Lab 02 – Relational Model

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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
PRODUCTNAME	VARCHAR2 (70 BYTE)	Yes
PRODUCTLINE	VARCHAR2 (50 BYTE)	Yes
PRODUCTSCALE	VARCHAR 2 (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
PRODUCTCODE	'S18_1984'
PRODUCTNAME	'1995 Honda Civic'
PRODUCTLINE	'Classic Cars'
PRODUCTSCALE	'1:18'
PRODUCTVENDOR	'Min Lin Diecast'
PRODUCTDESCRIPTION	'This model features, opening hood, opening doors, detailed engine, rear spoiler, opening trunk, working steering, tinted windows, baked enamel finish. Color yellow.'

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

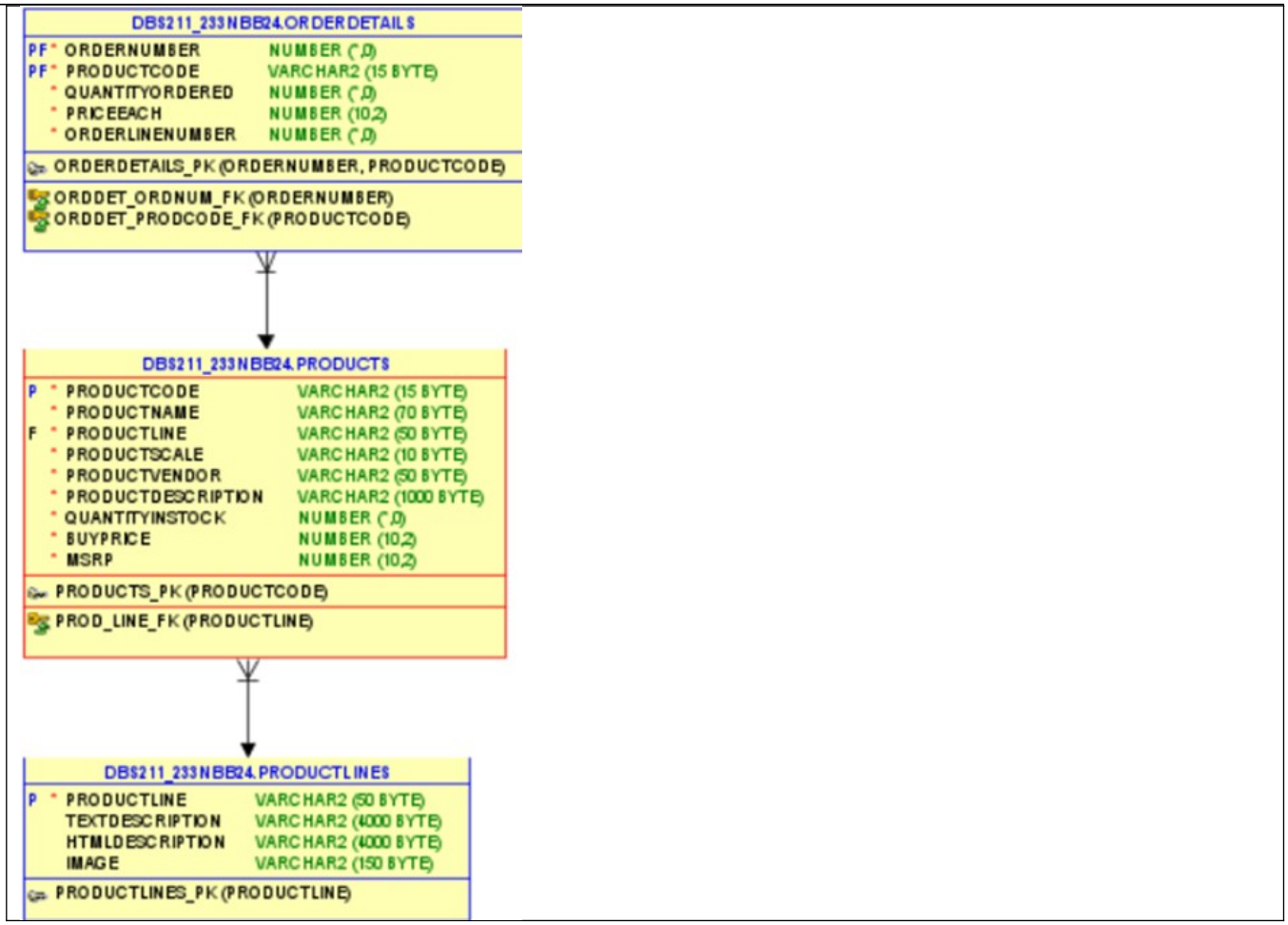
Constraint Name	Constraint Type	Constraint on Column	Constraint Condition	Reference Table
PROD_LINE_FK	Foreign Key	(null)	(null)	DBS211_PRODUCTLINES
SYS_C002913841	Check	PRODUCTCODE	"PRODUCTCODE" IS NOT NULL	
SYS_C002913842	Check	PRODUCTNAME	"PRODUCTNAME" IS NOT NULL	
SYS_C002913843	Check	PRODUCTLINE	"PRODUCTLINE" IS NOT NULL	
SYS_C002913844	Check	PRODUCTSCALE	"PRODUCTSCALE" IS NOT NULL	
SYS_C002913845	Check	PRODUCTVENDOR	"PRODUCTVENDOR" IS NOT NULL	

SYS_C002913846	Check	PRODUCTDESCRIPTION	"PRODUCTDESCRIPTION" IS NOT NULL	
SYS_C002913847	Check	QUANTITYINSTOCK	"QUANTITYINSTOCK" IS NOT NULL	
SYS_C002913848	Check	BUYPRICE	"BUYPRICE" IS NOT NULL	
SYS_C002913849	Check	MSRP	"MSRP" IS NOT NULL	
SYS_C002913850	Primary_Key	(null)	(null)	

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

Table Name	Column in Common
DBS211_ORDERDETAILS	ORDERNUMBER
DBS211_ORDERDETAILS	PRODUCTCODE
DBS211_PRODUCTLINES	PRODUCTLINE

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 productline may have many products.

A product refers to one productline.

A product may have many orders.

An order refers to one product.

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
CUSTUMERNUMBER	249
CUSTOMERNAME	Amica Models "&" Co.
CONTACTLASTNAME	Accorti
CONTACTFIRSTNAME	Paolo
PHONE	011-4988555
ADDRESSLINE1	Via Monte Bianco 34
CITY	Torino
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	(null	(null)	DBS211_EMPLOYEES
SYS_C002954517	Check	CUSTOMERNUMBER	"CUSTOMERNUMBER" IS NOT NULL	
SYS_C002954518	Check	CUSTOMERNAME	"CUSTOMERNAME" IS NOT NULL	
SYS_C002954519	Check	CONTACTLASTNAME	"CONTACTLASTNAME" IS NOT NULL	
SYS_C002954520	Check	CONTACTFIRSTNAME	"CONTACTFIRSTNAME" IS NOT NULL	
SYS_C002954521	Check	PHONE	"PHONE" IS NOT NULL	
SYS_C002954522	Check	ADDRESSLINE1	"ADDRESSLINE1" IS NOT NULL	

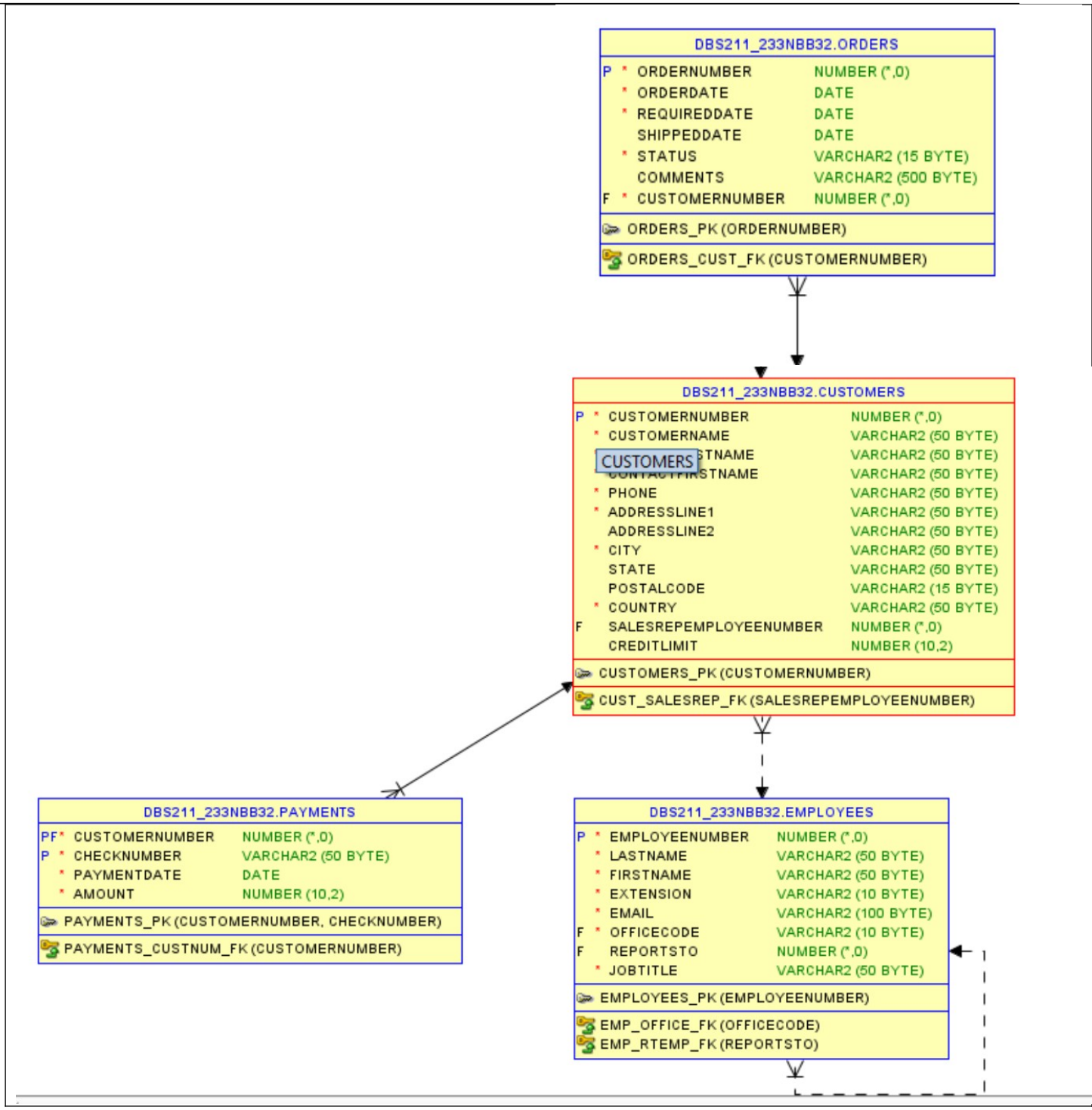
SYS_C002954523	Check	CITY	"CITY" IS NOT NULL	
SYS_C002954524	Check	COUNTRY	"COUNTRY" IS NOT NULL	
SYS_C002954525	Primary_Key	(null)	(null)	

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

Table Name	Column in Common
DBS211_ORDERS	ORDERNUMBER
DBS211_CUSTOMERS	CUSTOMERNUMBER
DBS211_EMPLOYEES	EMPLOYEENUMBER
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.

Many orders can be made by one customer
An order can be made by one customer
Many employees can report to one employee
One employee can report to one employee
An employee can serve many customers
A customer may served by one employee

One payment can be made by one customer
Many payments can be made by one customer

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
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
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	(null)	(null)	OFFICES
EMP_RTEMP_FK	Foreign_Key	(null)	(null)	EMPLOYEES
SYS_C002913819	Check	EMPLOYEENUMBER	"EMPLOYEENUMBER"	

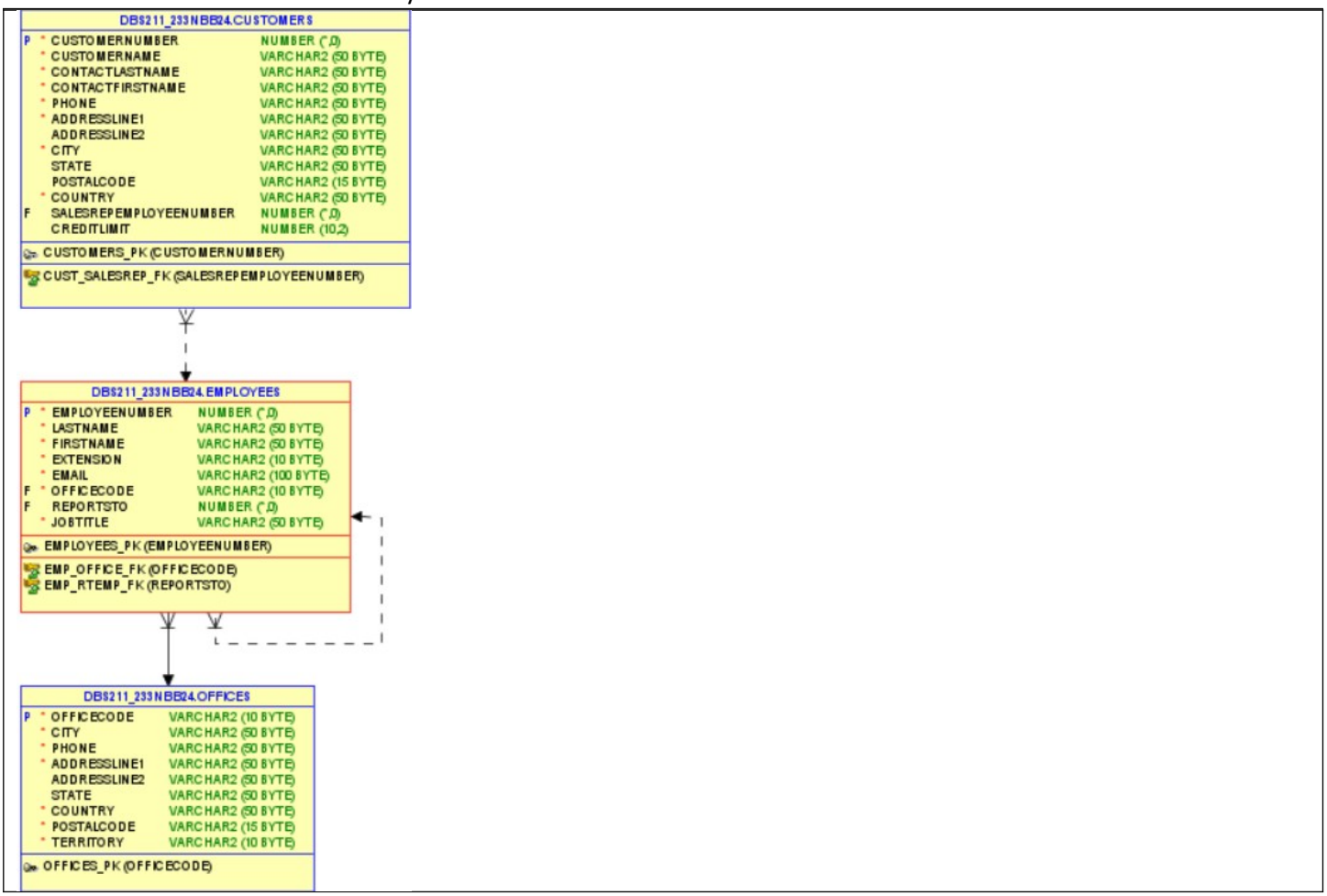
			IS NOT NULL	
SYS_C002913820	Check	LASTNAME	"EMPLOYEENUMBER" IS NOT NULL	
SYS_C002913821	Check	FIRSTNAME	"LASTNAME" IS NOT NULL	
SYS_C002913822	Check	EXTENSION	"EXTENSION" IS NOT NULL	
SYS_C002913823	Check	EMAIL	"EMAIL" IS NOT NULL	
SYS_C002913824	Check	OFFICECODE	"OFFICECODE" IS NOT NULL	
SYS_C002913825	Check	JOBTITLE	"JOBTITLE" IS NOT NULL	
SYS_C002913826	Primary_Key	(null)	(null)	

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

Table Name	**Column in Common**
CUSTOMERS	SALESREPEMPLOYEENUMBER
OFFICES	OFFICECODE
EMPLOYEES	REPORTSTO

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.

An Office can have multiple Employees
An Employee can only refer to one Office
Many Employees can report to one Employee
One Employee can only report to one Employee
An Employee may serve multiple Customers
A Customer may only be served by one Employee

d) Answer the following Question for the **DBS211_ORDERS** table.

1) How many columns (attributes) are there in this table? _____6_____
2) How many rows are there in this table? _____7_____
3) List the table's columns and the requested information in the following format:

Column Name	Type	Not Null
ORDERNUMBER	NUMBER	No
ORDERDATE	DATE	No
REQUIREDDATE	DATE	No
SHIPPEDDATE	DATE	Yes
STATUS	VARCHAR2	No

COMMENTS	VARCHAR2	Yes
CUSTOMERNUMBER	NUMBER	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	06-JAN-03
REQUIREDDATE	13-JAN-03
SHIPPEDDATE	10-JAN-03
STATUS	Shipped
COMMENTS	N/A
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	N/A	CUSTOMERS
SYS_C002964873	Check	ORDERNUMBER	"ORDERNUMBER" IS NOT NULL	N/A
SYS_C002964874	Check	ORDERDATE	"ORDERDATE" IS NOT NULL	N/A
SYS_C002964875	Check	REQUIREDDATE	"REQUIREDDATE" IS NOT NULL	N/A
SYS_C002964876	Check	STATUS	"STATUS" IS NOT NULL	N/A
SYS_C002964877	Check	CUSTOMERNUMBER	"CUSTOMERNUMBER" IS NOT NULL	N/A
SYS_C002964878	Primary Key	ORDERNUMBER	N/A	N/A

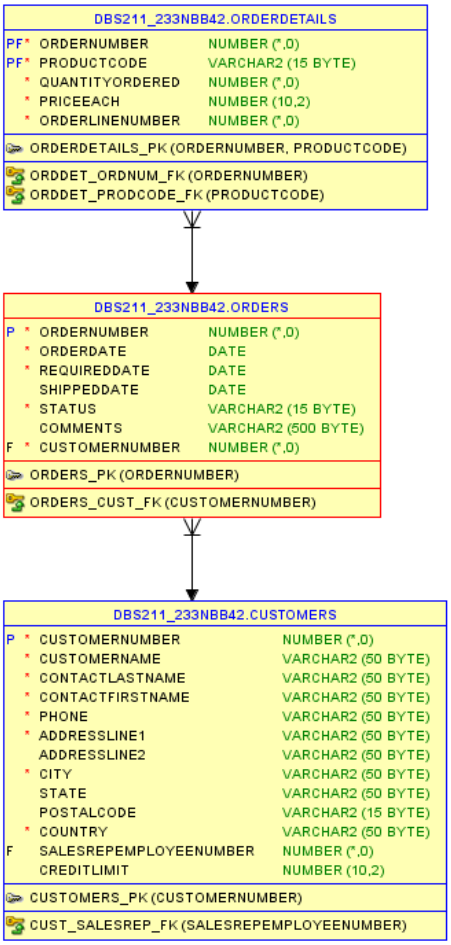
6) What tables are in relationship with this table? List them below.

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

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.

An order can have many order details
Order details can have one order only
Customers can make many orders
An order is done by a customer

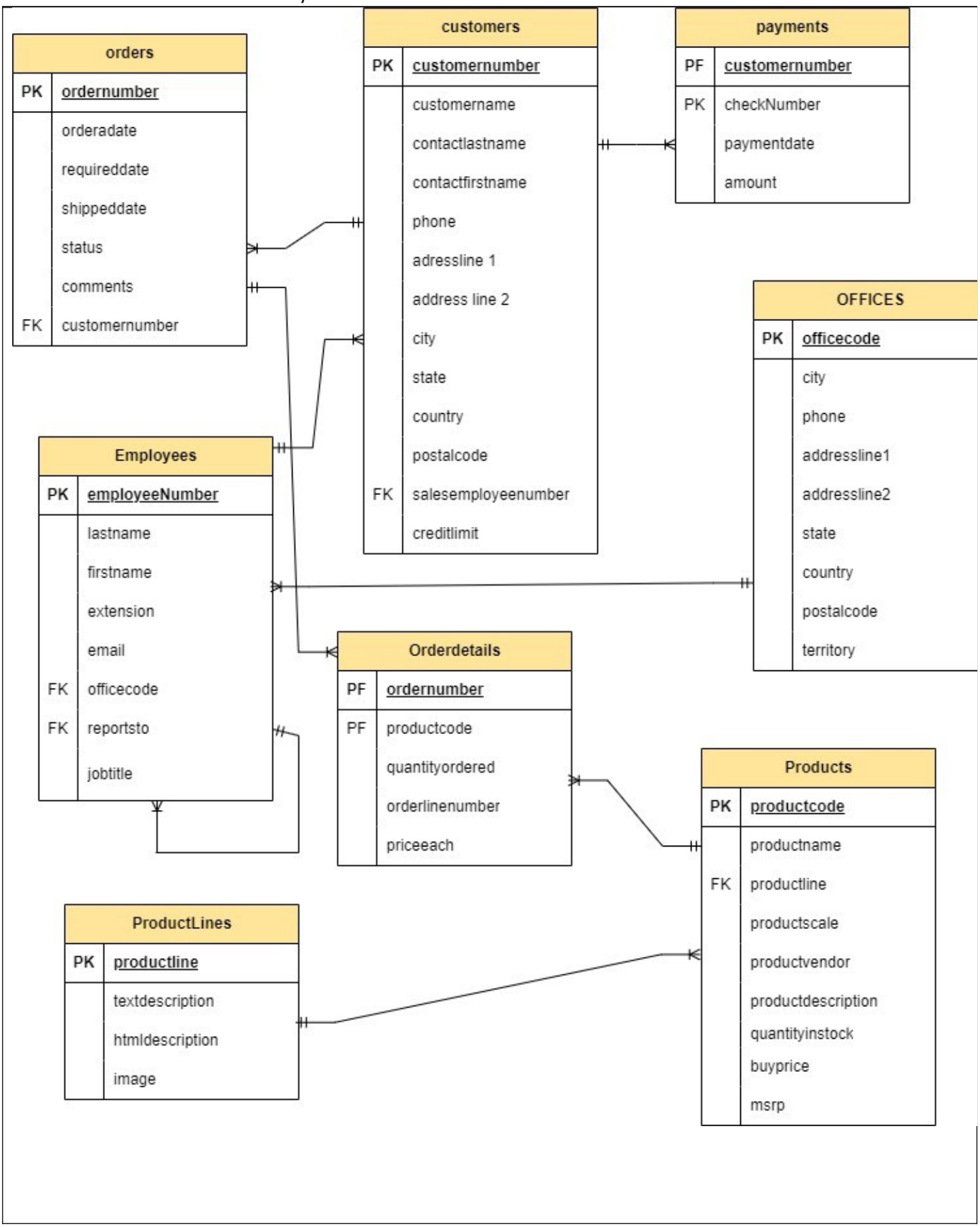
Part B

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


orders
PK ordernumber
orderadate
requireddate
shippeddate
status
comments
FK customernumber
customers
PK customernumber
customername
contactlastname
contactfirstname
phone
adressline 1
address line 2
city
state
country
postalcode
FK salesemployeenumber
creditlimit
payments
PF customernumber
PK checkNumber
paymentdate
amount
OFFICES
PK officecode
city
phone
addressline1
addressline2
state
country
postalcode
territory
Employees
PK employeeNumber
lastname
firstname
extension
email
FK officecode
FK reportsto
jobtitle
Orderdetails
PF ordernumber
PF productcode
quantityordered
orderlinenumber
priceeach
Products
PK productcode
productname
FK productline
productscale
productvendor
productdescription
quantityinstock
buyprice
msrp
ProductLines
PK productline
textdescription
htmldescription
image

Good Luck.