Lab 01 – Relational Model

# **Objectives:**

The purpose of the first lab of DBS211 is to familiarize yourself with the User Interface, SQL Developer, and the database that we will be using throughout the course to communicate with the Oracle server. By the end of this lab you should be able to:

* Successfully establish a connection with and login to the Oracle database server using SQL Developer
* Explore and work with the database and data
* Understand the relationships, constraints, data types, and tables’ specification.

# **Preface:**

If you have not already done so, you will need to download the sample database creation script from blackboard and run it. These instructions are included in the Getting Started section with SQL Developer document.

# **LAB 01 - SUBMISSION**

Answer the following questions in the provided space. **Save your file as a PDF file and name it as following**:

**DBS211\_L01\_LastName.sql.**

**Tasks:**

By navigating through SQL Developer and looking at the Columns, Data, model, and Constraints tabs for the given tables. You will answer the following questions.

**NOTE:** **In Question (a), some questions are answered as examples. You need to complete the rest. Add more rows to the tables in the document if you need more space for an answer. Use a different color for your answers.**

For the given tables in your database, answer the following questions:

# **Part A**

See the sample question:

1. Answer the following Question for the **DBS211\_PAYMENTS** table.
2. How many columns (attributes) are there in this table? \_\_\_4\_\_\_\_\_\_\_\_\_
3. How many rows are there in this table? \_\_\_\_\_\_273\_\_\_\_\_\_\_\_\_\_\_
4. List the table’s columns and the requested information in the following format:

|  |  |  |
| --- | --- | --- |
| **Column Name** | **Type** | **Not Null** |
| CUSTOMERNUMBER | NUMBER(38,0) | YES |
| CHECKNUMBER | VARCHAR2(50 BYTE) | YES |
| PAYMENTDATE | DATE | YES |
| AMOUNT | NUMBER(10,2) | YES |
|  |  |  |
|  |  |  |

1. Sort the data based on the third column in your table and write the data of the first row in the following format. To sort the data based on a column, right click on that column and select “sort”. You can select the column that the data will be sorted based on it. (Make sure CHATACTER type values are enclosed in single quotes.)

|  |  |
| --- | --- |
| Column name | Column Value |
| CUSTOMERNUMBER | 363 |
| CHECKNUMBER | ‘IS232033’ |
| PAYMENTDATE | 16-JAN-03 |
| AMOUNT | 10223.83 |

1. List all constraints in this table.

If a constraint is a foreign key, write the reference table.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Constraint Name** | **Constraint Type** | **Constraint on**  **Column** | **Constraint Condition** | **Reference Table** |
| DBS211\_PAYMENTS\_CUSTNUM\_FK | Foreign\_Key | CUSTOMER\_ID | (null) | DBS211\_CUSTOMERS |
| SYS\_C001034315 | Check |  | "CUSTOMERNUMBER" IS NOT NULL | (null) |
| SYS\_C001034316 | Check |  | "CHECKNUMBER" IS NOT NULL | (null) |
| SYS\_C001034317 | Check |  | "PAYMENTDATE" IS NOT NULL | (null) |
| SYS\_C001034318 | Check |  | "AMOUNT" IS NOT NULL | (null) |
| SYS\_C001034319 | Primary\_Key |  | (null) | (null) |

1. What tables are in relationship with this table? List them below.

|  |  |
| --- | --- |
| **Table Name** | **Column in Common** |
| DBS211\_CUSTOMERS | CUSTOMER ID |
|  |  |
|  |  |

1. What is the model for this table relationships?

NOTE: means MANY

means ONE

MANY () is close to Contacts. You read “many Contacts”.

ONE () is close to customers. You read “one customer”.

|  |
| --- |
|  |

1. Translate the relationships in Question 7 (model) to English.

|  |
| --- |
| A customer have many payments.  A payment refers to one customer. |

1. Answer the following Question for the **DBS211\_CUSTOMERS** table.
2. How many columns (attributes) are there in this table? \_\_\_\_\_\_13\_\_\_\_\_\_\_\_
3. How many rows are there in this table? \_\_\_\_\_\_\_122\_\_\_\_\_\_\_\_\_\_
4. List the table’s columns and the requested information in the following format:

|  |  |  |
| --- | --- | --- |
| **Column Name** | **Type** | **Not Null** |
| CUSTOMERNUMBER  CUSTOMERNAME  CONTACTLASTNAME  CONTACTFIRSTNAME  PHONE  ADDRESSLINE1  ADDRESSLINE2  CITY  STATE  POSTALCODE  COUNTRY  SALESREPEMPLOYEENUMBER  CREDITLIMIT | NUMBER(38,0)  VARCHAR2(50 BYTE)  VARCHAR2(50 BYTE)  VARCHAR2(50 BYTE)  VARCHAR2(50 BYTE)  VARCHAR2(50 BYTE)  VARCHAR2(50 BYTE)  VARCHAR2(50 BYTE)  VARCHAR2(50 BYTE)  VARCHAR2(15 BYTE)  VARCHAR2(50 BYTE)  NUMBER(38,0)  NUMBER(10,2) | No  No  No  No  No  No  Yes  No  Yes  Yes  No  Yes  Yes |

1. Sort the data based on the third column in your table and write the data of the first row in the following format: (Make sure **CHATACTER** type values are enclosed in ‘single quotes’.)

|  |  |
| --- | --- |
| **Column Name** | **Column Value** |
| CUSTOMERNUMBER  CUSTOMERNAME  CONTACTLASTNAME  CONTACTFIRSTNAME  PHONE  ADDRESSLINE1  ADDRESSLINE2  CITY  STATE  POSTALCODE  COUNTRY  SALESREPEMPLOYEENUMBER  CREDITLIMIT | 114  Australian Collectors, Co.  Ferguson  Peter  03 9520 4555  636 St Kilda Road  Level 3  Melbourne  Victoria  3004  Australia  1611  117300 |

1. List all constraints in this table.

If a constraint is a foreign key, write the reference table.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Constraint Name** | **Constraint Type** | **Constraint on**  **Column** | **Constraint Condition** | **Reference Table** |
| CUST\_SALESREP\_FK  SYS\_C002298487  SYS\_C002298488  SYS\_C002298489  SYS\_C002298490  SYS\_C002298491  SYS\_C002298492  SYS\_C002298493  SYS\_C002298494  SYS\_C002298495 | Foreign\_Key  Check  Check  Check  Check  Check  Check  Check  Check  Primary\_Key |  | (null)  "CUSTOMERNUMBER"ISNOTNULL  "CUSTOMERNAME" IS NOT NULL  "CONTACTLASTNAME"ISNOTNULL  "CONTACTFIRSTNAME"ISNOTNULL  "PHONE" IS NOT NULL  "ADDRESSLINE1" IS NOT NULL  "CITY" IS NOT NULL  "COUNTRY" IS NOT NULL  (null) | DBS211\_EMPLOYEES  (null)  (null)  (null)  (null)  (null)  (null)  (null)  (null)  (null) |

1. What tables are in relationship with this table? List them below.

|  |  |
| --- | --- |
| **Table Name** | **Column in Common** |
| DBS211\_CUSTOMERS | CUSTOMERNUMBER |
| DBS211\_PAYMENTS | CUSTOMERNUMBER |
|  |  |

1. What is the model for this table relationships?

NOTE: means MANY

means ONE

|  |
| --- |
|  |

1. Translate all the relationships in Question 7 (model) to English.

|  |
| --- |
| Many Orders 🡪 One Customers  An employee 🡪 Many Customers  Many Customers 🡪 One Employee  One Customers 🡪 Many Orders  One Payment 🡪 One Customers  Many Payments 🡪 One Payments |

1. Answer the following Question for the **DBS211\_EMPLOYEES** table.
2. How many columns (attributes) are there in this table? \_\_\_8\_\_\_\_\_\_\_\_\_\_
3. How many rows are there in this table? \_\_\_\_\_\_23\_\_\_\_\_\_\_\_\_
4. List the table’s columns and the requested information in the following format:

|  |  |  |
| --- | --- | --- |
| **Column Name** | **Type** | **Not Null** |
| EMPLOYEENUMBER  LASTNAME  FIRSTNAME  EXTENSION  EMAIL  OFFICECODE  REPORTSTO  JOBTITLE | NUMBER(38,0)  VARCHAR2(50 BYTE)  VARCHAR2(50 BYTE)  VARCHAR2(10 BYTE)  VARCHAR2(100 BYTE)  VARCHAR2(10 BYTE)  NUMBER(38,0)  VARCHAR2(50 BYTE) | No  No  No  No  No  No  Yes  No |

1. Sort the data based on the third column in your table and write the data of the first row in the following format: (Make sure **CHATACTER** type values are enclosed in single quotes.)

|  |  |
| --- | --- |
| **Column Name** | **Column Value** |
| EMPLOYEENUMBER  LASTNAME  FIRSTNAME  EXTENSION  EMAIL  OFFICECODE  REPORTSTO  JOBTITLE | 1076  Firrelli  Jeff  x9273  [jfirrelli@classicmodelcars.com](mailto:jfirrelli@classicmodelcars.com)  1  1002  VP Marketing |

1. List all constraints in this table.

If a constraint is a foreign key, write the reference table.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Constraint Name** | **Constraint Type** | **Constraint on**  **Column** | **Constraint Condition** | **Reference Table** |
| EMP\_OFFICE\_FK  EMP\_RTEMP\_FK  SYS\_C002298477  SYS\_C002298478  SYS\_C002298479  SYS\_C002298480  SYS\_C002298481  SYS\_C002298482  SYS\_C002298483  SYS\_C002298484 | Foreign\_Key  Foreign\_Key  Check  Check  Check  Check  Check  Check  Check  Primary\_Key |  | (null)  (null)  "EMPLOYEENUMBER"ISNOT NULL  "LASTNAME" IS NOT NULL  "FIRSTNAME" IS NOT NULL  "EXTENSION" IS NOT NULL  "EMAIL" IS NOT NULL  "OFFICECODE" IS NOT NULL  "JOBTITLE" IS NOT NULL  (null) | DBS211\_OFFICES  DBS211\_EMPLOYEES  (null)  (null)  (null)  (null)  (null)  (null)  (null)  (null) |

1. What tables are in relationship with this table? List them below.

|  |  |
| --- | --- |
| **Table Name** | **Column in Common** |
| DBS211\_EMPLOYEES | OFFICECODE |
| DBS211\_OFFICES | OFFICECODE |
|  |  |

1. What is the model for this table relationships?

NOTE: means MANY

means ONE

|  |
| --- |
|  |

1. Translate all the relationships in Question 7 (model) to English.

|  |
| --- |
| One Office 🡪 many employee  One employee 🡪 too many customers.  Many employees 🡪to one office  all employees may have more than one customer |

1. Answer the following Question for the **DBS211\_ORDERS** table.
2. How many columns (attributes) are there in this table? \_\_\_\_\_\_7\_\_\_\_\_\_\_\_
3. How many rows are there in this table? \_\_\_\_\_\_326\_\_\_\_\_\_\_\_\_\_\_
4. List the table’s columns and the requested information in the following format:

|  |  |  |
| --- | --- | --- |
| **Column Name** | **Type** | **Not Null** |
| ORDERNUMBER  ORDERDATE  REQUIREDDATE  SHIPPEDDATE  STATUS  COMMENTS  CUSTOMERNUMBER | NUMBER(38,0)  DATE  DATE  DATE  VARCHAR2(15 BYTE)  VARCHAR2(500 BYTE)  NUMBER(38,0) | No  No  No  Yes  No  Yes  No |

1. Sort the data based on the third column in your table and write the data of the first row in the following format: (Make sure **CHATACTER** type values are enclosed in single quotes.)

|  |  |
| --- | --- |
| **Column Name** | **Column Value** |
| ORDERNUMBER  ORDERDATE  REQUIREDDATE  SHIPPEDDATE  STATUS  COMMENTS | 10102  10-JAN-03  18-JAN-03  14-JAN-03  Shipped  (null) |

1. List all constraints in this table.

If a constraint is a foreign key, write the reference table.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Constraint Name** | **Constraint Type** | **Constraint on**  **Column** | **Constraint Condition** | **Reference Table** |
| DBS211\_ORDERS\_CUST\_FK  SYS\_C002298510  SYS\_C002298511  SYS\_C002298512  SYS\_C002298513  SYS\_C002298514  SYS\_C002298515 | Foreign\_Key  Check  Check  Check  Check  Check  Primary\_Key |  | (null)  "ORDERNUMBER"ISNOTNULL  "ORDERDATE" IS NOT NULL  "REQUIREDDATE"ISNOTNULL  "STATUS" IS NOT NULL  "CUSTOMERNUMBER"ISNOTNULL  (null) | DBS211\_CUSTOMERS  (null)  (null)  (null)  (null)  (null)  (null) |

1. What tables are in relationship with this table? List them below.

|  |  |  |
| --- | --- | --- |
| **Table Name** | **Column in Common** | **Refers to** |
| DBS211\_ORDERDETAILS | ORDERNUMBER |  |
| DBS211\_ORDERS | ORDERNUMBER |  |
|  |  |  |

1. What is the model for this table relationships?

NOTE: means MANY

means ONE

|  |
| --- |
|  |

1. Translate all the relationships in Question 7 (model) to English.

|  |
| --- |
| A order have many order details.  Many order details refer to one order.  A customer have many orders.  Many orders refer to one customer. |

**Part B**  
Create a relationship diagram for all the tables in the database. Use the MODEL tab to see the tables (entities) and their relationships.

Your diagram must include:

* All 8 tables
* The names of the entities (tables)
* The attributes (columns) for each table
* Lines representing the relationships between tables
* Crows Foot Symbols on the lines representing the type of relationship (1-1, 1-many)
* Required fields should be bolded
* Primary Key fields should be underlined **or** indicated with a PK beside it.
* Child fields in the relationships should be indicated with an FK beside it.

Use Lucidchart to draw you diagram. Save the diagram as an image and insert it here in the following box.

|  |
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|  |

Good Luck.