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? ___110___
3) List the table's columns and the requested information in the following format:

Column Name	Type	Not Null
PRODUCTCODE	VARCHAR2(15 byte)	Yes (it is not Null)
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	's24_4048'
PRODUCTNAME	'1992 Porsche Cayenne Turbo Silver'
PRODUCTLINE	'Classic Cars'
PRODUCTSCALE	'1:24'
PRODUCTVENDOR	'Exoto Designs'
QUANTITYINSTOCK	6582
BUYPRICE	69.78
PRODUCTDESCRIPTION	'This replica features opening doors, superb detail and craftsmanship, working steering system, opening forward compartment, opening rear trunk with removable spare, 4 wheel independent spring suspension as well as factory baked enamel finish.'
MSRP	118.28

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			
PROD_LINE_FK	Foreign_Key	PRODUCTLINE		PRODUCTLINES
SYS_C002967949	Check		"PRODUCTCODE" IS NOT NULL	

SYS_C002967950	Check		"PRODUCTNAME" IS NOT NULL	
SYS_C002967951	Check		"PRODUCTLINE" IS NOT NULL	
SYS_C002967952	Check		"PRODUCTSCALE" IS NOT NULL	
SYS_C002967953	Check		"PRODUCTVENDOR" IS NOT NULL	
SYS_C002967954	Check		"PRODUCTDESCRIPTION" IS NOT NULL	
SYS_C002967955	Check		"QUANTITYINSTOCK" IS NOT NULL	
SYS_C002967956	Check		"BUYPRICE" IS NOT NULL	
SYS_C002967957	Check		"MSRP" IS NOT NULL	
SYS_C002967958	Primary_Key			

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

Table Name	Column in Common
DBS211_CUSTOMERS	CUSTOMER ID
PRODUCTLINES	PRODUCTLINE
ORDERDETAILS	PRODUCTCODE

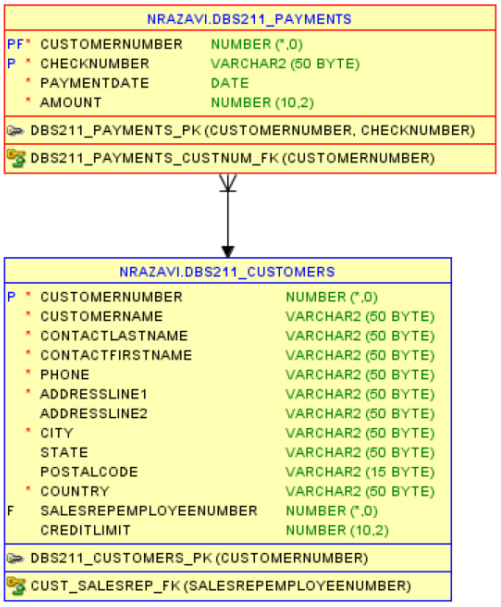
7) What is the model for this table relationships?

NOTE: ⩛ means MANY

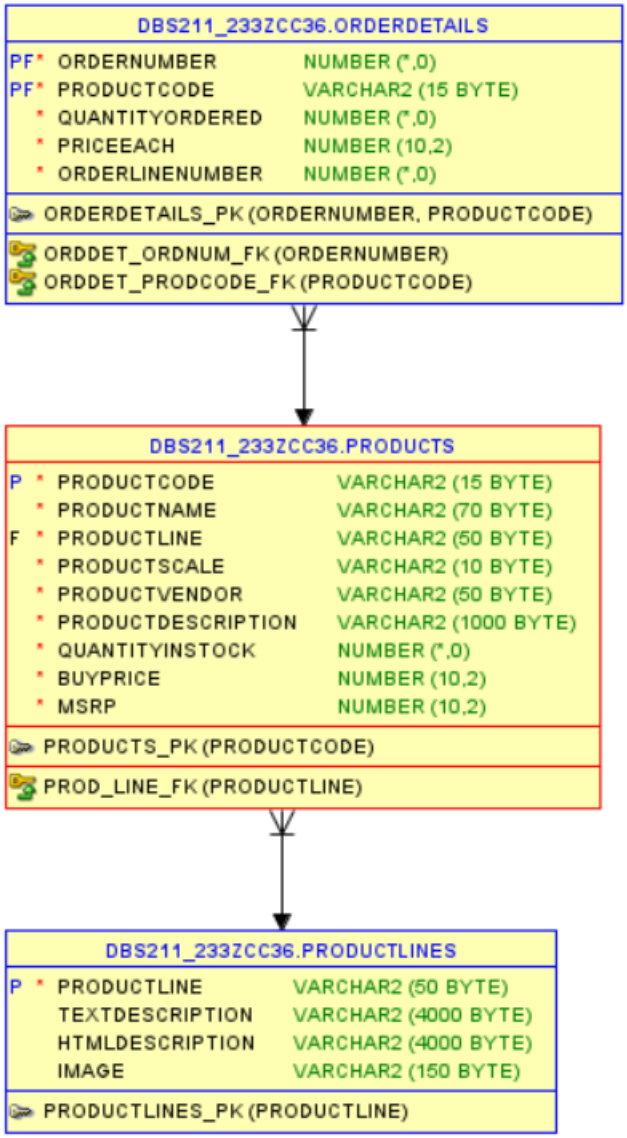
🡻 means ONE

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

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


NRAZAVI.DBS211_PAYMENTS
PF * CUSTOMERNUMBER NUMBER (*,0)
P * CHECKNUMBER VARCHAR2 (50 BYTE)
* PAYMENTDATE DATE
* AMOUNT NUMBER (10,2)
DBS211_PAYMENTS_PK (CUSTOMERNUMBER, CHECKNUMBER)
DBS211_PAYMENTS_CUSTNUM_FK (CUSTOMERNUMBER)
NRAZAVI.DBS211_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)
DBS211_CUSTOMERS_PK (CUSTOMERNUMBER)
CUST_SALESREP_FK (SALESREPEMPLOYEENUMBER)

ANSWER:


DBS211_233ZCC36.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_233ZCC36.PRODUCTS
P * PRODUCTCODE VARCHAR2 (15 BYTE)
* PRODUCTNAME VARCHAR2 (70 BYTE)
F * PRODUCTLINE VARCHAR2 (50 BYTE)
* PRODUCTSCALE VARCHAR2 (10 BYTE)
* PRODUCTVENDOR VARCHAR2 (50 BYTE)
* PRODUCTDESCRIPTION VARCHAR2 (1000 BYTE)
* QUANTITYINSTOCK NUMBER (*,0)
* BUYPRICE NUMBER (10,2)
* MSRP NUMBER (10,2)
PRODUCTS_PK (PRODUCTCODE)
PROD_LINE_FK (PRODUCTLINE)
DBS211_233ZCC36.PRODUCTLINES
P * PRODUCTLINE VARCHAR2 (50 BYTE)
TEXTDESCRIPTION VARCHAR2 (4000 BYTE)
HTMLDESCRIPTION VARCHAR2 (4000 BYTE)
IMAGE VARCHAR2 (150 BYTE)
PRODUCTLINES_PK (PRODUCTLINE)

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

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

A product has multiple order details, and a product line has many products.
A order refers to single product, and product refer to single product line

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 (it is Not Null)
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, it is nullable
CITY	VARCHAR2(50 BYTE)	Yes
STATE	VARCHAR2(50 BYTE)	No, it is nullable
POSTALCODE	VARCHAR2(15 BYTE)	No, it is nullable
COUNTRY	VARCHAR2(50 BYTE)	Yes
SALESREPEMPLOYEENUMBER	NUMBER(38,0)	No, it is nullable
CREDITLIMIT	NUMBER(10,2)	No, it is nullable

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.

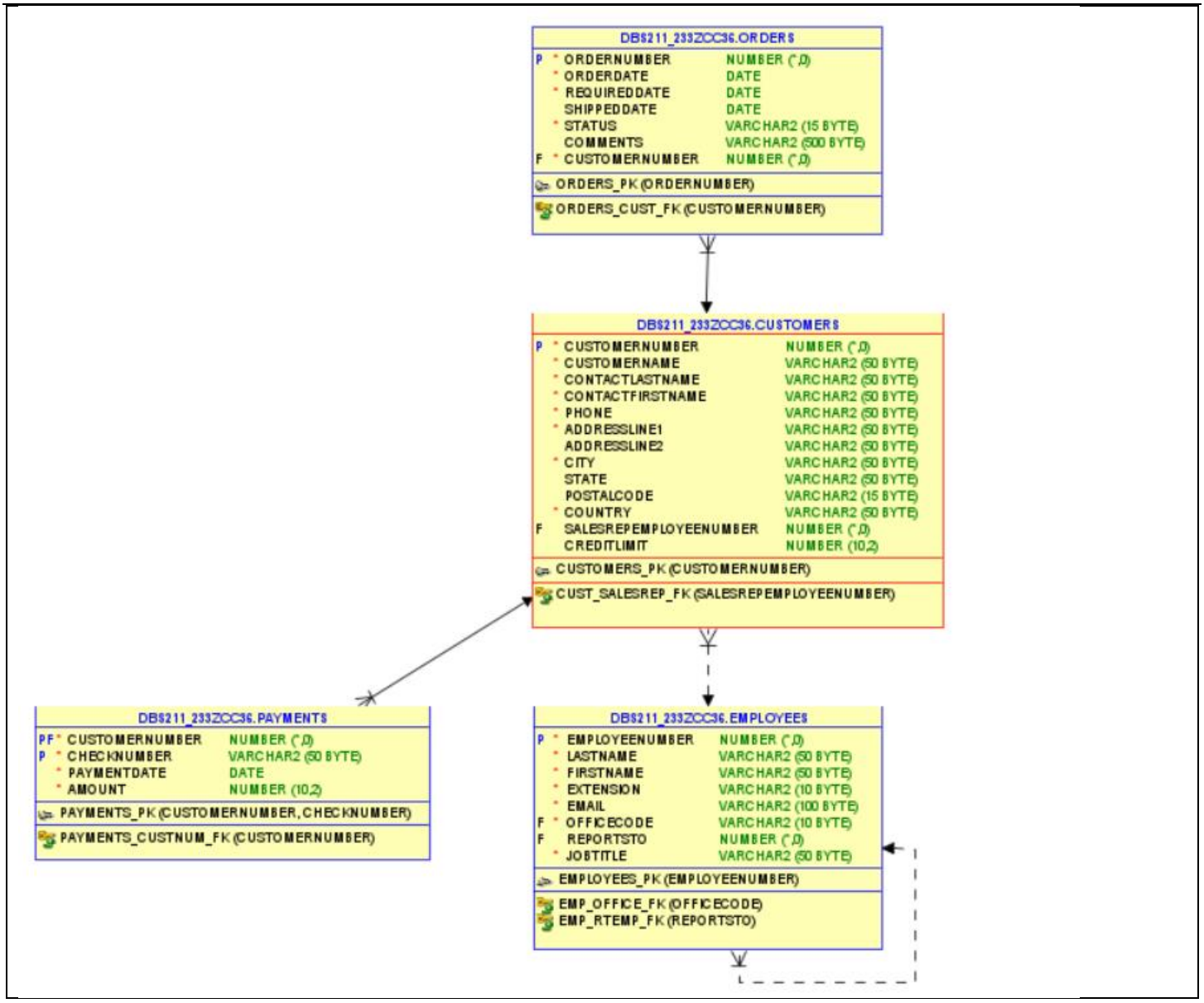
Constraint Name	Constraint Type	Constraint on Column	Constraint Condition	Reference Table
CUST_SALESREP_FK	Foreign_Key	SALESREPEMPLOYEENUMBER		EMPLOYEES
SYS_C002967937	Check		"CUSTOMERNUMBER" IS NOT NULL	
SYS_C002967938	Check		"CUSTOMERNAME" IS NOT NULL	
SYS_C002967939	Check		"CONTACTLASTNAME" IS NOT NULL	
SYS_C002967940	Check		"CONTACTFIRSTNAME" IS NOT NULL	
SYS_C002967941	Check		"PHONE" IS NOT NULL	
SYS_C002967942	Check		"ADDRESSLINE1" IS NOT NULL	
SYS_C002967943	Check		"CITY" IS NOT NULL	
SYS_C002967944	Check		"COUNTRY" IS NOT NULL	
SYS_C002967945	Primary_Key			

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

Table Name	Column in Common
ORDERS	CUSTOMERNUMBER
PAYMENTS	CUSTOMERNUMBER
EMPLOYEES	EMPLOYEENUMBER

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

↓ means ONE



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

A customer can have many orders and payments.
A order and payment refers to one customer.
A employee may have multiple customers while customer refer to only one employee.

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)	Yes (it is Not Null)
LASTNAME	VARCHAR2(50 BYTE)	Yes
FIRSTNAME	VARCHAR2(50 BYTE)	Yes
EXTENSION	VARCHAR2(10 BYTE)	Yes
EMAIL	VARCHAR2(100 BYTE)	Yes
OFFICECODE	VARCHAR2(10 BYTE)	Yes
REPORTSTO	NUMBER(38,0)	No, it is nullable
JOBTITLE	VARCHAR2(50 BYTE)	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: (Make sure **CHATACTER** type values are enclosed in single quotes.)

Column Name	Column Value
EMPLOYEENUMBER	1611
LASTNAME	'Fixter'
FIRSTNAME	'Andy'
EXTENSION	'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	OFFICECODE		OFFICES
EMP_RTEMP_FK	Foreign_Key	REPORTSTO		EMPLOYEES
SYS_C002967927	Check		"EMPLOYEENUMBER" IS NOT NULL	
SYS_C002967928	Check		"LASTNAME" IS NOT NULL	
SYS_C002967929	Check		"FIRSTNAME" IS NOT NULL	
SYS_C002967930	Check		"EXTENSION" IS NOT NULL	
SYS_C002967931	Check		"EMAIL" IS NOT NULL	
SYS_C002967932	Check		"OFFICECODE" IS NOT NULL	
SYS_C002967933	Check		"JOBTITLE" IS NOT NULL	
SYS_C002967934	Primary_Key			

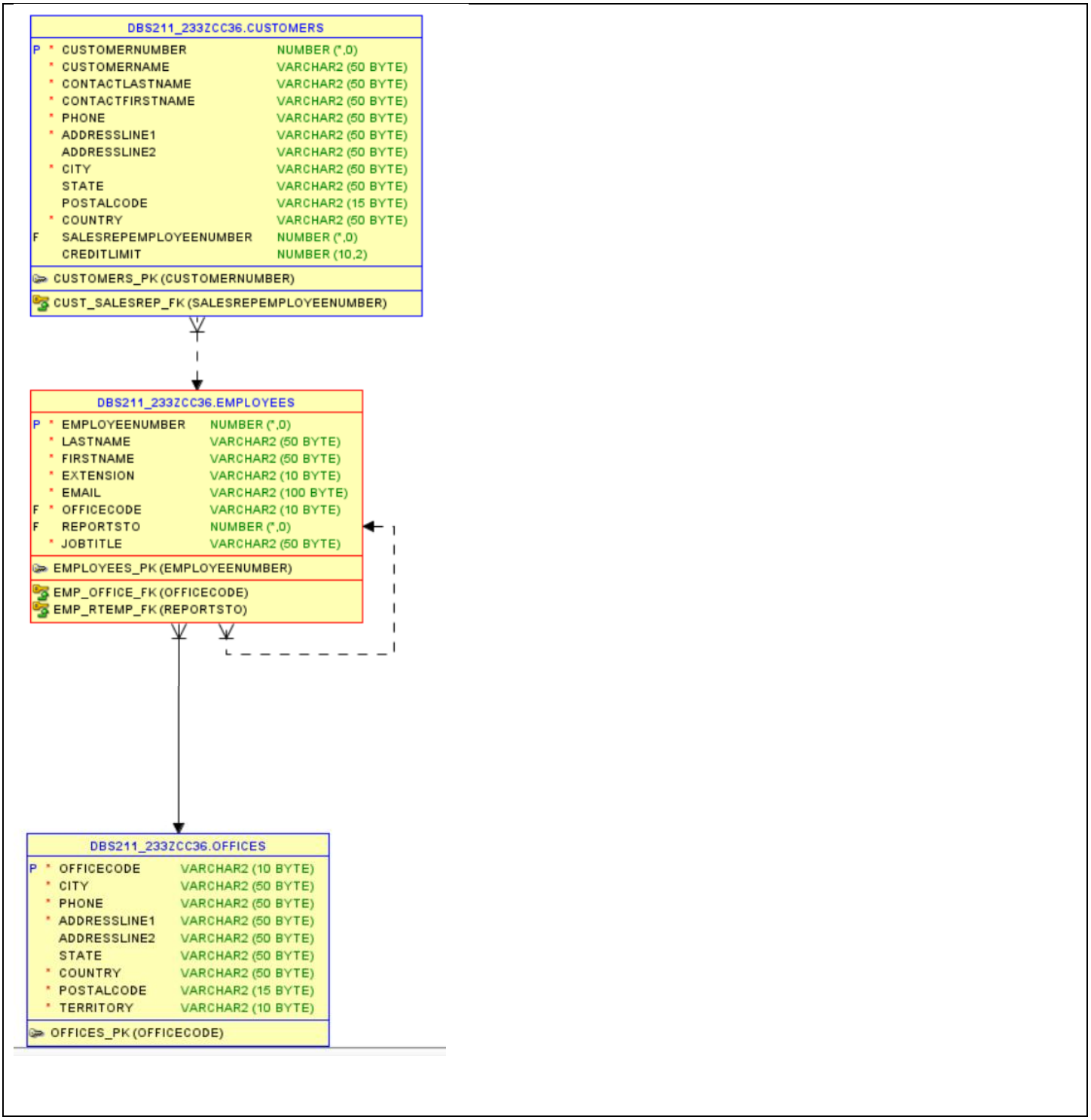
6) What tables are in relationship with this table? List them below.

Table Name	Column in Common

CUSTOMERS	EMPLOYEENUMBER
OFFICES	OFFICECODE

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.

A employee may have multiple customers while a customer refer to only one employee.
A employee refer to one office while office can have many employee.

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)	Yes (it is Not Null)
ORDERDATE	DATE	Yes
REQUIREDDATE	DATE	Yes
SHIPPEDDATE	DATE	No, it is nullable
STATUS	VARCHAR2(15 BYTE)	Yes
COMMENTS	VARCHAR2(500 BYTE)	No, it is nullable
CUSTOMERNUMBER	NUMBER(38,0)	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: (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	
CUSTOMERNUMBER	363

5) List all constraints in this table.
If a constraint is a foreign key, write the reference table.

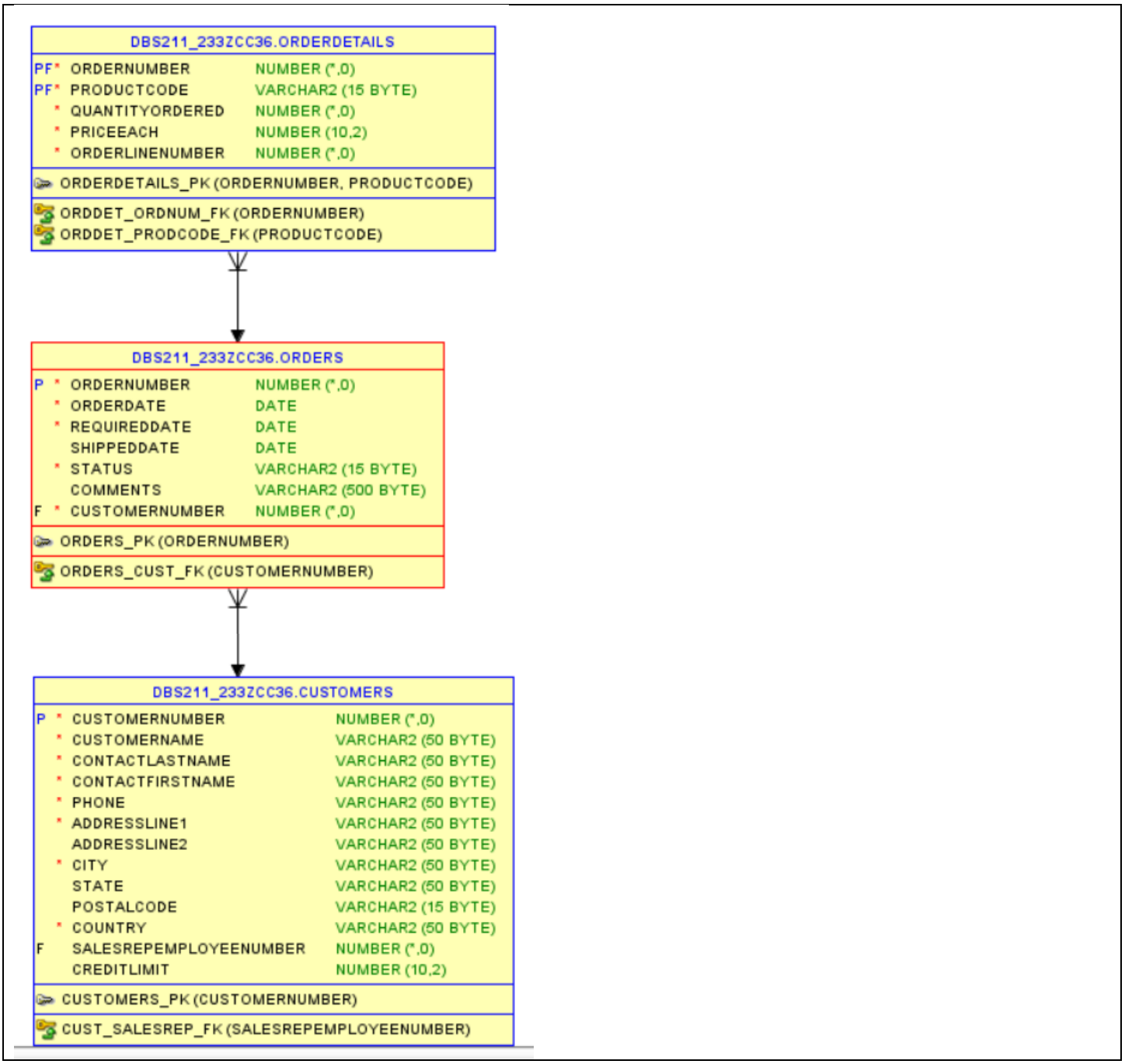
Constraint Name	Constraint Type	Constraint on Column	Constraint Condition	Reference Table
ORDERS_CUST_FK	Foreign_Key	CUSTOMERNUMBER		CUSTOMERS
SYS_C002967960	Check		"ORDERNUMBER" IS NOT NULL	
SYS_C002967961	Check		"ORDERDATE" IS NOT NULL	
SYS_C002967962	Check		"REQUIREDDATE" IS NOT NULL	
SYS_C002967963	Check		"STATUS" IS NOT NULL	
SYS_C002967964	Check		"CUSTOMERNUMBER" IS NOT NULL	
SYS_C002967965	Primary_Key			

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

Table Name	Column in Common	Refers to
CUSTOMERS	CUSTOMERNUMBER	ORDERS
ORDERDETAILS	ORDERNUMBER	ORDERS

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.

A customer has many orders and a order has multiple details.
A order refer to one customer and a order details refer to one order

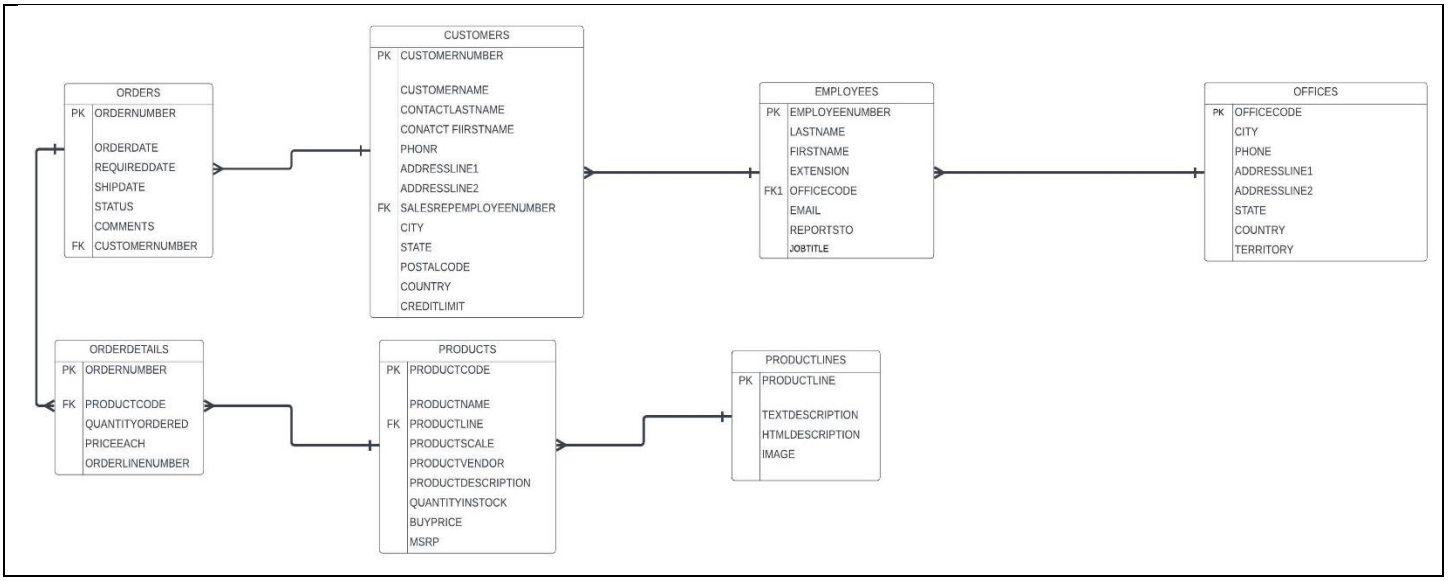
Part B

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.

Members of Group 2 participated:

1.Manav Alpeshbhai Zadafiya

2. Patel Arth Bimalbhai

3. Niroopah Bonifus Joseph