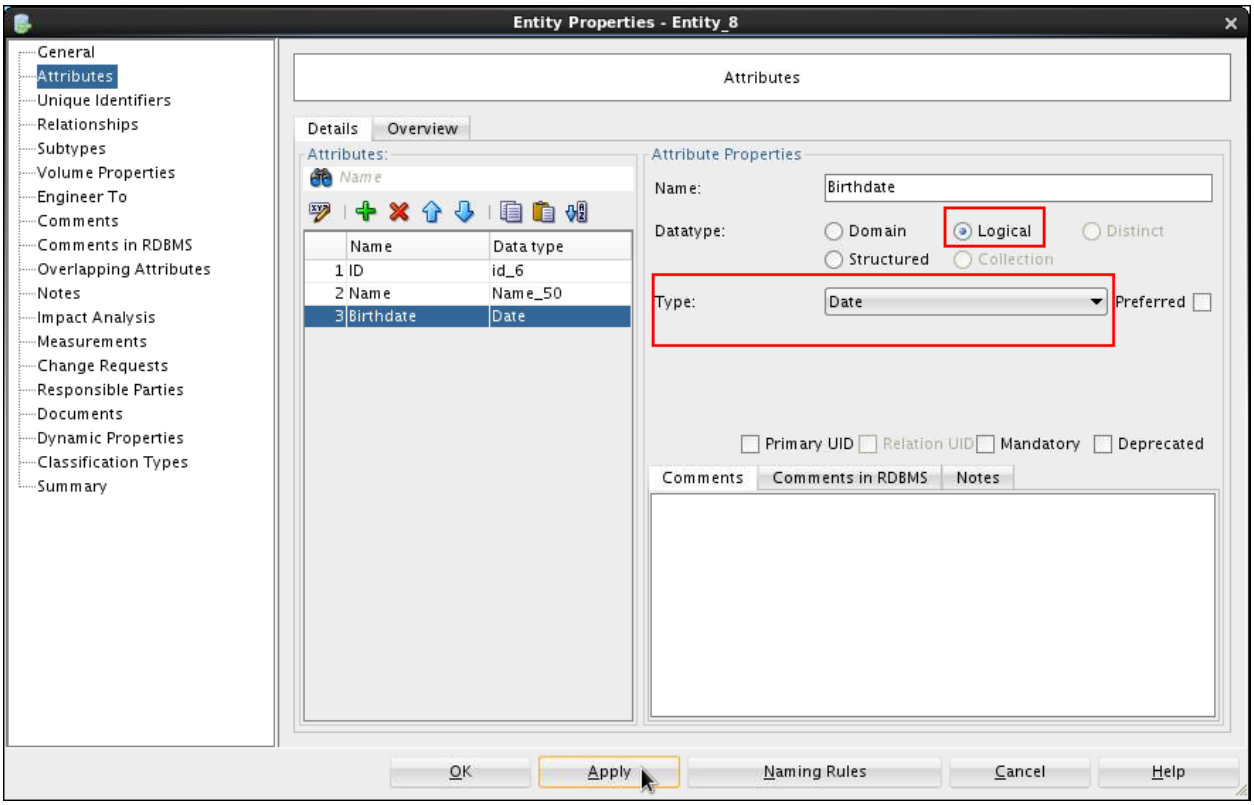
22. Enter `ID` for the **Name**, select the `id_6` domain for **Type**, click **Apply**, and then click the **Add** icon.



23. Enter `Name` for **Name**, select the `Name_50` domain for Type, click **Apply**, and then click the **Add** icon.

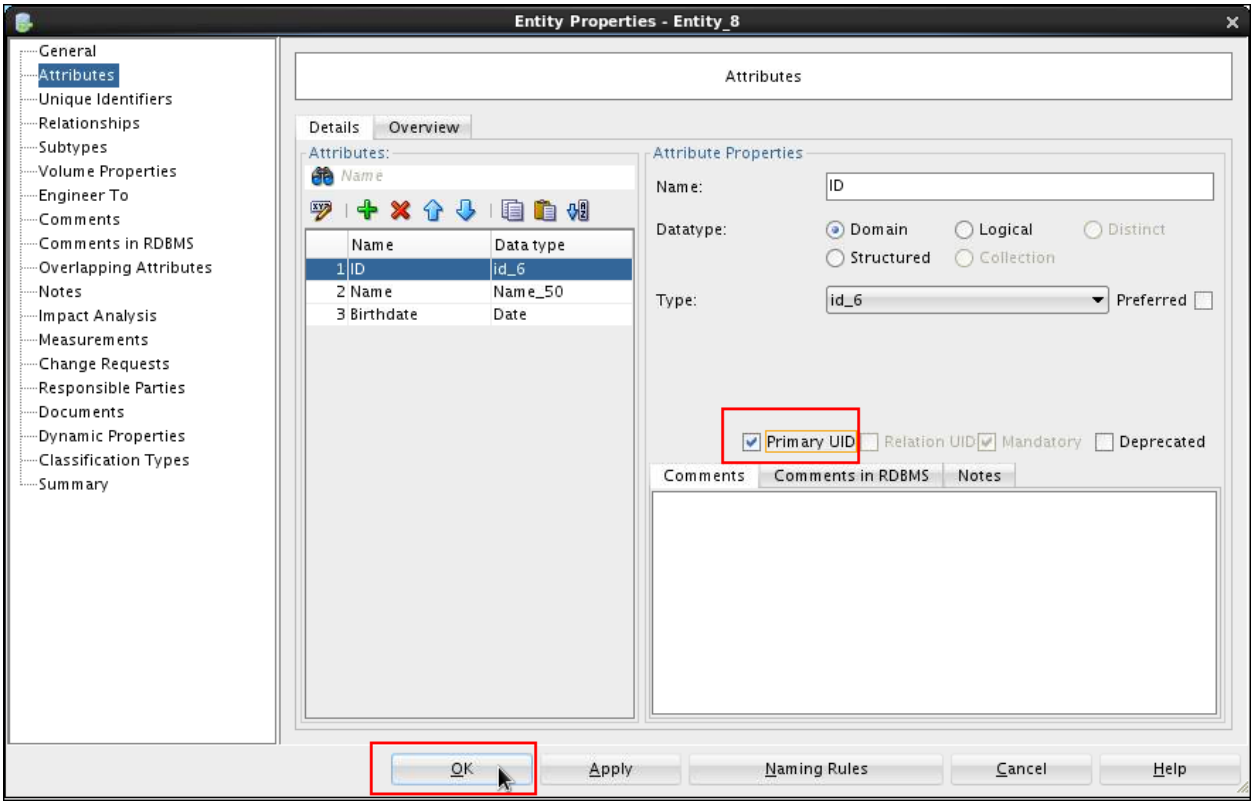


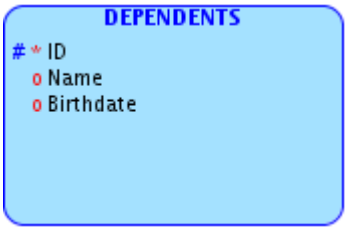
24. Enter `Birthdate` for **Name**, select **Logical** for **Datatype**, and then select `Date` for **Type**. Click **Apply**.



Note: If you have opened too many models and closed without saving, you may get a low perm memory error dailog box. Click **OK** to continue.

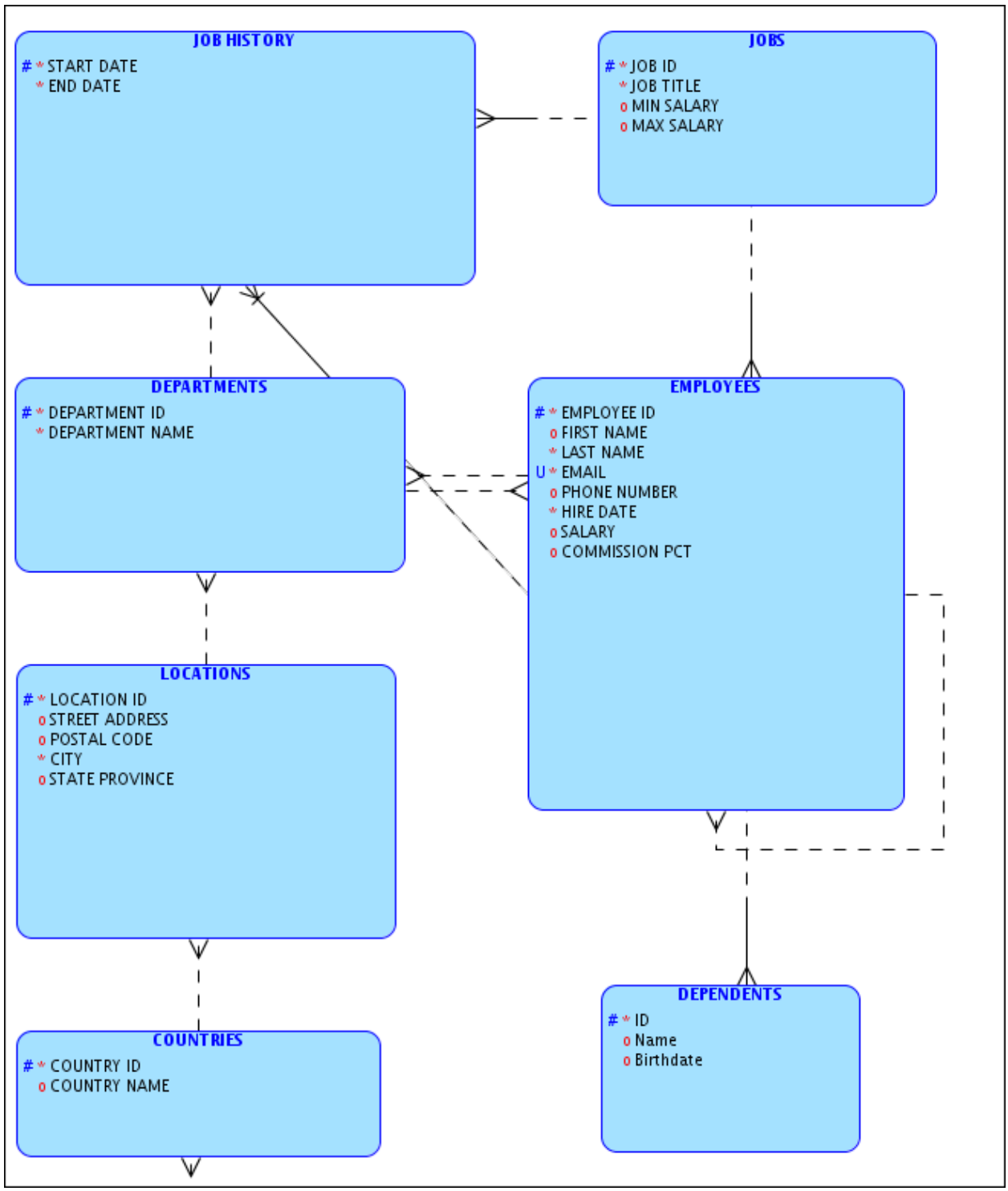
25. To specify `ID` as the Unique Identifier, select `ID` in the **Attributes** region. Select the **Primary UID** check box, and then click **OK** to create the entity and attributes.



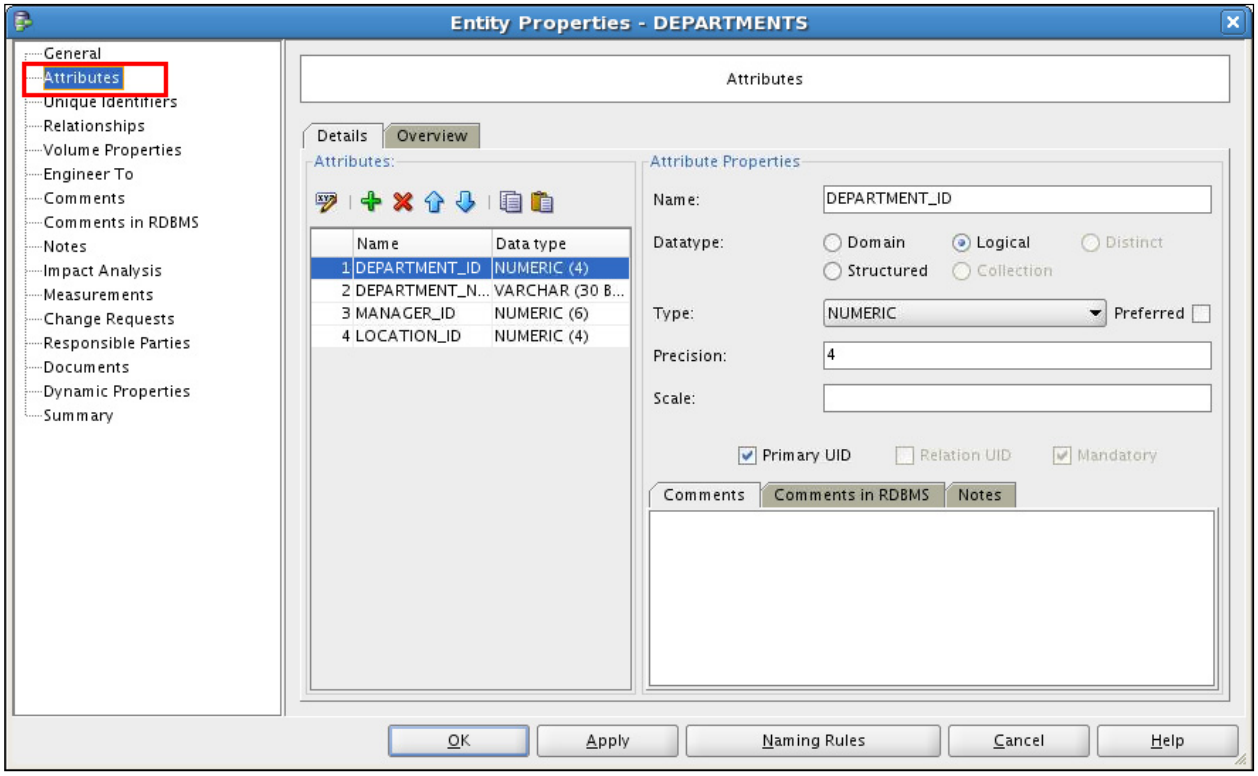


26. You want to create a `1:N` relationship between `EMPLOYEES` and `DEPENDENTS`. Select the **New 1: N Relation**  icon, click `EMPLOYEES`, and then click `DEPENDENTS`.

27. The 1:N relationship is created. Click **OK** to exit the dialog box. Click the **Select** icon  on the toolbar. You can make some more changes to the logical model.

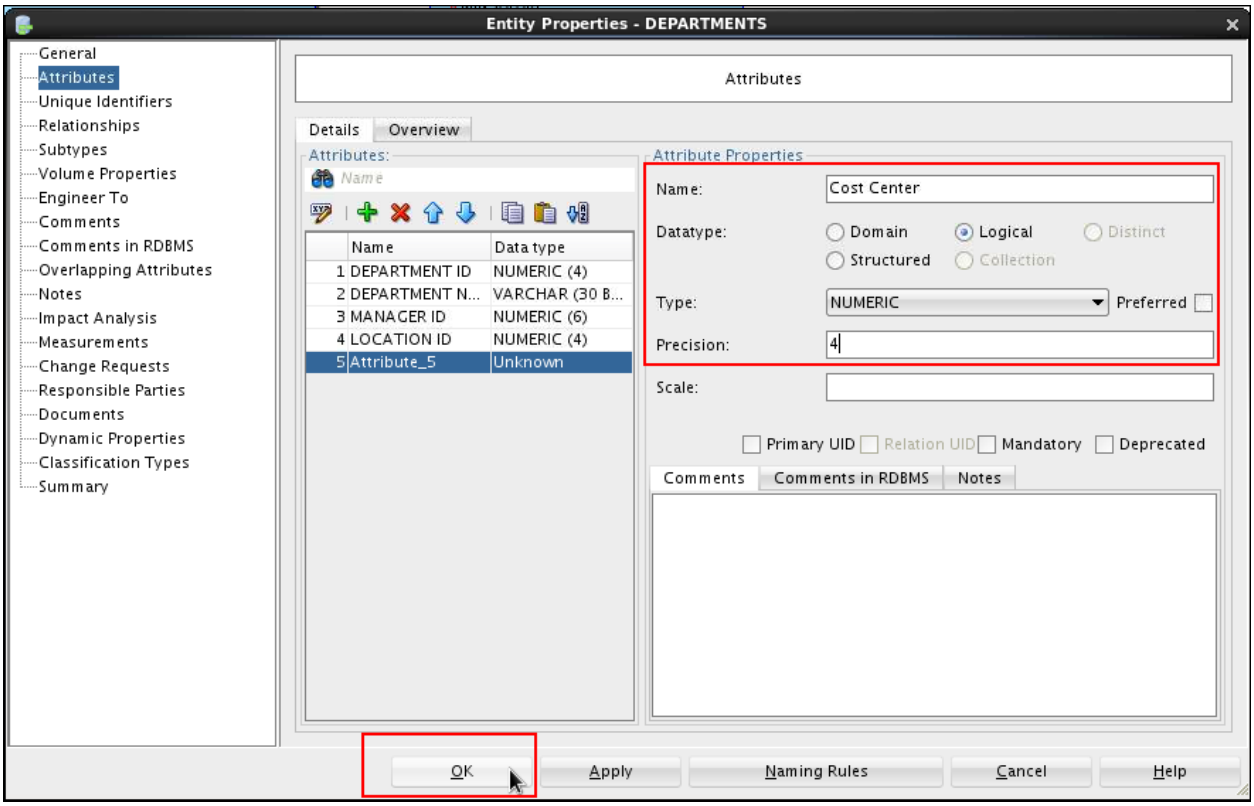


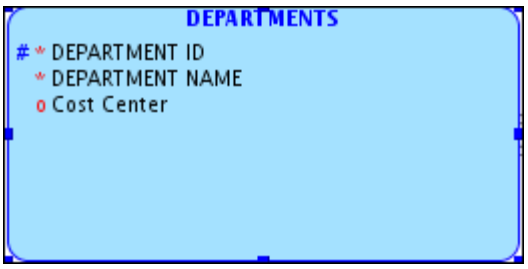
28. Double-click the `DEPARTMENTS` entity. The **Entity Properties** dialog box is displayed. Select the **Attributes** property in the left navigator.



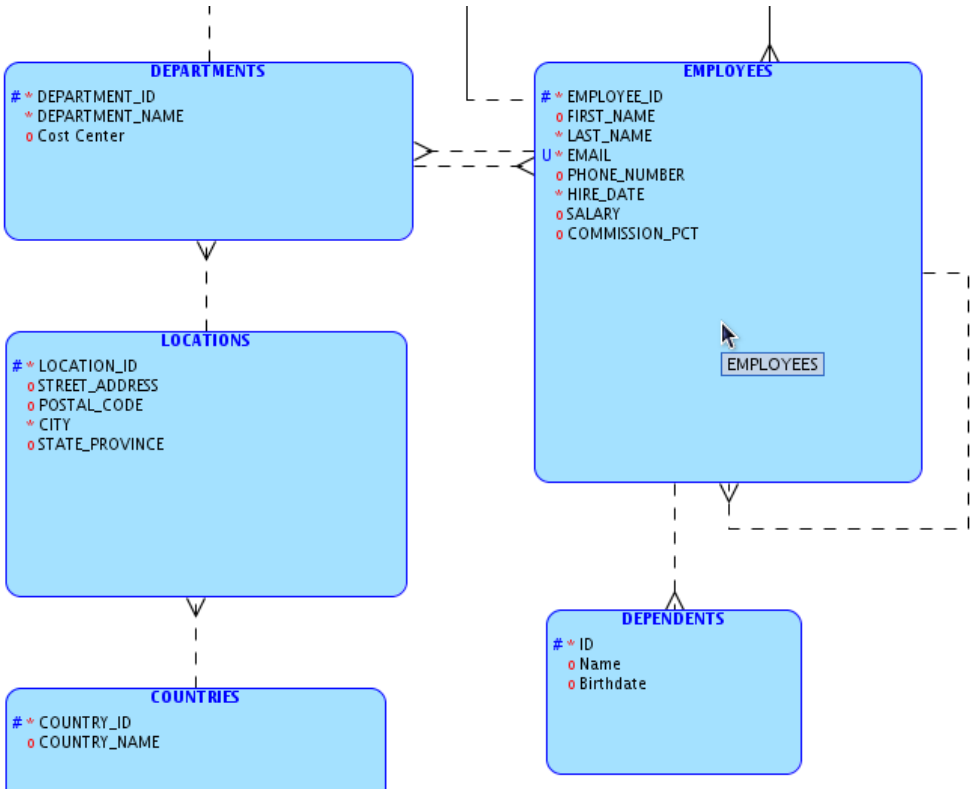
29. Click Add  icon.

30. Enter `Cost Center` for Name, select **Logical** for **Datatype**, select `NUMERIC` for **Type**, and enter `4` for **Precision**. Then click **OK**. The new `Cost Center` attribute is displayed in the `DEPARTMENTS` entity.



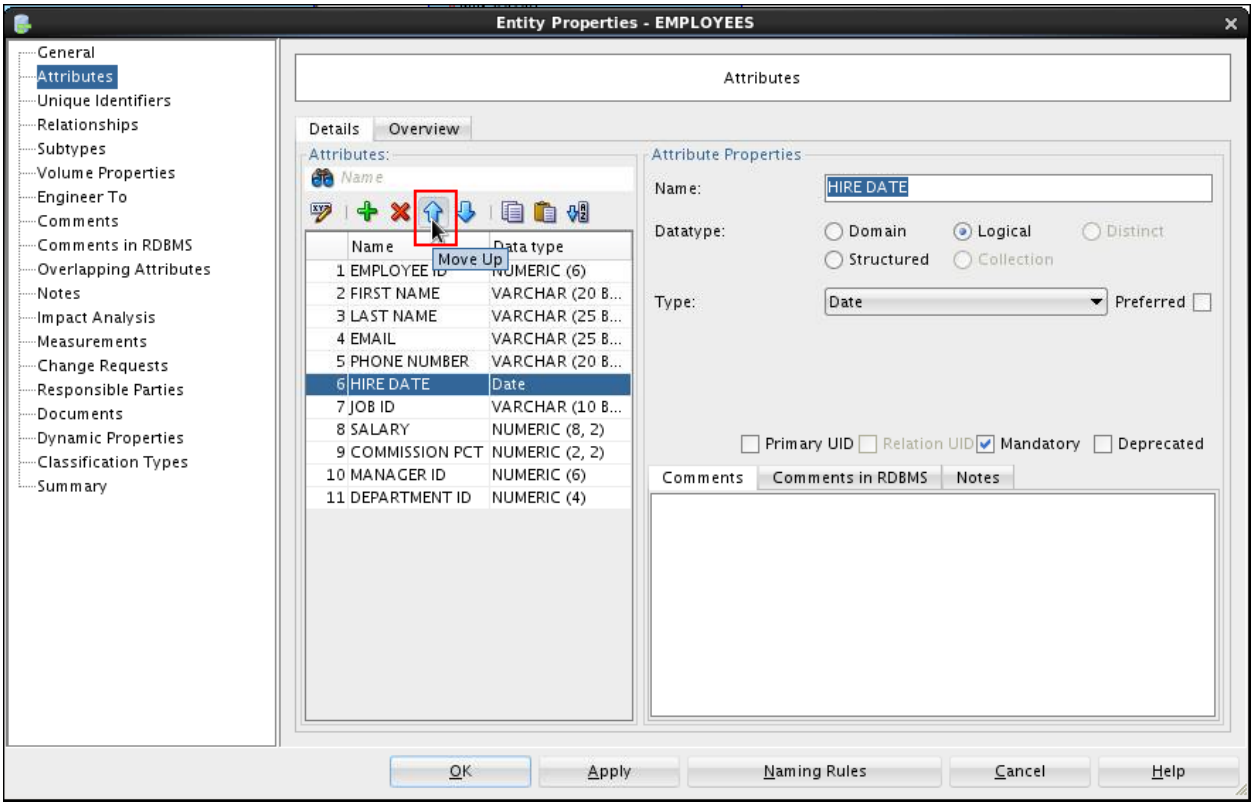


31. Double-click the `EMPLOYEES` entity. The **Entity Properties** dialog box is displayed.

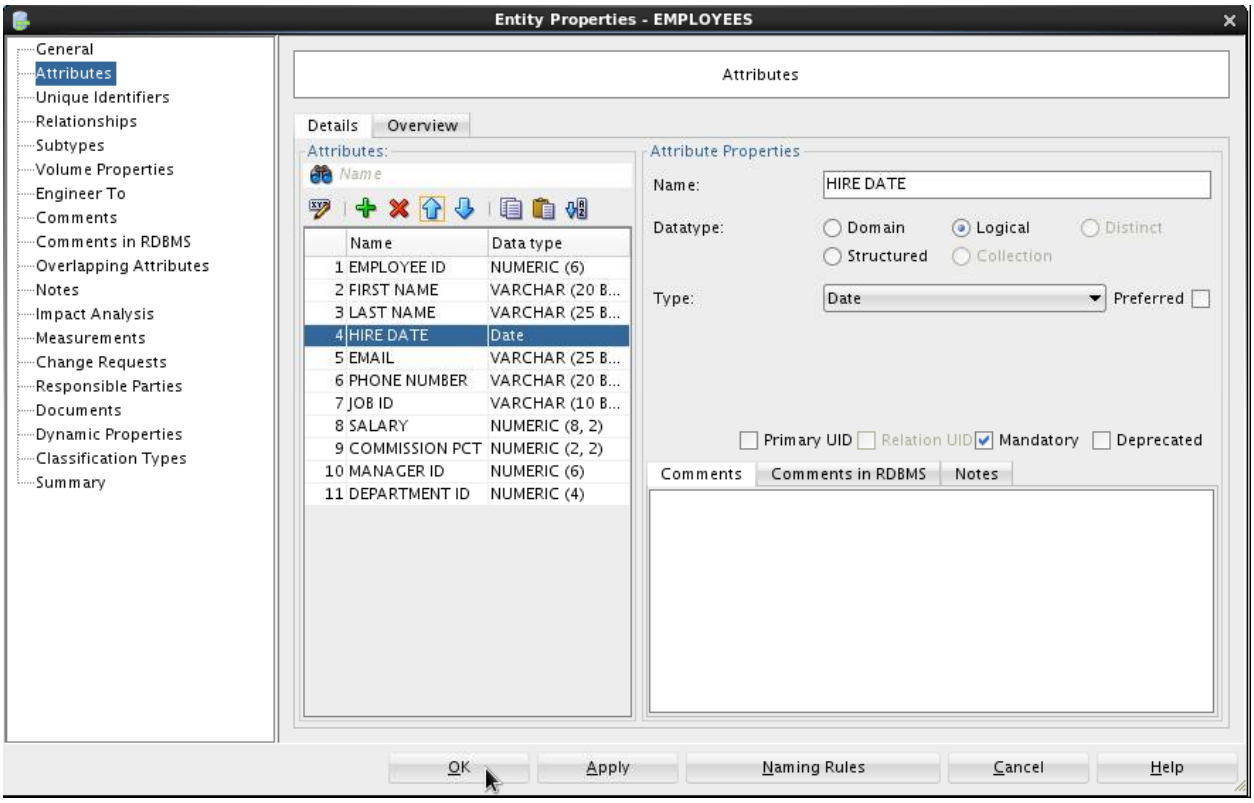


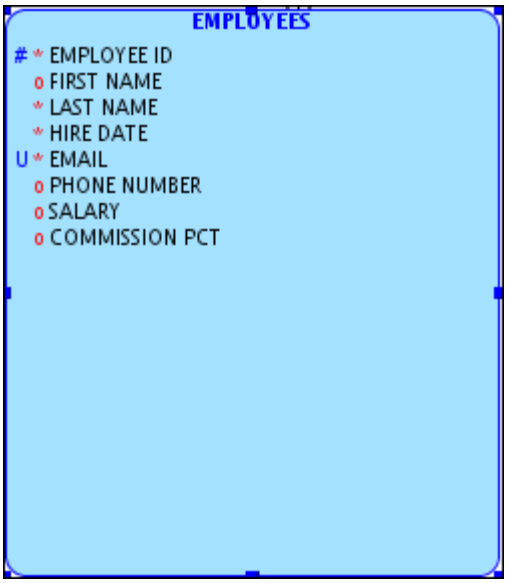
32. Select the **Attributes** property in the left navigator.

33. Select the `HIRE_DATE` attribute, and click the Move Up  icon two times so that the `HIRE_DATE` attribute appears before the `EMAIL` attribute.

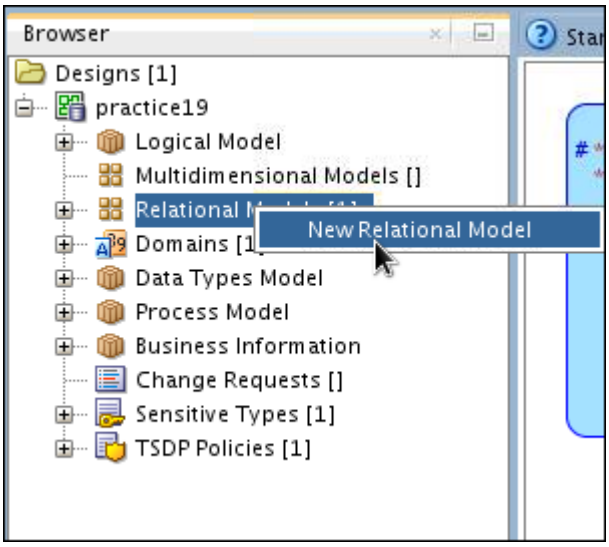


34. Click **OK**.

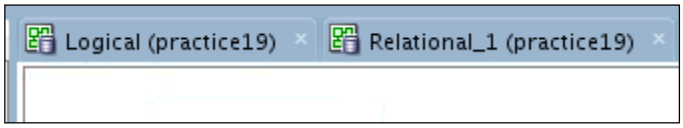

Entity Properties - EMPLOYEES
General
Attributes
Unique Identifiers
Relationships
Subtypes
Volume Properties
Engineer To
Comments
Comments in RDBMS
Overlapping Attributes
Notes
Impact Analysis
Measurements
Change Requests
Responsible Parties
Documents
Dynamic Properties
Classification Types
Summary
Attributes
Details
Overview
Attributes:
Name
Name
Data type
1 EMPLOYEE ID
NUMERIC (6)
2 FIRST NAME
VARCHAR (20 B...
3 LAST NAME
VARCHAR (25 B...
4 HIRE DATE
Date
5 EMAIL
VARCHAR (25 B...
6 PHONE NUMBER
VARCHAR (20 B...
7 JOB ID
VARCHAR (10 B...
8 SALARY
NUMERIC (8, 2)
9 COMMISSION PCT
NUMERIC (2, 2)
10 MANAGER ID
NUMERIC (6)
11 DEPARTMENT ID
NUMERIC (4)
Attribute Properties
Name:
HIRE DATE
Datatype:
Domain
Logical
Distinct
Structured
Collection
Type:
Date
Preferred
Primary UID
Relation UID
Mandatory
Deprecated
Comments
Comments in RDBMS
Notes
OK
Apply
Naming Rules
Cancel
Help


EMPLOYEES
* EMPLOYEE ID
o FIRST NAME
* LAST NAME
* HIRE DATE
U * EMAIL
o PHONE NUMBER
o SALARY
o COMMISSION PCT

35. Now, you will forward engineer the changes to a new relational model and then compare the relational model to what is in the database. Right-click the **Relational Model** node in the **Object Browser**, and then select **New Relational Model** from the pop-up menu.

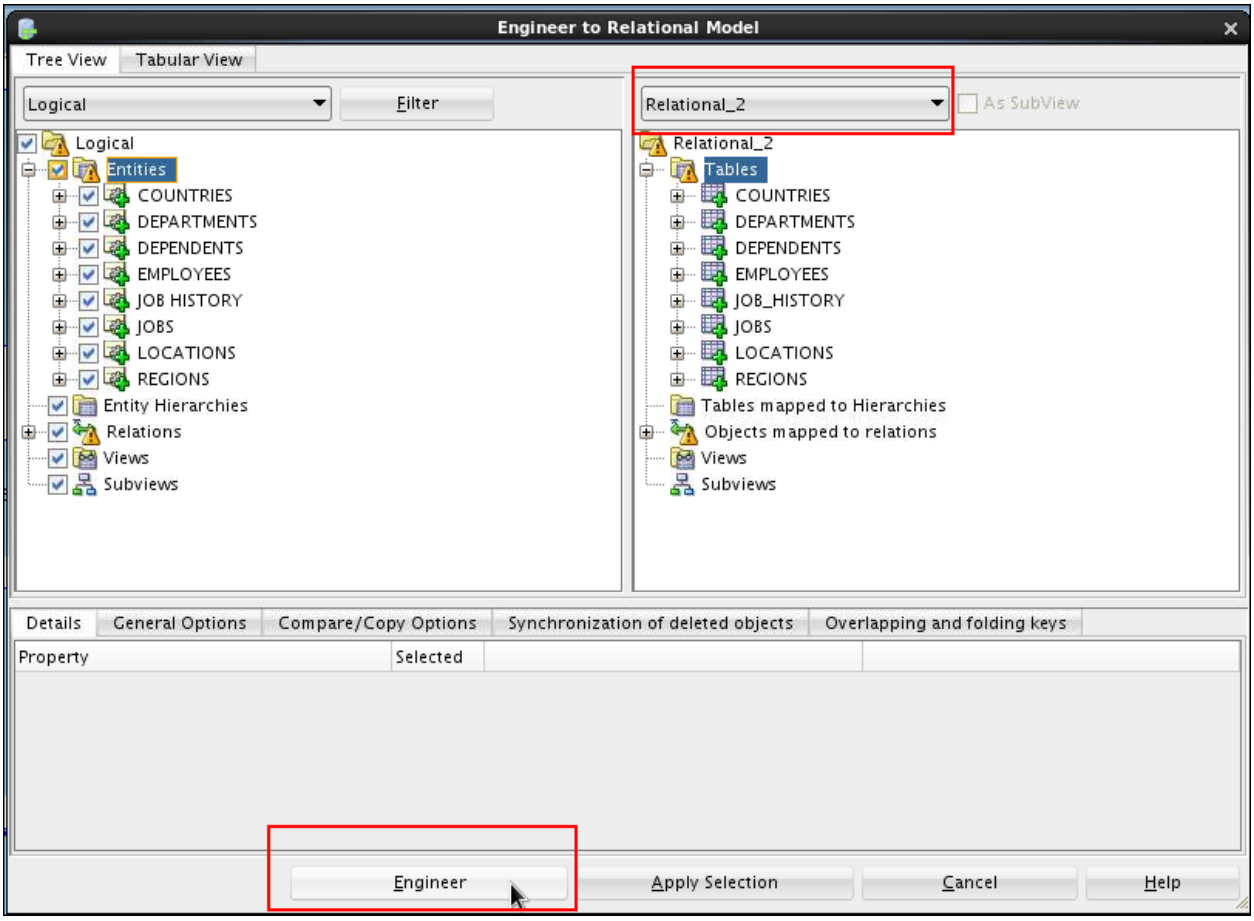


36. Click the **Logical** tab to return to your entity relationship diagram.

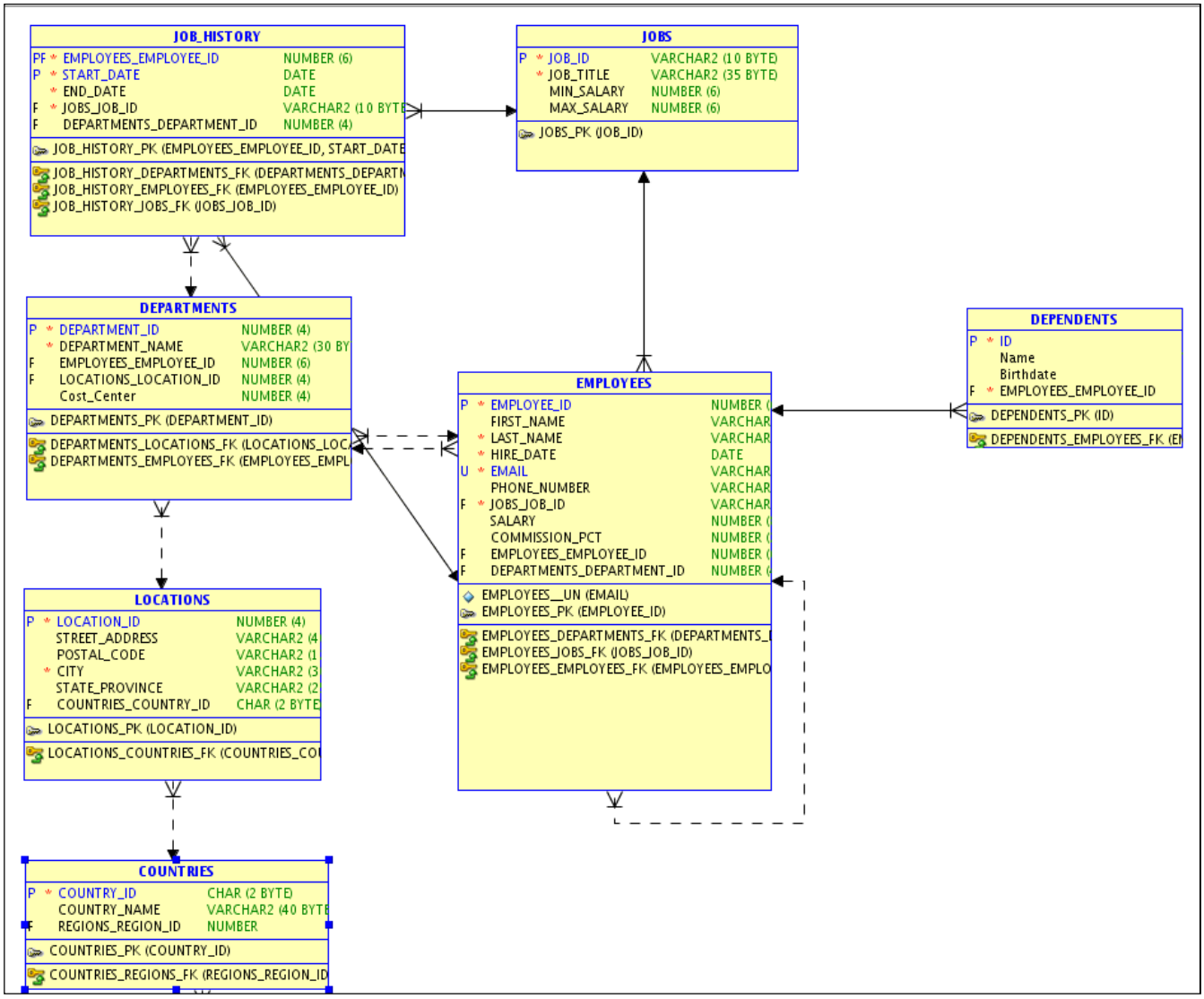


37. Click the **Engineer to Relational Model**  icon.

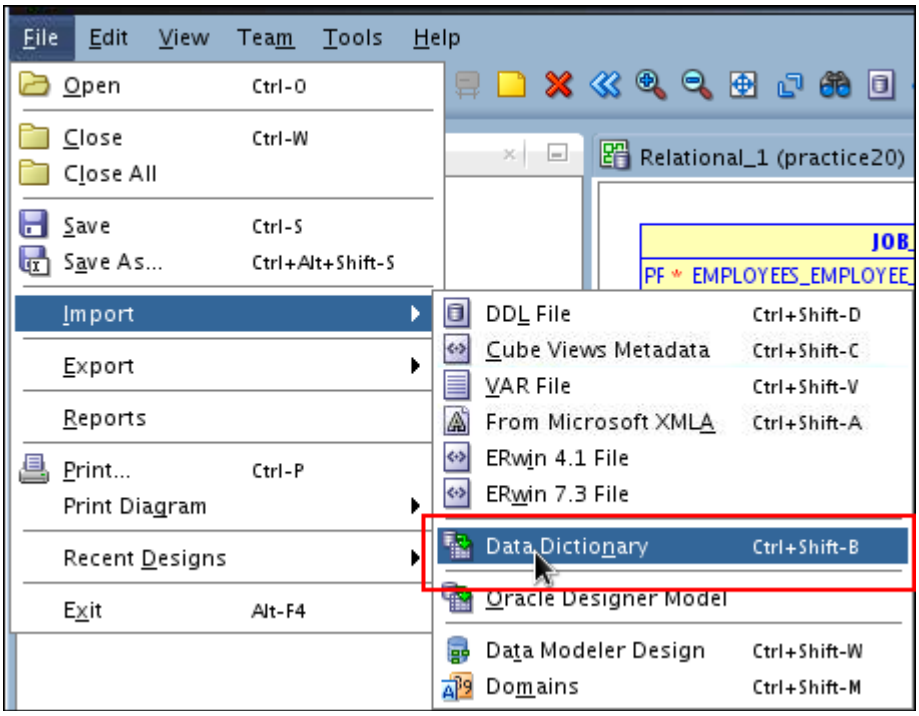
38. Make sure that `Relational_2` is selected at the top right. You can expand some of the nodes to see what will be created in the new relational model. Click **Engineer**.



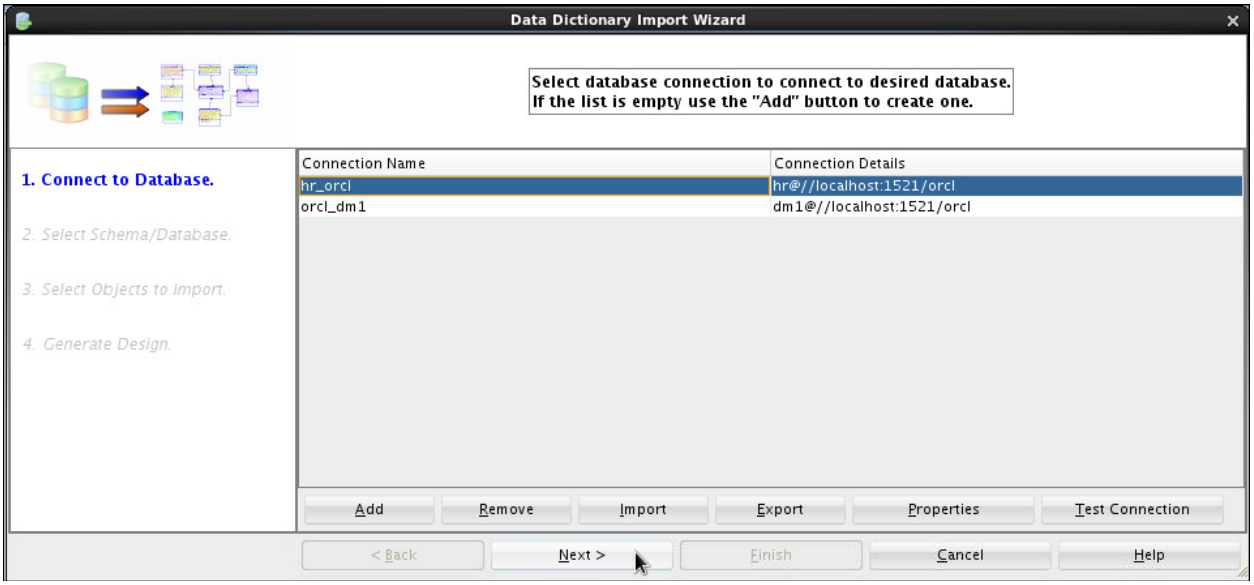
39. Your relational model was created with your modifications.



40. You want to compare this model with what is in the database. To do that, you import from the data dictionary. Select **File > Import > Data Dictionary**.

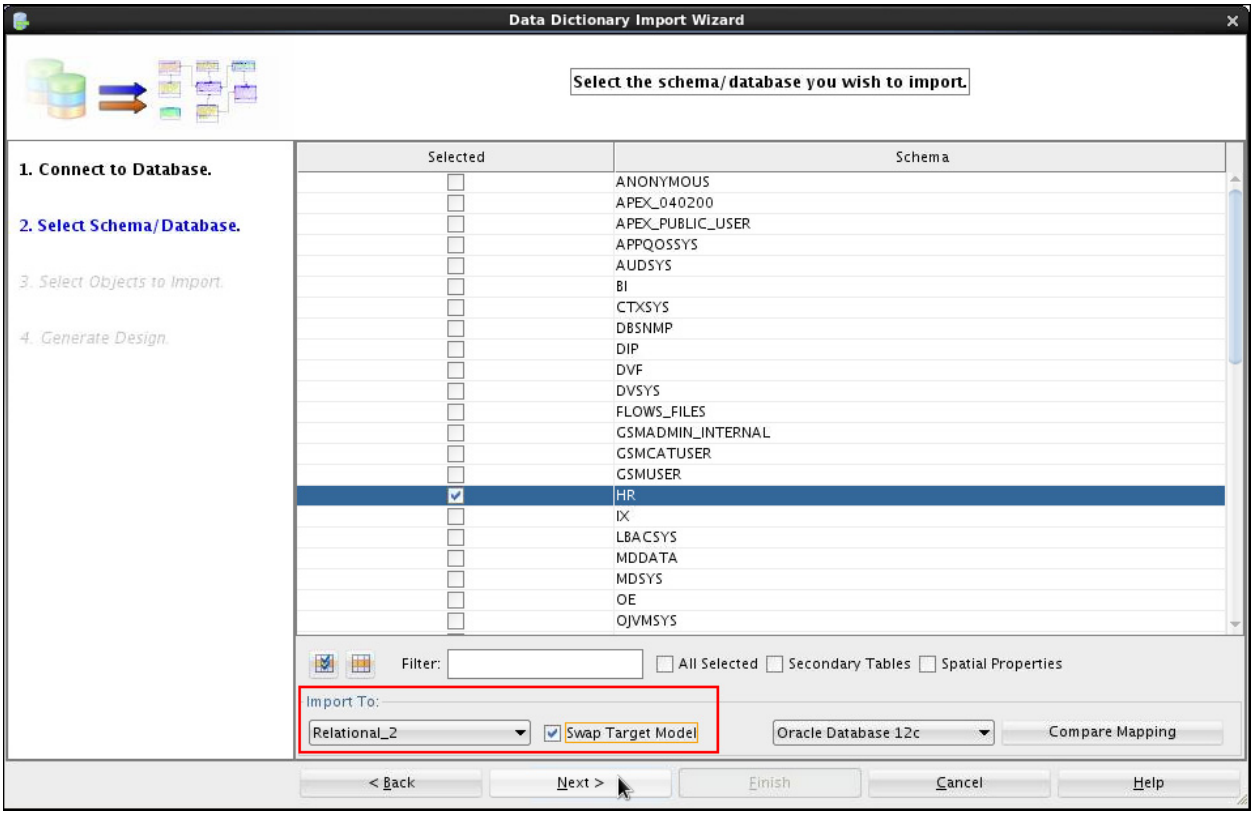


41. Select the `hr_orcl` database connection that you created earlier in this practice, and then click **Next**.

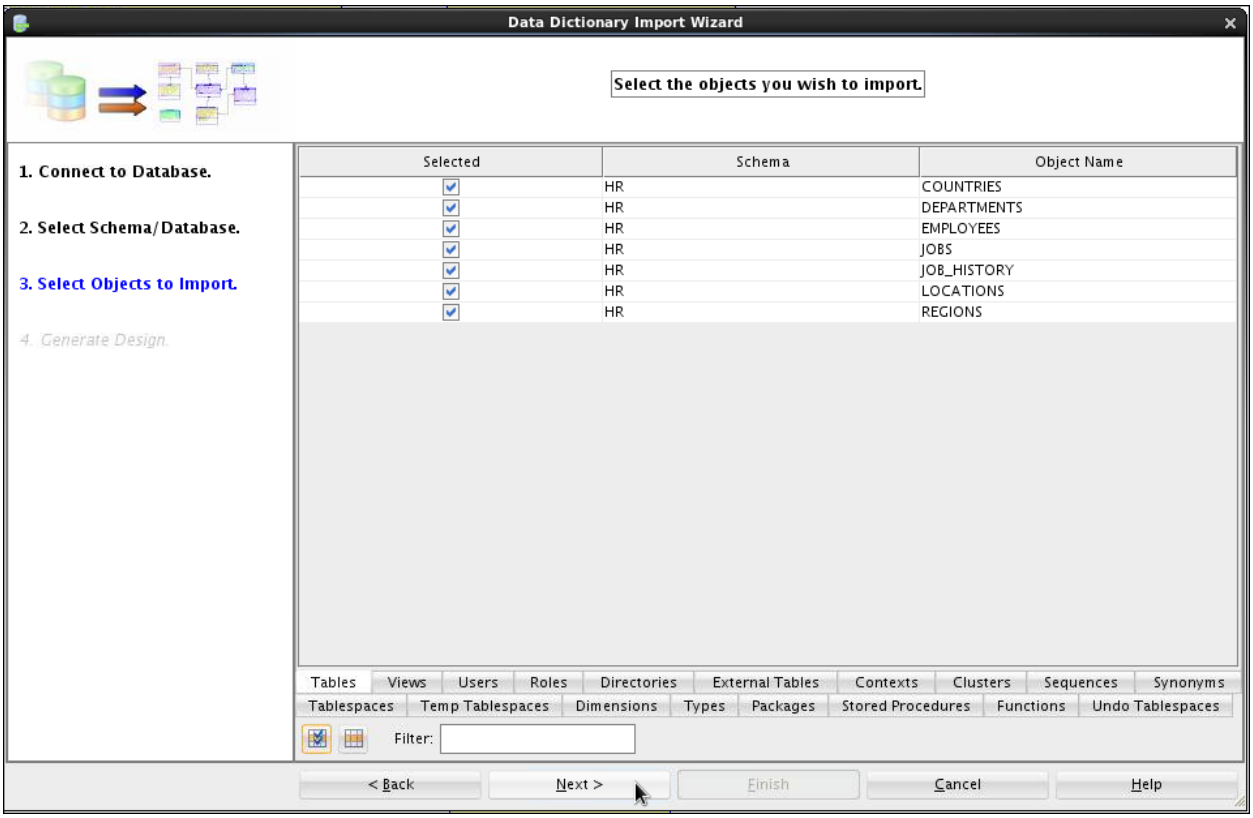


Note: If you created other database connections earlier in this course, those connections will also be displayed.

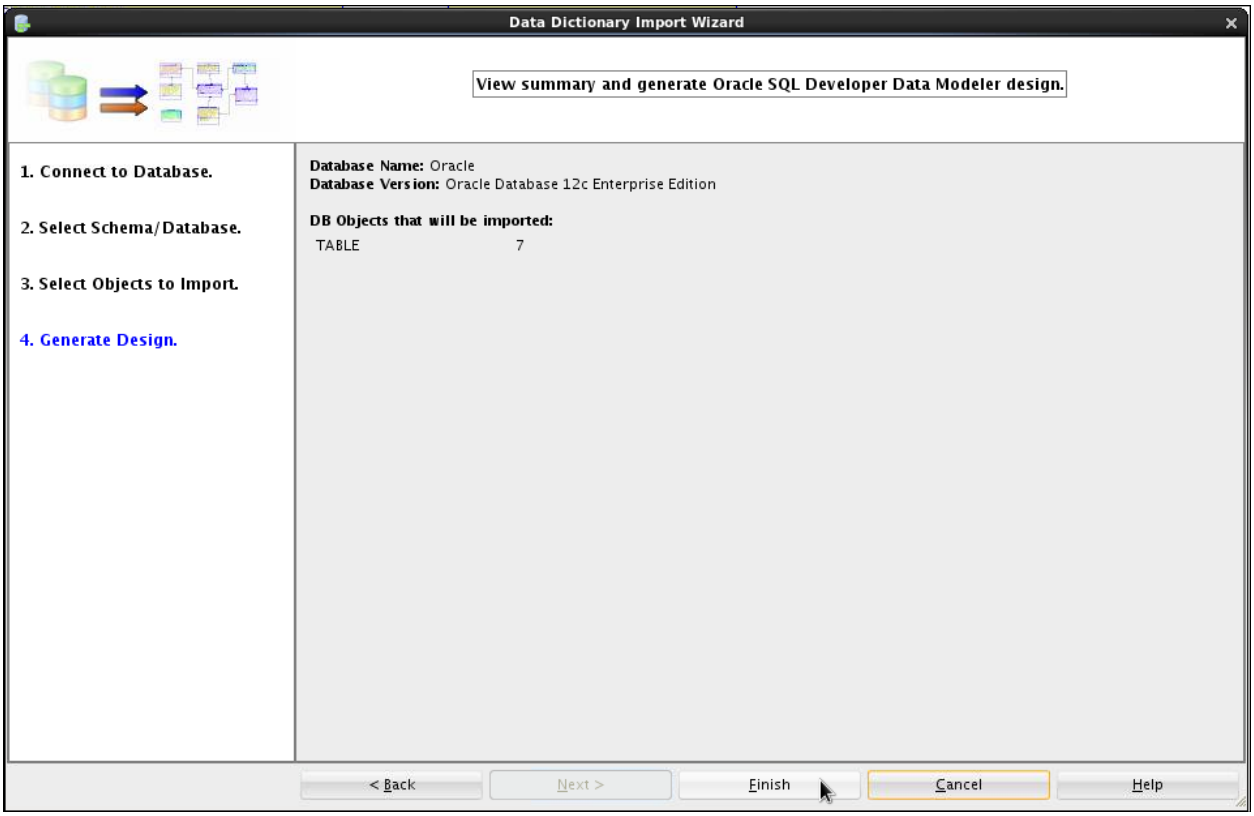
42. Select the HR schema. ***This step is important:*** In order to compare the relational model against the database, select `Relational_2` for **Import To**, click the **Swap Target Model** check box, and then click **Next**.



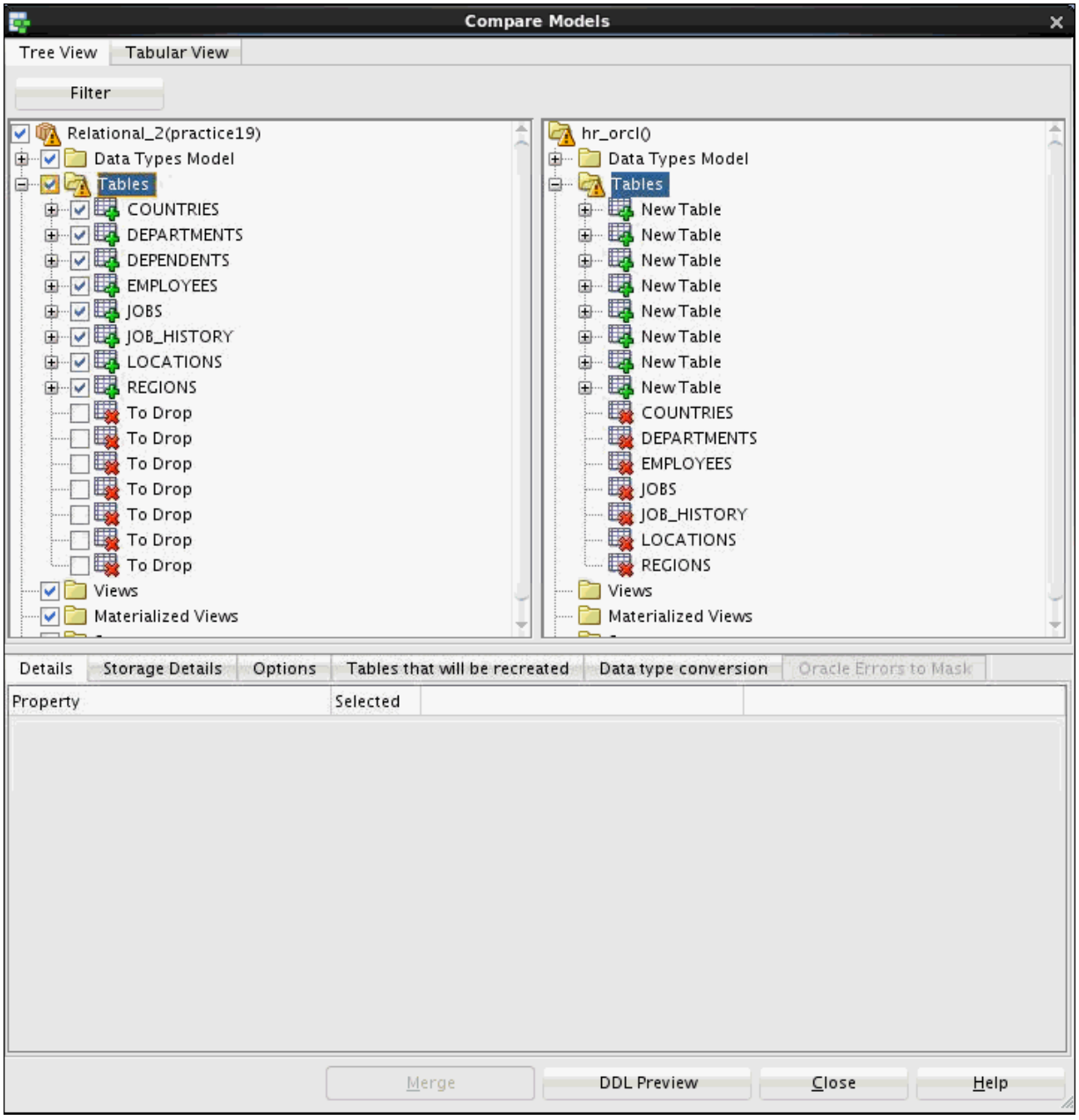
43. Click the **Select All**  icon to select all the tables, if not already selected, and then click **Next**.



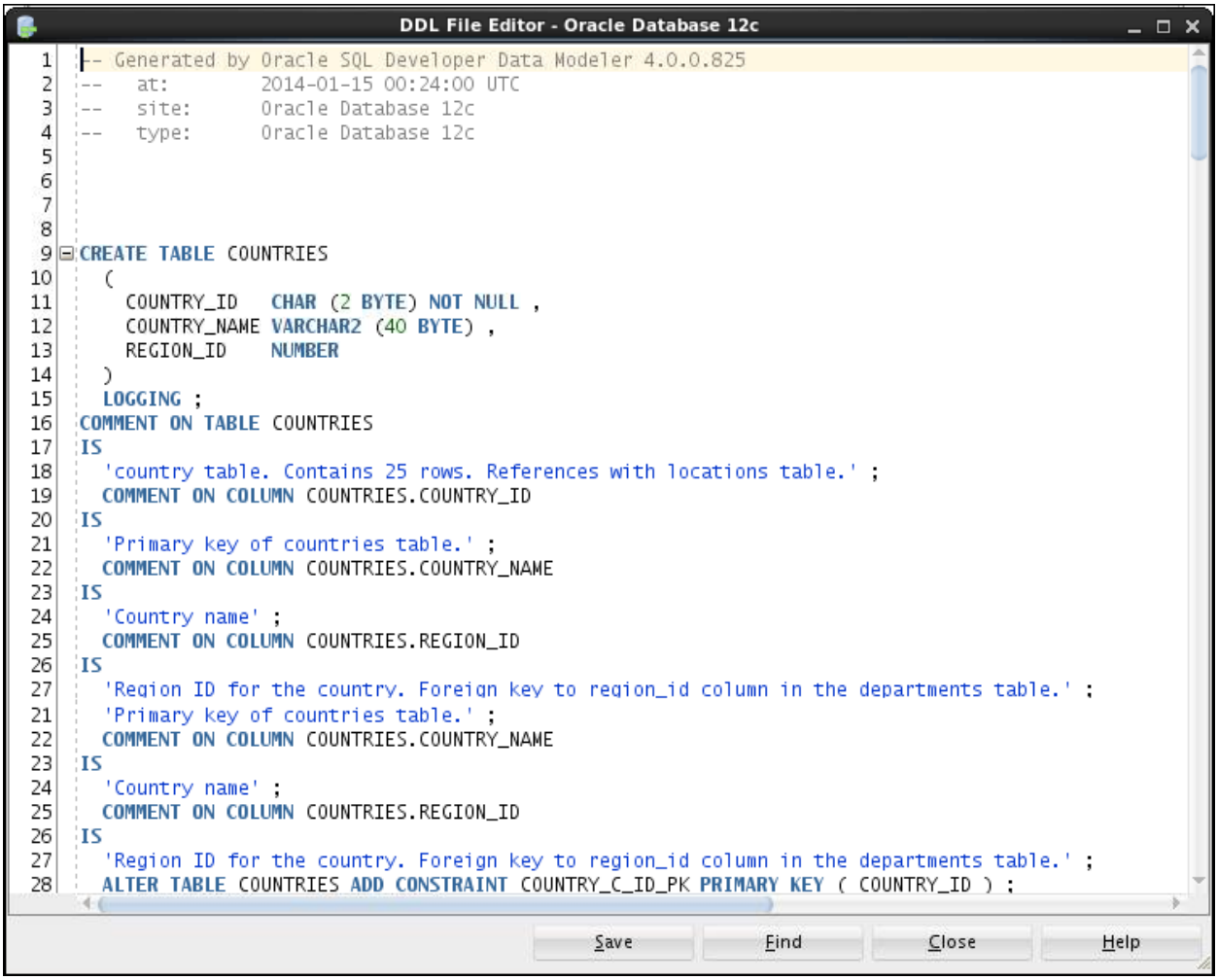
44. The summary of what will be imported is displayed. Click **Finish**.



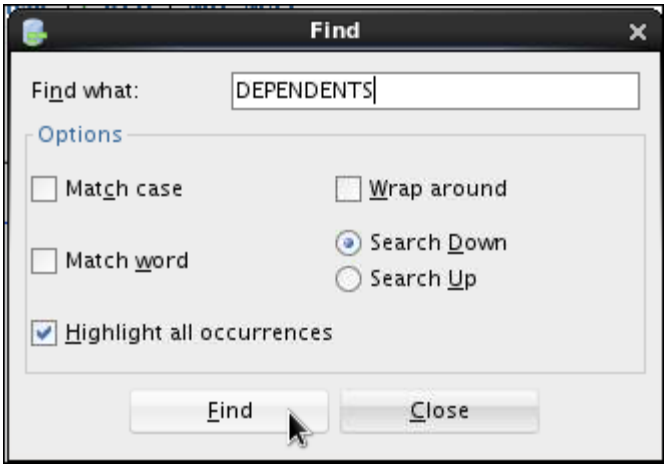
45. The **Compare Models** dialog box is displayed. Notice that you are comparing `Relational_2` on the left with `hr_orcl`, the database on the right. Expand some of the nodes to see what will happen if you generated the DDL. Notice that a new column is added to the `DEPARTMENTS` table, the new `DEPENDENTS` table is added and the columns in the `EMPLOYEES` table are reordered. To see the DDL, click **DDL Preview**.



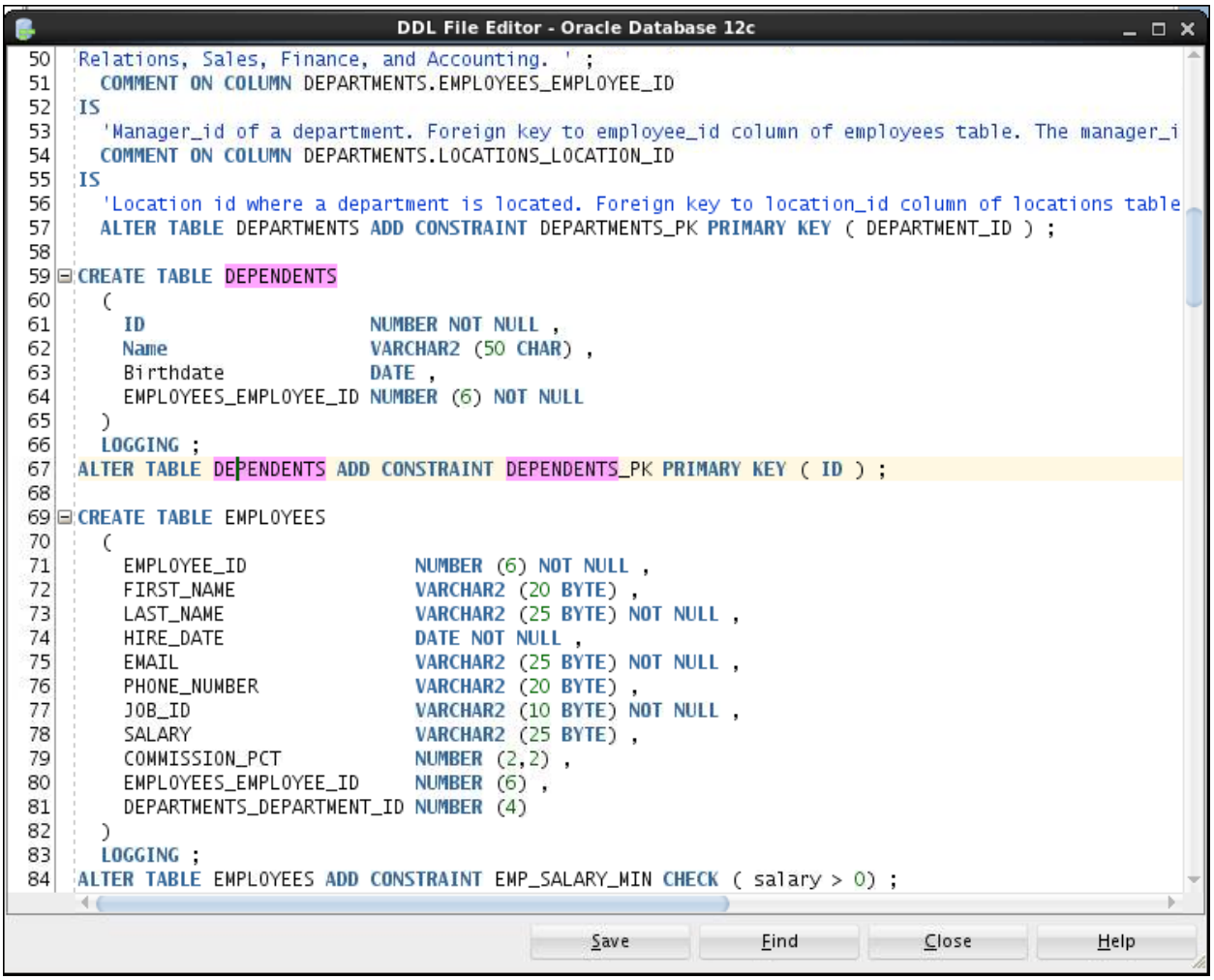
46. Notice that the DDL contains `CREATE` statements. Click **Find**.



47. Enter `DEPENDENTS` in the **Find what** text box, and then click **Find**.



48. The DDL for the new table is displayed. When done reviewing, click **Close**.



49. Click **Close** in the **Compare Models** dialog box to cancel the comparison.