Lab 01 – Relational Model

Objectives:

The purpose of the first lab of TM210 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:

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)	No
PRODUCTNAME	VARCHAR2(70 BYTE)	No
PRODUCTLINE	VARCHAR2(50 BYTE)	No
DBS211_PRODUCTSCALE	VARCHAR2(10 BYTE)	No
PRODUCTVENDOR	VARCHAR2(50 BYTE)	No
PRODUCTDESCRIPTION	VARCHAR2(1000 BYTE)	No
QUANTITYINSTOCK	NUMBER(38,0)	No
BUYPRICE	NUMBER(10,2)	No
MSRP	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. 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

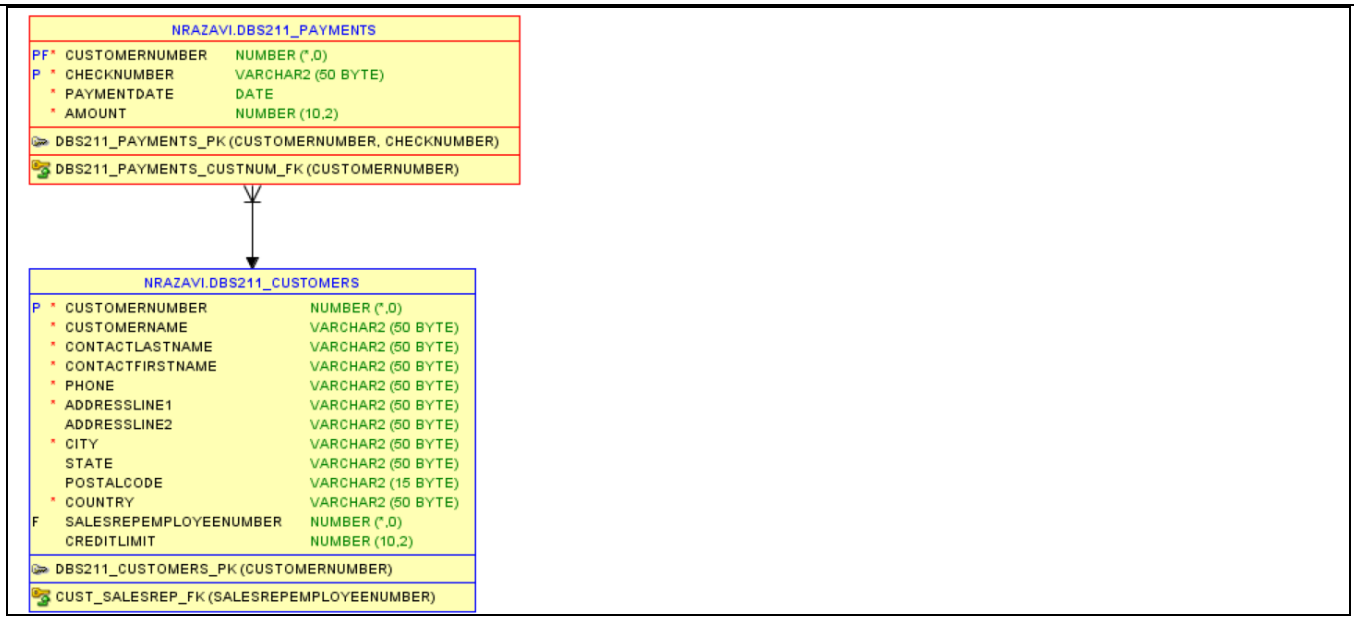
5) List all constraints in this table.
If a constraint is a foreign key, write the reference table.

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)	No
CUSTOMERNAME	VARCHAR2(50 BYTE)	No
CONTACTLASTNAME	VARCHAR2(50 BYTE)	No
CONTACTFIRSTNAME	VARCHAR2(50 BYTE)	No
PHONE	VARCHAR2(50 BYTE)	No
ADDRESSLINE1	VARCHAR2(50 BYTE)	No
ADDRESSLINE2	VARCHAR2(50 BYTE)	Yes
CITY	VARCHAR2(50 BYTE)	No
STATE	VARCHAR2(50 BYTE)	Yes
POSTALCODE	VARCHAR2(15 BYTE)	Yes
COUNTRY	VARCHAR2(50 BYTE)	No
SALESREPEMPLOYEENUMBER	NUMBER(38,0)	Yes
CREDITLIMIT	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: (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	'null'
CITY	'Torino'
STATE	'null'
POSTALCODE	'10100'
COUNTRY	113000
SALESREPEMPLOYEENUMBER	1401

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

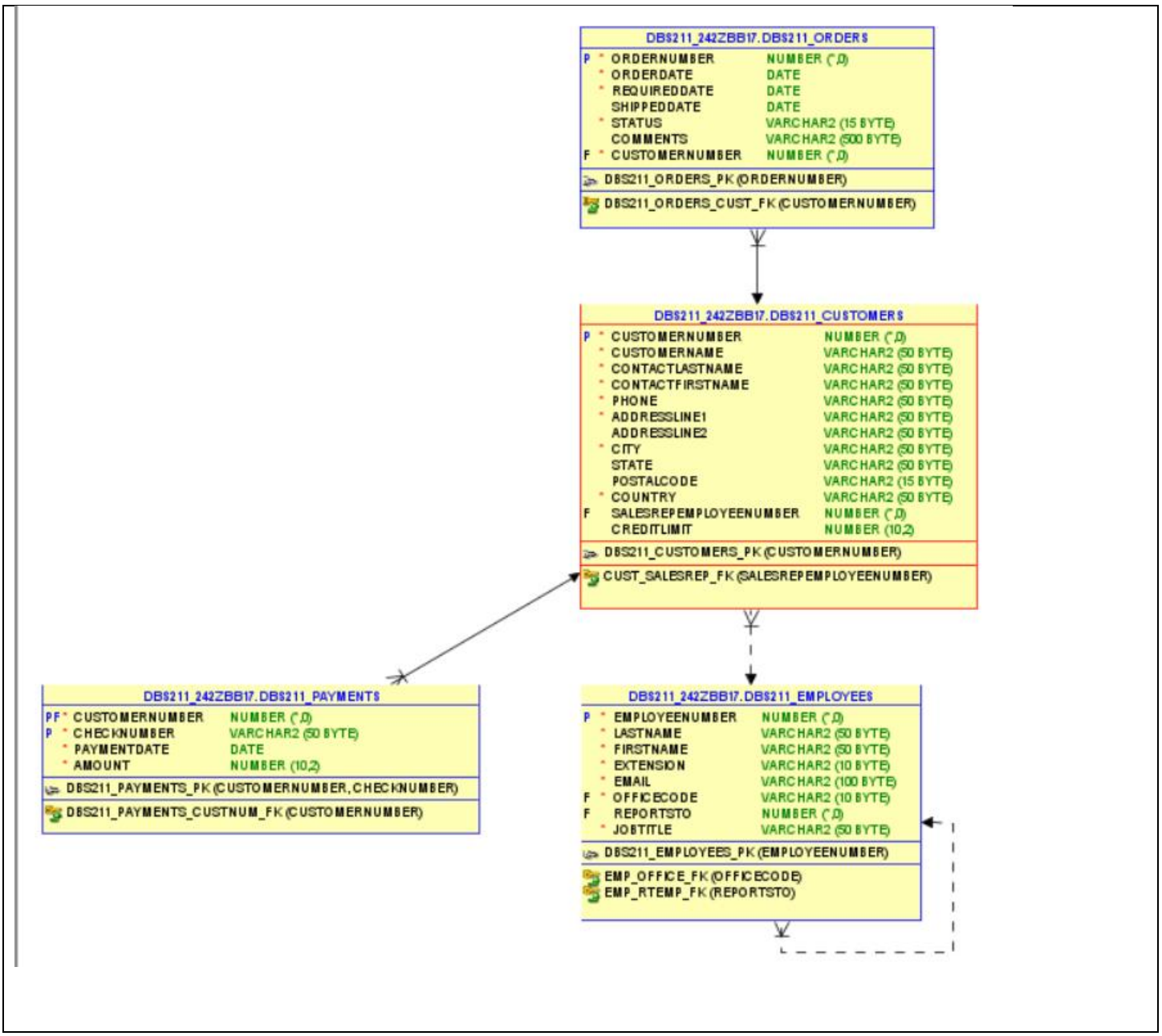
Constraint Name	Constraint Type	Constraint on Column	Constraint Condition	Reference Table
CUST_SALESREP_FK	Foreign_Key	CUSTOMER_NUMBER		DBS211_EMPLOYEES
SYS_C003545109	Check		"CUSTOMERNUMBER" IS NOT NULL	
SYS_C003545110	Check		"CUSTOMERNAME" IS NOT NULL	
SYS_C003545111	Check		"CONTACTLASTNAME" IS NOT NULL	
SYS_C003545112	Check		"CONTACTFIRSTNAME" IS NOT NULL	
SYS_C003545113	Check		"PHONE" IS NOT NULL	
SYS_C003545114	Check		"ADDRESSLINE1" IS NOT NULL	
SYS_C003545115	Check		"CITY" IS NOT NULL	
SYS_C003545116	Check		"COUNTRY" IS NOT NULL	
SYS_C003545117	Primary_Key			

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

Table Name	Column in Common
DBS211_ORDERS	CUSTOMERNUMBER
DBS211_PAYMENTS	CUSTOMERNUMBER
DBS211_EMPLOYEES	EMPLOYEENUMBER

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.
Orders refer to one customer.
A customer has many payments.
Payments refer to one customer.
Many customers rely on many employees and vice versa.

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
EXTENSION	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
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.

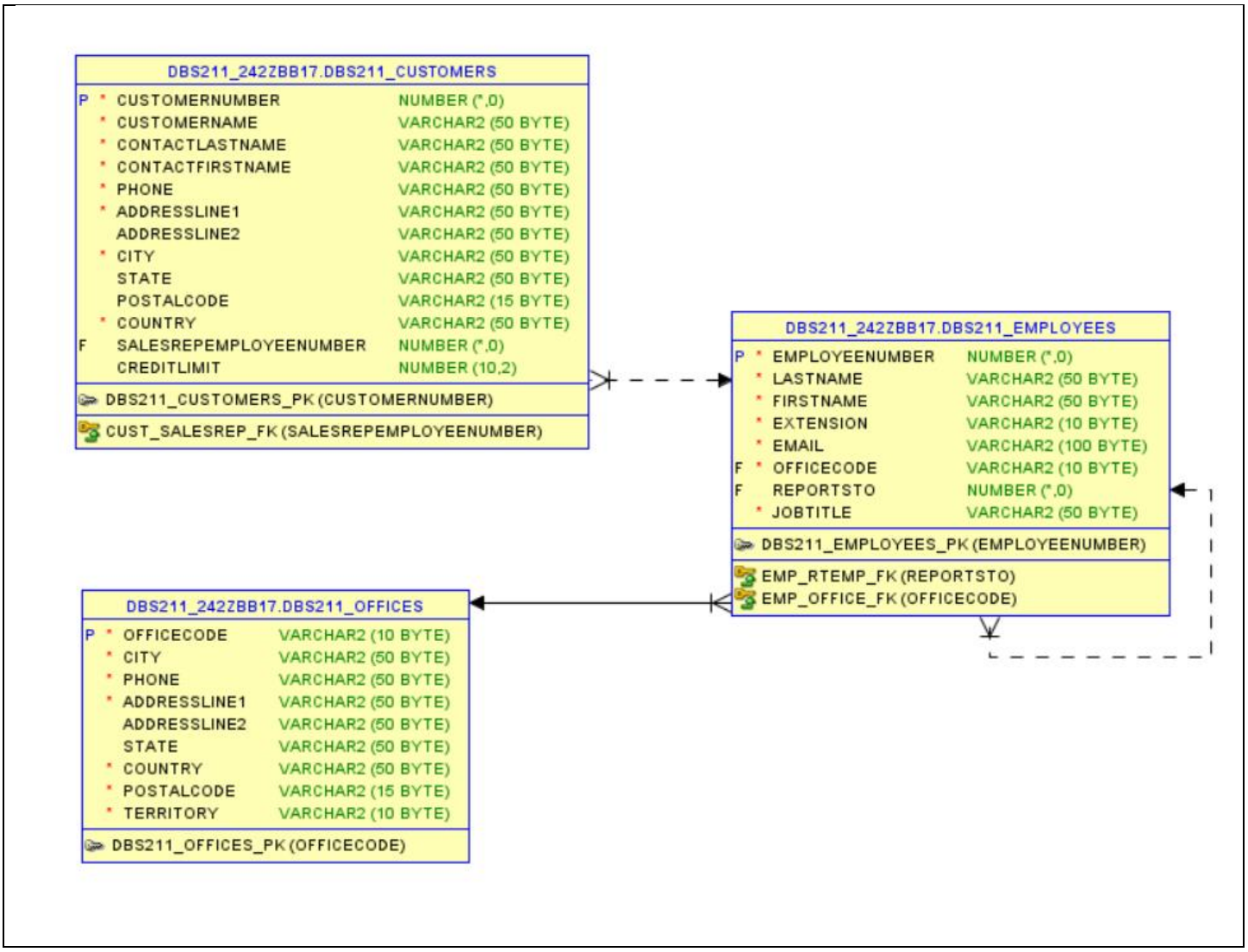
Constraint Name	Constraint Type	Constraint on Column	Constraint Condition	Reference Table
EMP_OFFICE_FK	Foreign_Key	OFFICECODE		DBS211_OFFICES
EMP_RTEMP_FK	Foreign_Key	EMPLOYEENUMBER		DBS211_EMPLOYEES
SYS_C003545099	Check		"EMPLOYEENUMBER" IS NOT NULL	
SYS_C003545100	Check		"LASTNAME" IS NOT NULL	
SYS_C003545101	Check		"FIRSTNAME" IS NOT NULL	
SYS_C003545102	Check		"EXTENSION" IS NOT NULL	
SYS_C003545103	Check		"EMAIL" IS NOT NULL	
SYS_C003545104	Check		"OFFICECODE" IS NOT NULL	
SYS_C003545105	Check		"JOBTITLE" IS NOT NULL	
SYS_C003545106	Primary_Key			

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

Table Name	Column in Common
DBS211_CUSTOMERS	
DBS211_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.

An Office has many employees.
Employees refer to one office.
Many Employees have many customers and vice versa.

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-JAN-06
REQUIREDDATE	03-JAN-13
SHIPPEDDATE	03-JAN-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.

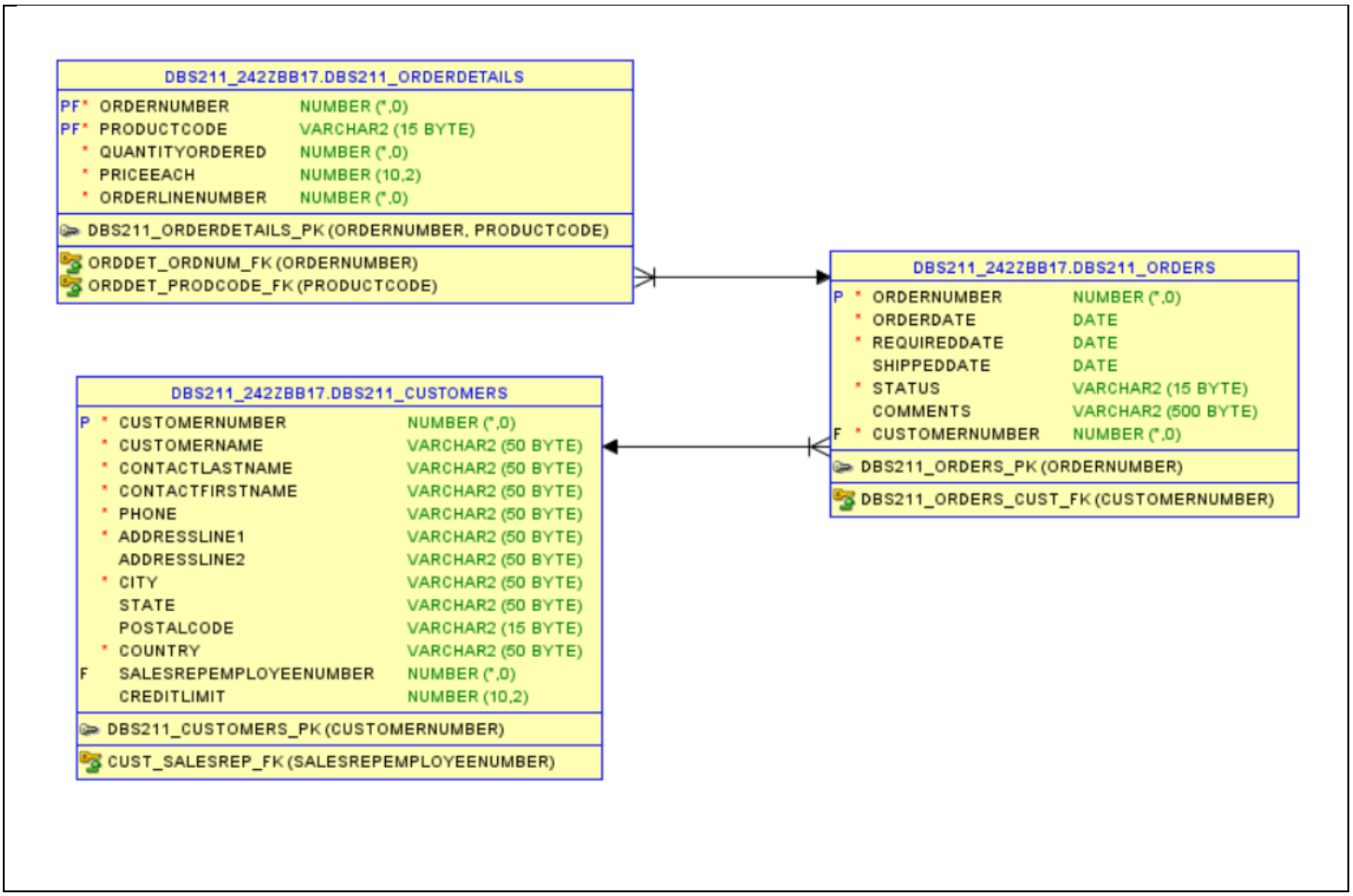
Constraint Name	Constraint Type	Constraint on Column	Constraint Condition	Reference Table
DBS211_ORDERS_CUST_FK	Foreign_Key	CUSTOMERNUMBER		DBS211_CUSTOMERS
SYS_C003545132	Check		"ORDERNUMBER" IS NOT NULL	
SYS_C003545133	Check		"ORDERDATE" IS NOT NULL	
SYS_C003545134	Check		"REQUIREDDATE" IS NOT NULL	
SYS_C003545135	Check		"STATUS" IS NOT NULL	
SYS_C003545136	Check		"CUSTOMERNUMBER" IS NOT NULL	
SYS_C003545137	Primary_Key			

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

Table Name	Column in Common	Refers to
DBS211_ORDERDETAILS	ORDERNUMBER	DBS211_ORDERS
DBS211_CUSTOMERS	CUSTOMERNUMBER	DBS211_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.

An Order has many order details.
Order details refer to one order.
A customer has many orders.
Orders refer to one customer.

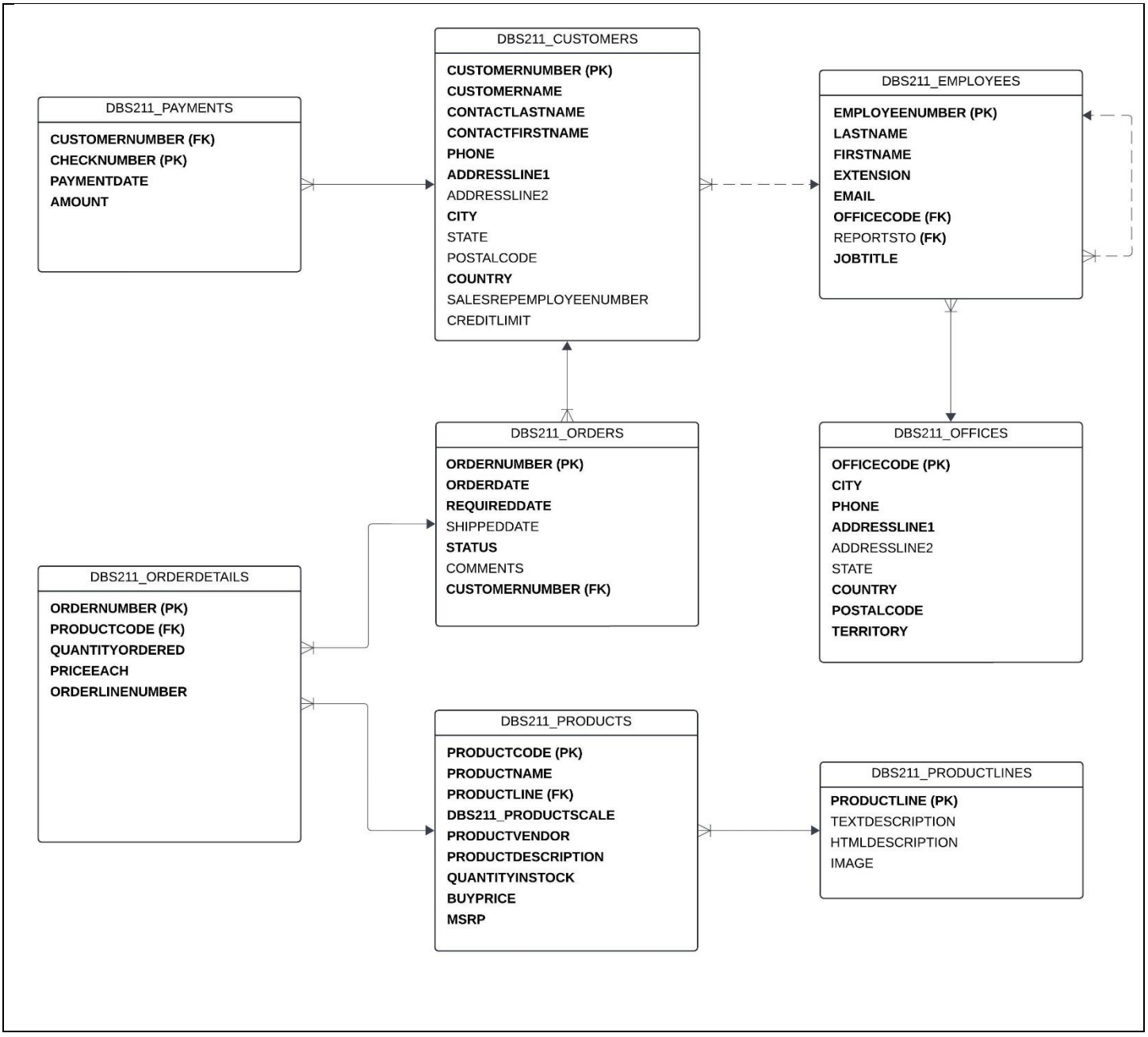
Part B

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.



Good Luck.