Lab 02 – Relational Model

Objectives:

The purpose of the lab of 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.

SUBMISSION

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

DBS211_L02_Group#.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:

a) Answer the following Question for the **DBS211_PRODUCTS** table.
  1) How many columns (attributes) are there in this table? _____9_____
  2) How many rows are there in this table? _____120_____
  3) List the table's columns and the requested information in the following format:

Column Name	Type	Not Null
PRODUCTCODE	VARCHAR2(15 BYTE)	Yes
PRODUCTNAME	VARCHAR2(70 BYTE)	Yes
PRODUCTLINE	VARCHAR2(50 BYTE)	Yes

PRODUCTSCALE	VARCHAR2(10 BYTE)	Yes
PRODUCTVENDOR	VARCHAR2(50 BYTE)	Yes
PRODUCTDESCRIPTION	VARCHAR2(1000 BYTE)	Yes
QUANTITYINSTOCK	NUMBER(38,0)	Yes
BUYPRICE	NUMBER(10,2)	Yes
MSRP	NUMBER(10,2)	Yes

4) 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
PRODUCTCODE	S10_1949
PRODUCTNAME	1952 Alpine Renault 1300
PRODUCTLINE	Classic Cars
PRODUCTSCALE	1:10
PRODUCTVENDOR	Classic Metal Creations

PRODUCTDESCRIPTION	Turnable front wheels; steering function; detailed interior; detailed engine; opening hood; opening trunk; opening doors; and detailed chassis
QUANTITYINSTOCK	7305
BUYPRICE	98.58
MSRP	214.3

5) 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		DBS211_CUSTOMERS
SYS_C001034315	Check		"CUSTOMERNUMBER" IS NOT NULL	
SYS_C001034316	Check		"CHECKNUMBER" IS NOT NULL	
SYS_C001034317	Check		"PAYMENTDATE" IS NOT NULL	
SYS_C001034318	Check		"AMOUNT" IS NOT NULL	
SYS_C001034319	Primary_Key			

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

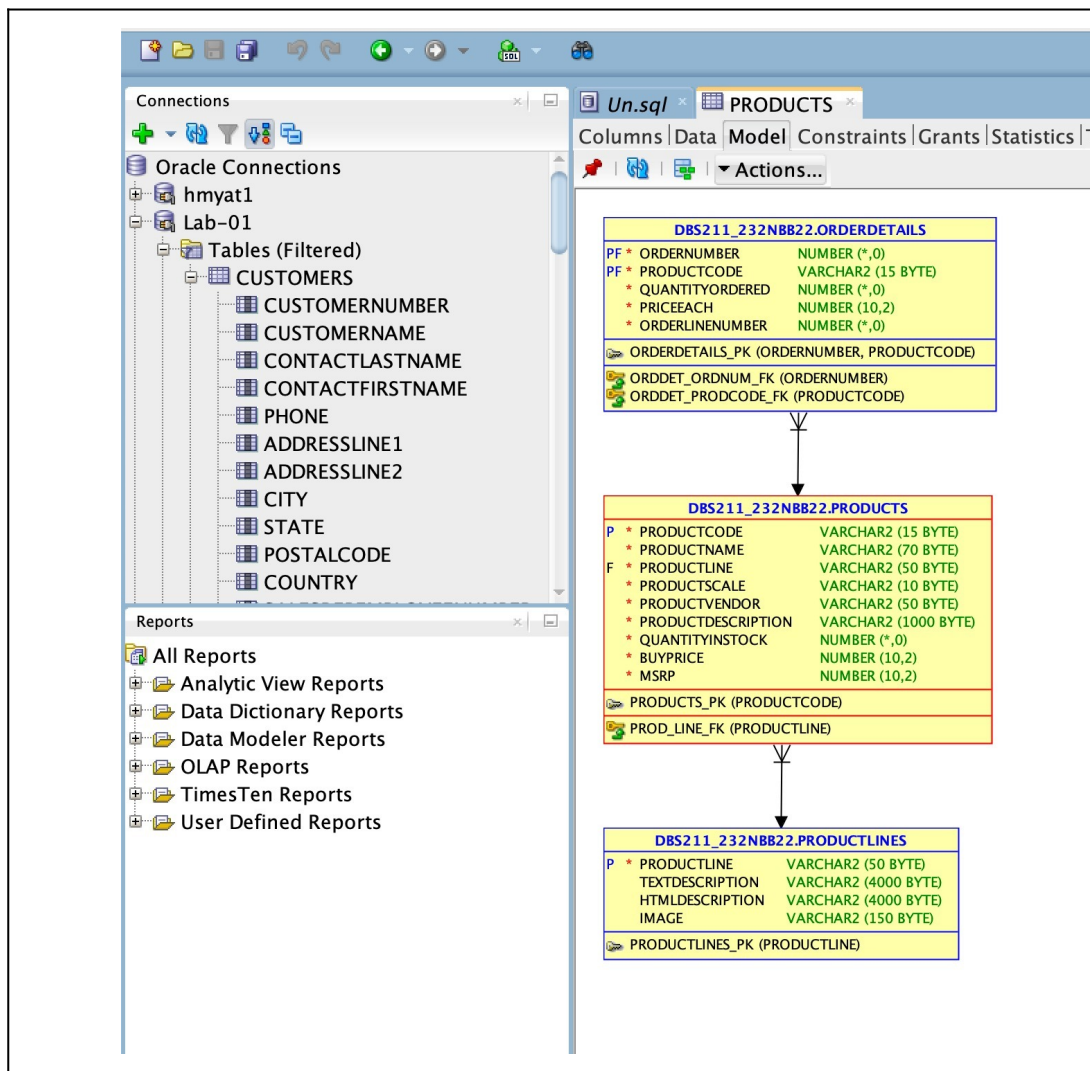| Table Name	Column in Common
DBS211_CUSTOMERS	CUSTOMER ID

7) 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".

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

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

b) Answer the following Question for the **DBS211_CUSTOMERS** table.
   1) How many columns (attributes) are there in this table?
   _____13_____

2) How many rows are there in this table? _____122_____
3) List the table's columns and the requested information in the following format:

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

4) 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	249
CUSTOMERNAME	Amica Models "&" Co.
CONTACTLASTNAME	Accorti
CONTACTFIRSTNAME	Paolo
PHONE	011-4988555
ADDRESSLINE1	Via Monte Bianco 34
ADDRESSLINE2	
CITY	Torino
STATE	
POSTALCODE	10100
COUNTRY	Italy
SALESREPEMPLOYEENUMBER	1401
CREDITLIMIT	113000

5) 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	Foreign_Key			DBS_EMPLOYEES
SYS_C002297701	Check		"CUSTOMER NUMBER" IS NOT NULL	
SYS_C002297702	Check		"CUSTOMER NUMBER" IS NOT NULL	
SYS_C002297703	Check		"CUSTOMER NUMBER" IS NOT NULL	
SYS_C002297704	Check		"CUSTOMER NUMBER" IS NOT NULL	
SYS_C002297705	Check		"CUSTOMER NUMBER" IS	

				NOT NULL	
SYS_ C0022 97706	Check			"CUST OMER NUMB ER" IS NOT NULL	
SYS_ C0022 97707	Check			"CUST OMER NUMB ER" IS NOT NULL	
SYS_ C0022 97708	Check			"CUST OMER NUMB ER" IS NOT NULL	
SYS_ C0022 97709	Primar y_Key				

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

Table Name	Column in Common
DBS211_CUSTOMERS	CUSTOMERNUMBER
DBS211_PAYMENTS	CUSTOMERNUMBER

7) What is the model for this table relationships?
NOTE: means MANY

means ONE
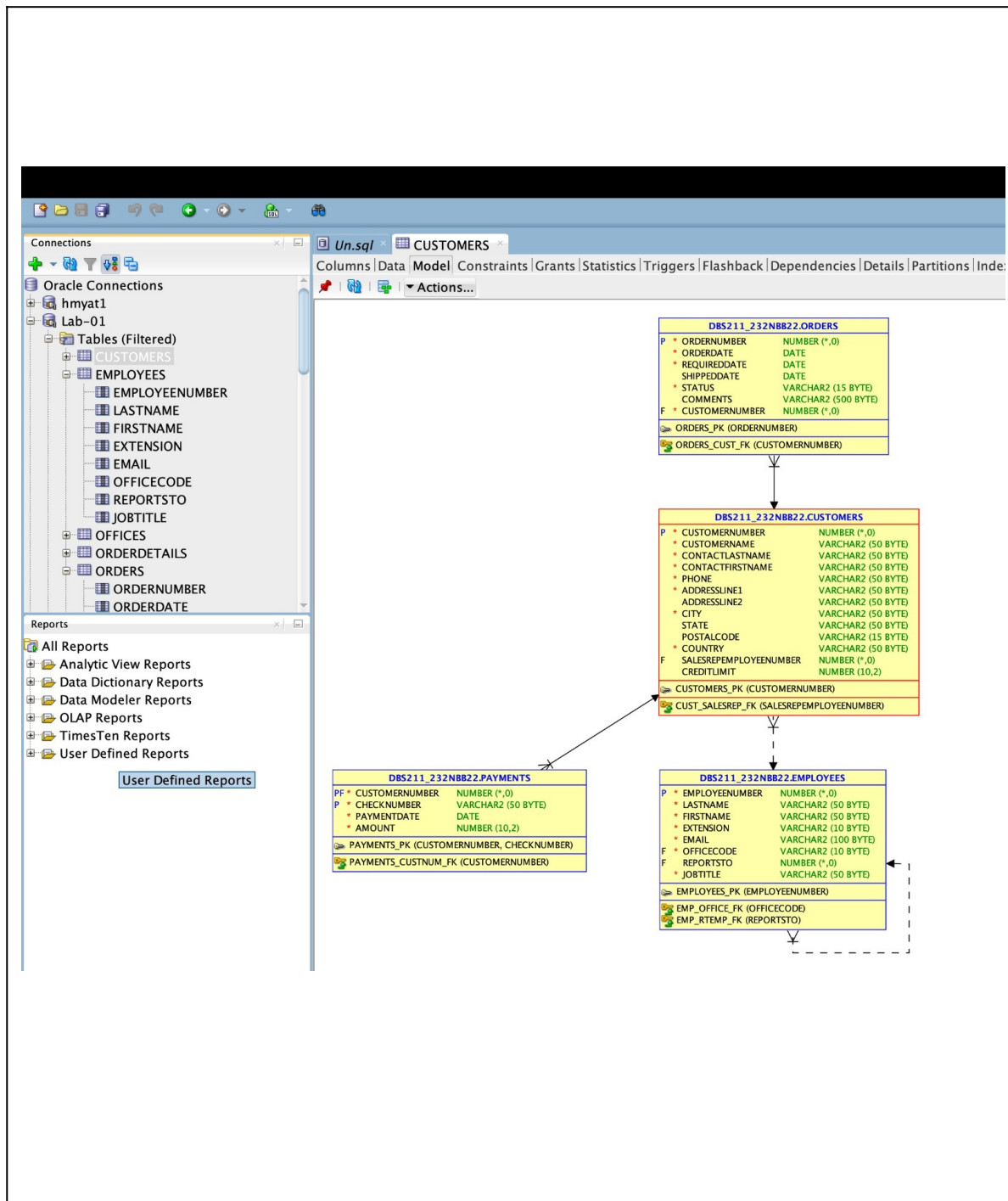
8) Translate all the relationships in Question 7 (model) to English.

1. Employee may have many customers
2. A customer can refer to only one employee
3. An office can have many employees
4. An employee can only have one office

c) Answer the following Question for the **DBS211_EMPLOYEES** table.
1) How many columns (attributes) are there in this table? _____8_____
2) How many rows are there in this table? _____23_____

3) List the table's columns and the requested information in the following format:

Column name	Type	Not Null
EMPLOYEENUMBER	NUMBER(38,0)	NO
LASTNAME	VARCHAR2(50 BYTE)	NO
FIRSTNAME	VARCHAR2(50 BYTE)	NO
EXTENTION	VARCHAR2(10 BYTE)	NO
EMAIL	VARCHAR2(100 BYTE)	NO
OFFICECODE	VARCHAR2(10 BYTE)	NO
REPORTSTO	NUMBER(38,0)	YES
JOBTITLE	VARCHAR2(50 BYTE)	NO

4) 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	1611
LAST NAME	'Fixter'
FIRSTNAME	'Andy'
EXTENTION	'x101'
EMAIL	'afixter@classicmodelcars.com'
OFFICECODE	6
REPORTSTO	1088
JOBTITLE	'Sales Rep'

5) 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	Foreign_Key	SYS_C002746400	(null)	OFFICES
EMP_RTEMP_FK	Foreign_Key	SYS_C002746408	(null)	EMPLOYEES
SYS_C002746401	Check	(null)	"EMPLOYEE NUMBER" IS NOT NULL	(null)
SYS_C002746402	Check	(null)	"LASTNAME" IS NOT NULL	(null)
SYS_C002746403	Check	(null)	"FIRSTNAME" IS NOT NULL	(null)
SYS_C002746404	Check	(null)	"EXTENSION" IS NOT NULL	(null)
SYS_C002746405	Check	(null)	"EMAIL" IS NOT NULL	(null)
SYS_C002746406	Check	(null)	"OFFICECODE" IS NOT NULL	(null)
SYS_C002746407	Check	(null)	"JOBTITLE" IS NOT NULL	(null)
SYS_C002746408	Primary_Key	(null)	(null)	(null)

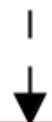6) What tables are in relationship with this table? List them below.

| Table Name	Column in Common
Customers	customernumber
OFFICES	officecode
Employees	employeenumber

7) What is the model for this table relationships?
NOTE: means MANY

means ONE

DBS211_232NBB22.CUSTOMERS

P	*	CUSTOMERNUMBER	NUMBER (*,0)
	*	CUSTOMERNAME	VARCHAR2 (50 BYTE)
	*	CONTACTLASTNAME	VARCHAR2 (50 BYTE)
	*	CONTACTFIRSTNAME	VARCHAR2 (50 BYTE)
	*	PHONE	VARCHAR2 (50 BYTE)
	*	ADDRESSLINE1	VARCHAR2 (50 BYTE)
		ADDRESSLINE2	VARCHAR2 (50 BYTE)
	*	CITY	VARCHAR2 (50 BYTE)
		STATE	VARCHAR2 (50 BYTE)
		POSTALCODE	VARCHAR2 (15 BYTE)
	*	COUNTRY	VARCHAR2 (50 BYTE)
F		SALESREPEMPLOYEENUMBER	NUMBER (*,0)
		CREDITLIMIT	NUMBER (10,2)

CUSTOMERS_PK (CUSTOMERNUMBER)

CUST_SALESREP_FK (SALESREPEMPLOYEENUMBER)

DBS211_232NBB22.EMPLOYEES

P	*	EMPLOYEENUMBER	NUMBER (*,0)
	*	LASTNAME	VARCHAR2 (50 BYTE)
	*	FIRSTNAME	VARCHAR2 (50 BYTE)
	*	EXTENSION	VARCHAR2 (10 BYTE)
	*	EMAIL	VARCHAR2 (100 BYTE)
F	*	OFFICECODE	VARCHAR2 (10 BYTE)
F		REPORTSTO	NUMBER (*,0)
	*	JOBTITLE	VARCHAR2 (50 BYTE)

EMPLOYEES_PK (EMPLOYEENUMBER)

EMP_OFFICE_FK (OFFICECODE)
EMP_RTEMP_FK (REPORTSTO)
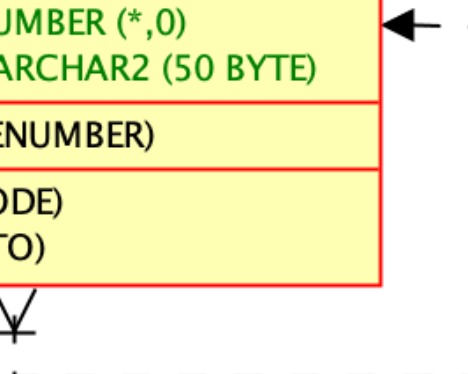
DBS211_232NBB22.OFFICES

P	* OFFICECODE	VARCHAR2 (10 BYTE)
	* CITY	VARCHAR2 (50 BYTE)
	* PHONE	VARCHAR2 (50 BYTE)
	* ADDRESSLINE1	VARCHAR2 (50 BYTE)
	ADDRESSLINE2	VARCHAR2 (50 BYTE)
	STATE	VARCHAR2 (50 BYTE)
	* COUNTRY	VARCHAR2 (50 BYTE)
	* POSTALCODE	VARCHAR2 (15 BYTE)
	* TERRITORY	VARCHAR2 (10 BYTE)

OFFICES_PK (OFFICECODE)

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

An office can have so many employees.
Each employee can have so many customers.

d) Answer the following Question for the **DBS211_ORDERS** table.
1) How many columns (attributes) are there in this table? _____7_____
2) How many rows are there in this table? _____326_____
3) List the table's columns and the requested information in the following format:

Column name	Type	Not Null
ORDERNUMBER	NUMBER(38,0)	NO
ORDERDATE	DATE	NO

REQUIREDDATE	DATE	NO
SHIPPEDDATE	DATE	YES
STATUS	VARCHAR2(15 BYTE)	NO
COMMENTS	VARCHAR2(500 BYTE)	YES
CUSTOMERNUMBER	NUMBER(38,0)	NO

4) 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	10100
ORDERDATE	03-01-06
REQUIREDDATE	03-01-13
SHIPPEDDATE	03-01-10
STATUS	Shipped
COMMENTS	(null)
CUSTOMERNUMBER	363

5) 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
ORDERS_C	Foreign_Key	SYS_C002	(null)	CUSTOMERS

UST_FK		746419		
SYS_C002746434	Check	(null)	"ORDERNUMBER" IS NOT NULL	(null)
SYS_C002746435	Check	(null)	"ORDERDATE" IS NOT NULL	(null)
SYS_C002746436	Check	(null)	"REQUIREDDATE" IS NOT NULL	(null)
SYS_C002746437	Check	(null)	"STATUS" IS NOT NULL	(null)
SYS_C002746438	Check	(null)	"CUSTOMERNUMBER" IS NOT NULL	(null)
SYS_C002746439	Primary_Key	(null)	(null)	(null)

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

Table Name	Column in Common	Refers to

Orderdetails	ordernumber	
customers	customernumber	

7) What is the model for this table relationships?
NOTE: means MANY

means ONE

DBS211_232NBB22.ORDERDETAILS

PF	* ORDERNUMBER	NUMBER (*,0)
PF	* PRODUCTCODE	VARCHAR2 (15 BYTE)
	* QUANTITYORDERED	NUMBER (*,0)
	* PRICEEACH	NUMBER (10,2)
	* ORDERLINENUMBER	NUMBER (*,0)

🔑 ORDERDETAILS_PK (ORDERNUMBER, PRODUCTCODE)

🔑 ORDDET_ORDNUM_FK (ORDERNUMBER)
🔑 ORDDET_PRODCODE_FK (PRODUCTCODE)

DBS211_232NBB22.ORDERS

P	* ORDERNUMBER	NUMBER (*,0)
	* ORDERDATE	DATE
	* REQUIREDDATE	DATE
	SHIPPEDDATE	DATE
	* STATUS	VARCHAR2 (15 BYTE)
	COMMENTS	VARCHAR2 (500 BYTE)
F	* CUSTOMERNUMBER	NUMBER (*,0)

🔑 ORDERS_PK (ORDERNUMBER)

ORDERS

🔑 ORDERS_CUST_FK (CUSTOMERNUMBER)

DBS211_232NBB22.CUSTOMERS

P	* CUSTOMERNUMBER	NUMBER (*,0)
	* CUSTOMERNAME	VARCHAR2 (50 BYTE)
	* CONTACTLASTNAME	VARCHAR2 (50 BYTE)
	* CONTACTFIRSTNAME	VARCHAR2 (50 BYTE)
	* PHONE	VARCHAR2 (50 BYTE)
	* ADDRESSLINE1	VARCHAR2 (50 BYTE)
	ADDRESSLINE2	VARCHAR2 (50 BYTE)
	* CITY	VARCHAR2 (50 BYTE)
	STATE	VARCHAR2 (50 BYTE)
	POSTALCODE	VARCHAR2 (15 BYTE)
	* COUNTRY	VARCHAR2 (50 BYTE)
F	SALESREPEMPLOYEENUMBER	NUMBER (*,0)
	CREDITLIMIT	NUMBER (10,2)

🔑 CUSTOMERS_PK (CUSTOMERNUMBER)

🔑 CUST_SALESREP_FK (SALESREPEMPLOYEENUMBER)

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

Customers can have so many orders.
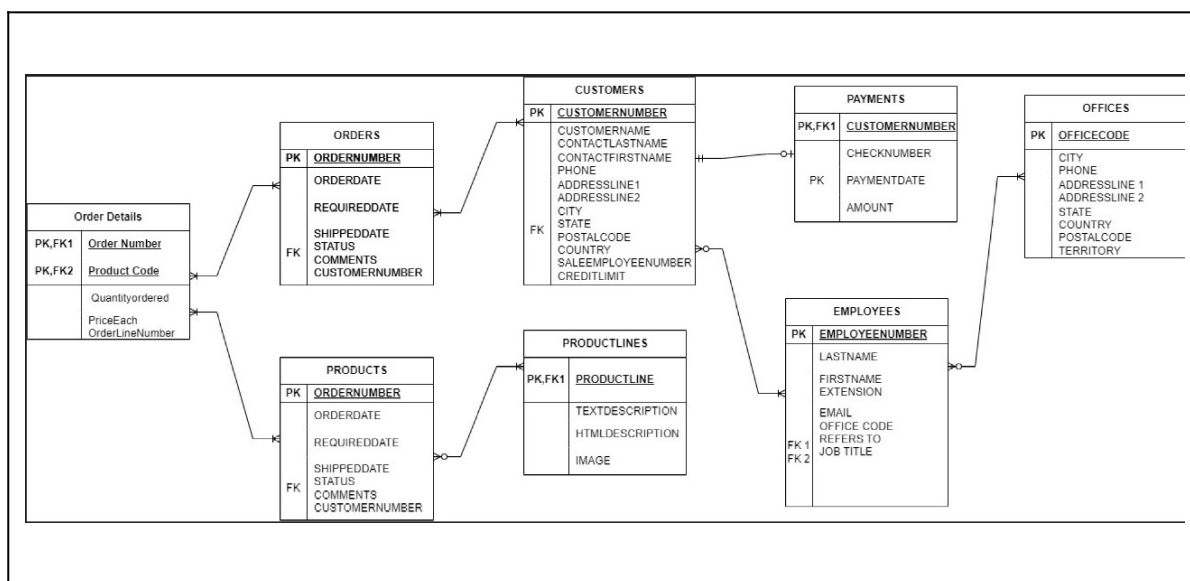Each orders can have so many order details.

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

Good Luck.