–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	Null
PRODUCTCODE	VARCHAR2 (15 BYTE)	NO
PRODUCTNAME	VARCHAR2 (70 BYTE)	NO
PRODUCTLINE	VARCHAR2 (50 BYTE)	NO
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
PRODUCTCODE	S10_1949
PRODUCTNAME	1952 Alpine Renault 1300
PODUCTLINE	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
PROD_LINE_FK	Foreign_Key	SYS_c003198720	(null)	PRODUCTLINES
SYS_C003198721	Check	Null	"PRODUCTCODE" IS NOT NULL	Null
SYS_ C003198722	Check	Null	"PRODUCTNAME" IS NOT NULL	Null
SYS_ C003198723	Check	Null	"PRODUCTLINE" IS NOT NULL	Null
SYS_ C003198724	Check	Null	"PRODUCTSCALE" IS NOT NULL	Null
SYS_ C003198725	Check	Null	"PRODUCTVENDOR" IS NOT NULL	Null
SYS_ C003198726	Check	Null	"PRODUCTDESCRIPTION" IS NOT NULL	Null
SYS_ C003198727	Check	Nulll	"QUANTITYINSTOCK" IS NOT NULL	Null

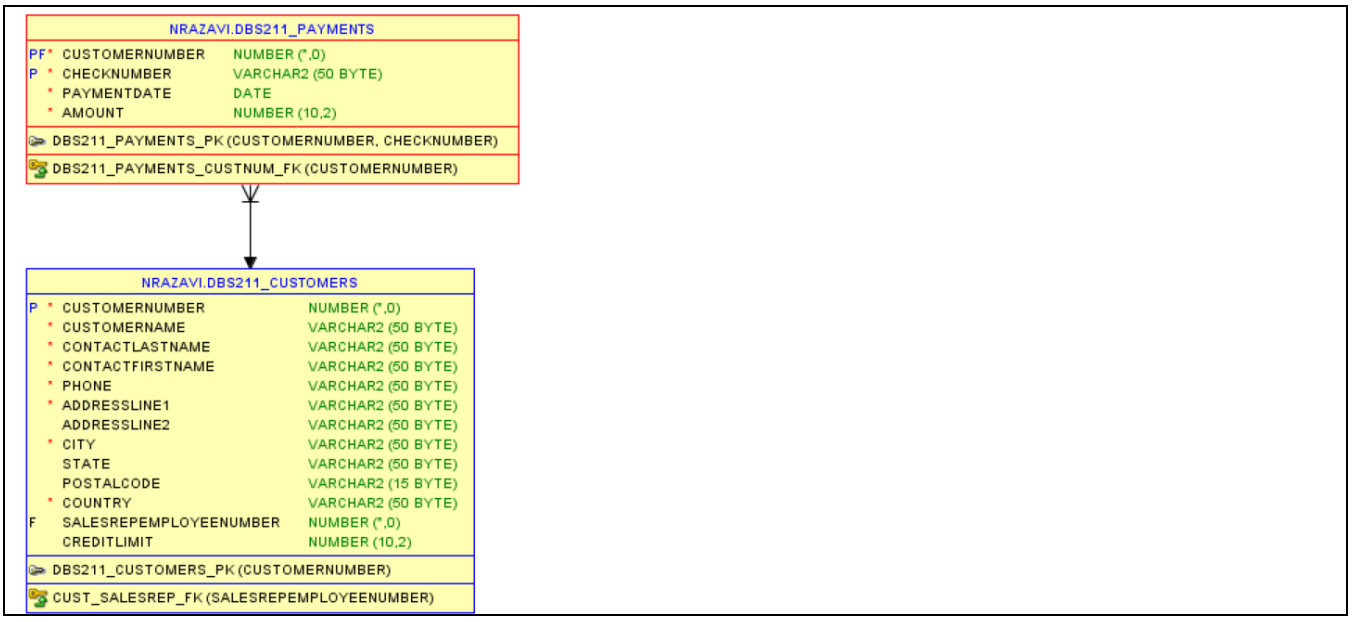
6) What tables are in relationship with this table? List them below.

Table Name	Column in Common
PRODUCTLINE	PRODUCTLINES
ORDERS	CUSTOMERS

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	Italy
SALESREPEMPLOYEENUMBER	1401
CREDITLIMIT	113000

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

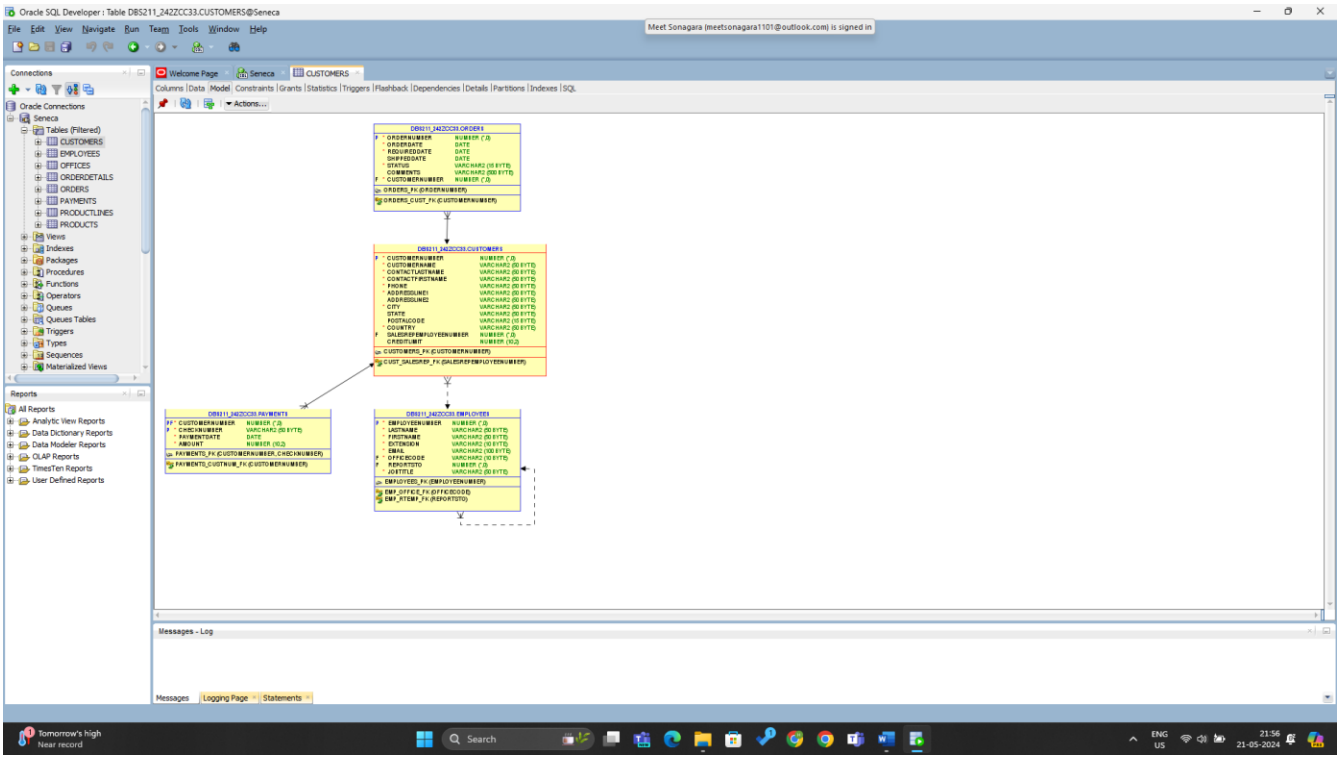
Constraint Name	Constraint Type	Constraint on Column	Constraint Condition	Reference Table
CUST_SALESREP_FK	Foreign_Key	SYS_C003577655	(null)	EMPLOYEES
SYS_C003577658	Check	(null)	"CUSTOMERNUMBER" IS NOT NULL	(null)
SYS_C003577659	Check	(null)	"CUSTOMERNAME" IS NOT NULL	(null)
SYS_C003577660	Check	(null)	"CONTACTLASTNAME" IS NOT NULL	(null)
SYS_C003577661	Check	(null)	"CONTACTFIRSTNAME" IS NOT NULL	(null)
SYS_C003577662	Check	(null)	"PHONE" IS NOT NULL	(null)
SYS_C003577663	Check	(null)	"ADDRESSLINE1" IS NOT NULL	(null)
SYS_C003577664	Check	(null)	"CITY" IS NOT NULL	(null)
SYS_C003577665	Check	(null)	"COUNTRY" IS NOT NULL	(null)
SYS_C003577666	Primary_Key	(null)	(null)	(null)

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

Table Name	Column in Common
ORDERS	CUSTOMERNUMBER
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.

There may be more then 2 or 3 payment by only one customer where as a single payment only refers to 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)	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	SYS_C003577647	(null)	OFFICES
EMP_RTEMP_FK	Foreign_Key	SYS_C003577655	(null)	EMPLOYESS
SYS_C003577648	Check	(null)	"EMPLOYEESNUMBERS" IS NOT NULL	(null)
SYS_C003577649	Check	(null)	"LASTNAME" IS NOT NULL	(null)
SYS_C003577650	Check	(null)	"FIRSTNAME" IS NOT NULL	(null)
SYS_C003577651	Check	(null)	"EXTENSION" IS NOT NULL	(null)
SYS_C003577652	Check	(null)	"EMAIL" IS NOT NULL	(null)

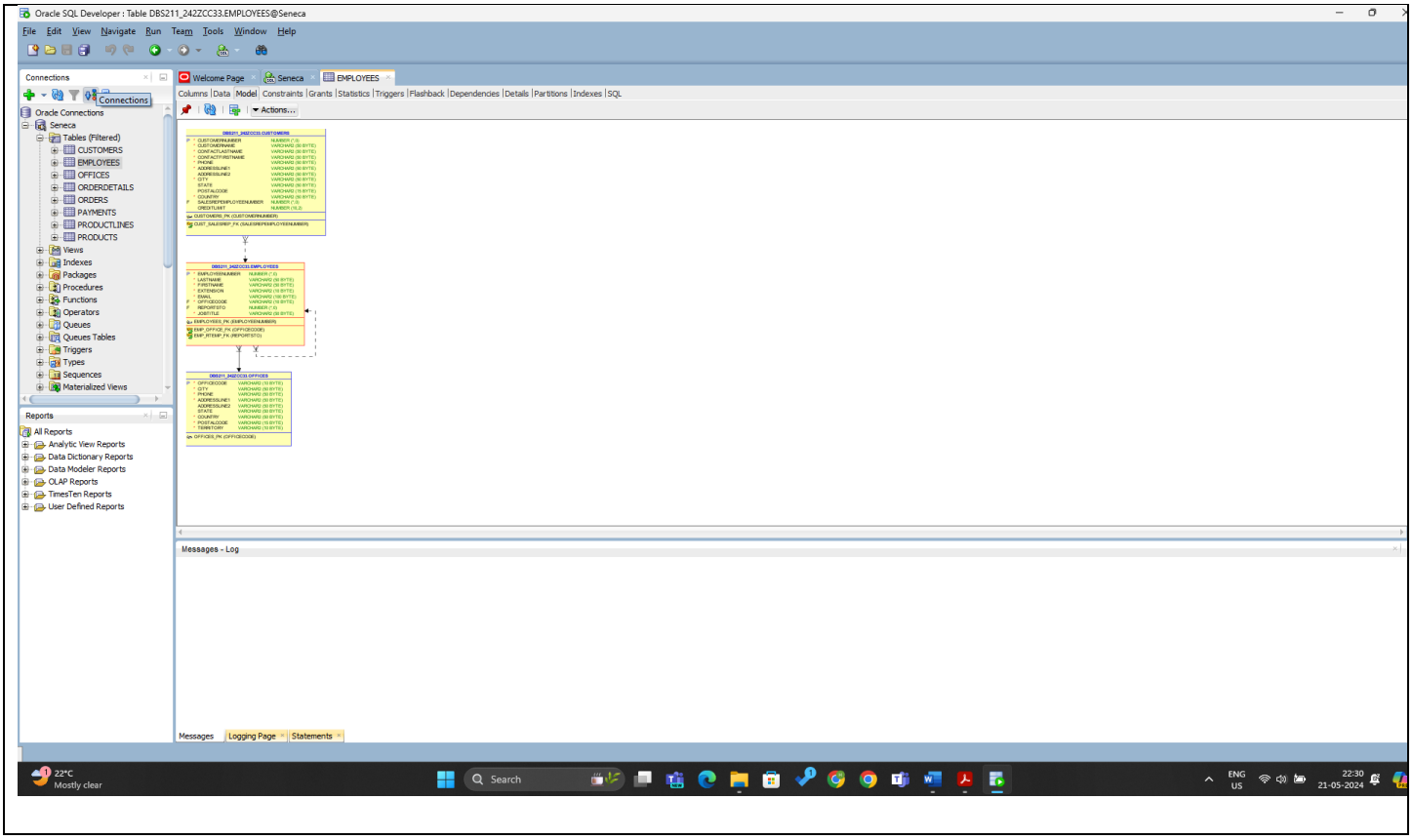
SYS_C003577653	Check	(null)	"OFFICECODE" IS NOT NULL	(null)
SYS_C003577654	Check	(null)	"JOBTITLE" IS NOT NULL	(null)
SYS_C003577655	Primary_Key	(null)	(null)	(null)

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

Table Name	Column in Common
CUSTOMER	EMPLOYEESNUMBER
EMPLOYEES	EMPLOYEESNUMBER, OFFICECODE
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.

One customer only refers to only and only one employee ID or employee, but one employee may refer to many customer.

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	NUMBER(38, 0)	No
REQUIREDATE	NUMBER(38, 0)	No
SHIPPEDDATE	NUMBER(38, 0)	Yes
STATUS	NUMBER(38, 0)	No
COMMENTS	NUMBER(38, 0)	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	06-01-03
REQUIREDATE	13-01-03
SHIPPEDDATE	10-01-03
STATUS	Shipped
COMMENTS	(null)
CUSTOMERNUMBER	363

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

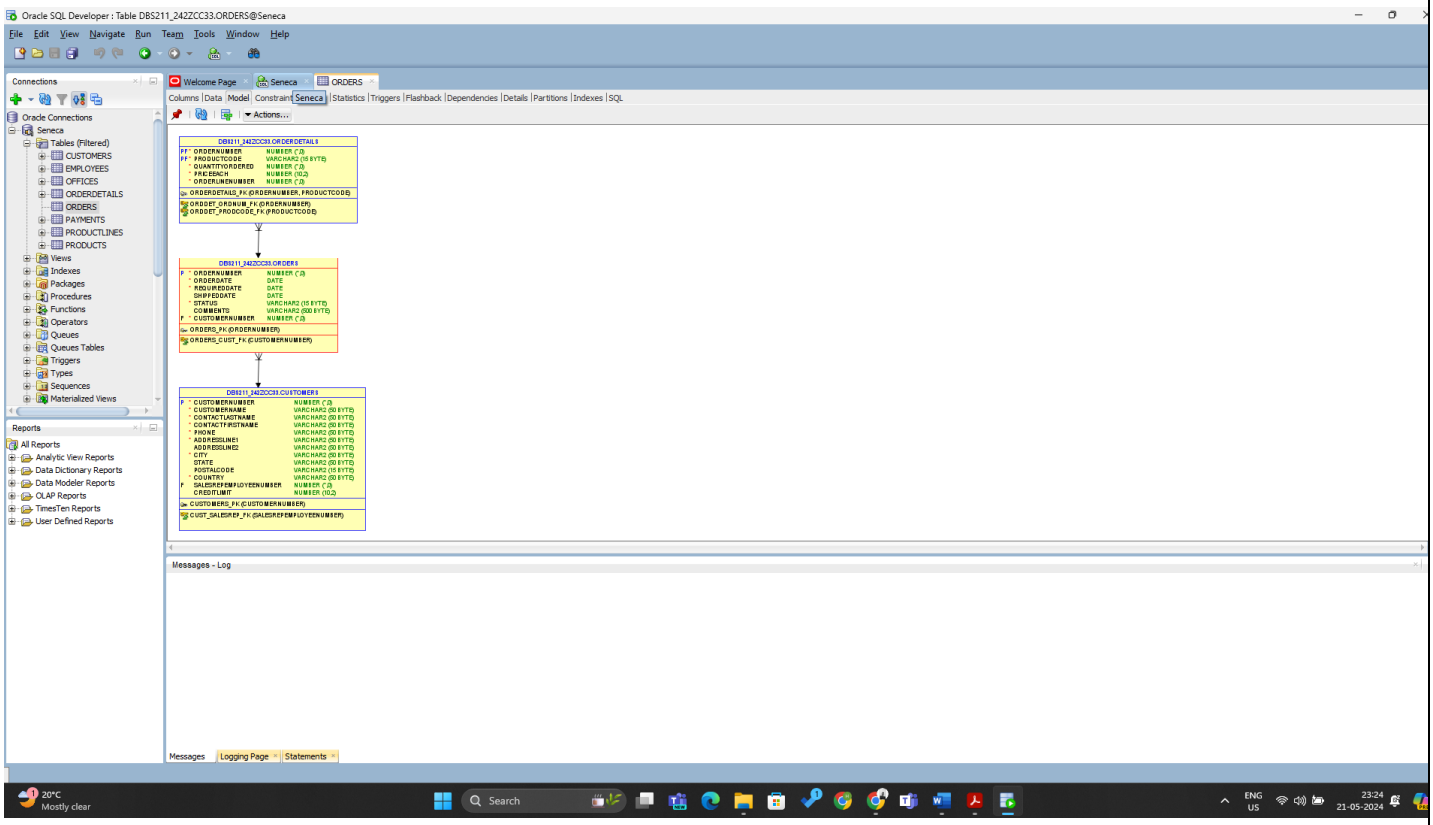
Constraint Name	Constraint Type	Constraint on Column	Constraint Condition	Reference Table
ORDERS_CUST_FK	Foreign_Key	SYS_C003577666	(null)	CUSTOMERS
SYS_C003577681	Check	(null)	"ORDERNUMBER" IS NOT NULL	(null)
SYS_C003577682	Check	(null)	"ORDERDATE" IS NOT NULL	(null)
SYS_C003577683	Check	(null)	"REQUIREDDATE" IS NOT NULL	(null)
SYS_C003577684	Check	(null)	"STATUS" IS NOT NULL	(null)
SYS_C003577685	Check	(null)	"CUSTOMERNUMBER" IS NOT NULL	(null)
SYS_C003577686	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	ORDERS
ORDERS	ORDERNUMBER,CUSTOMERNUMBER	ORDERDETAILS, CUSTOMERS
CUSTOMERS	CUSTOMERNUMER	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.

"ONE" indicates a primary key, "MANY" corresponds to a foreign key referencing another table's primary key.

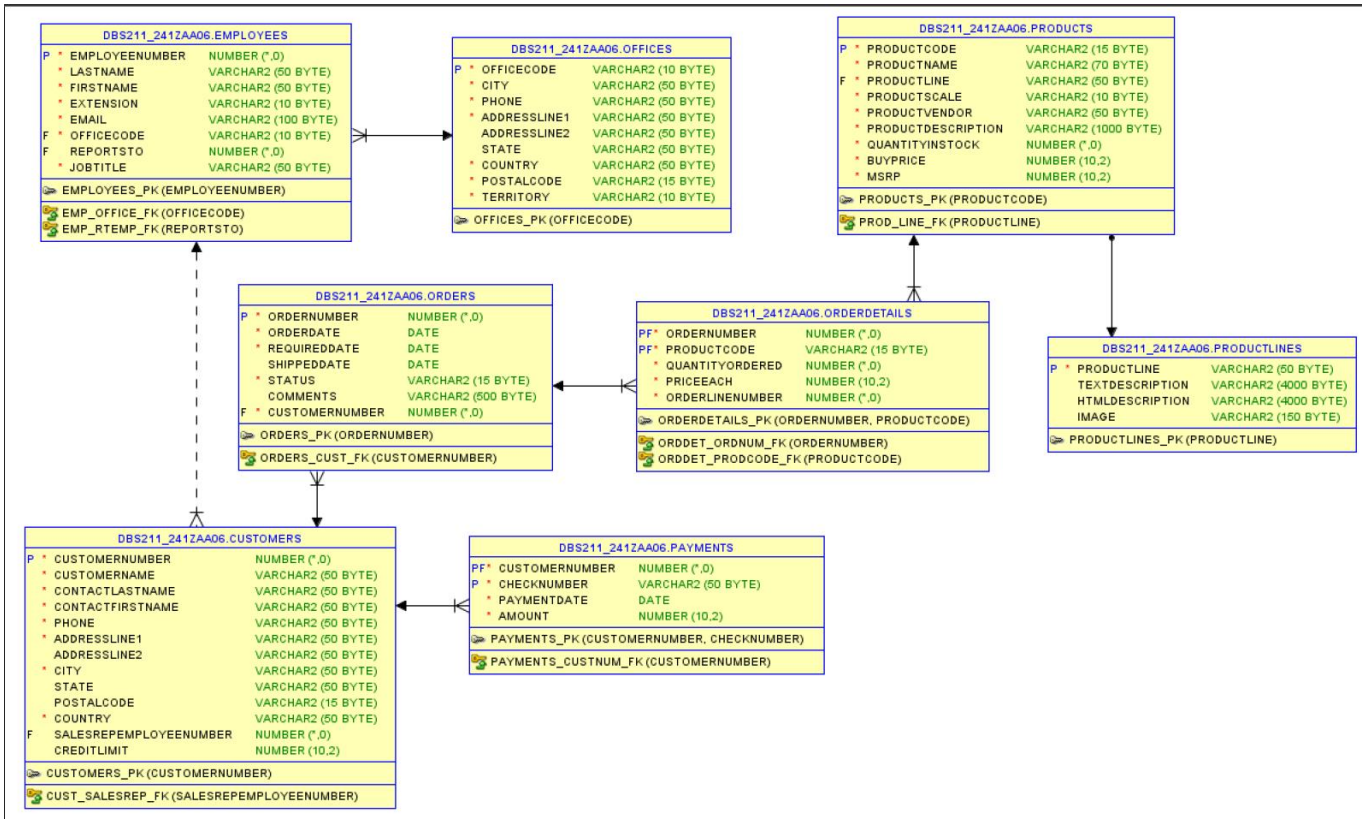
Part B

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.