

# 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)	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	'S24_4048'
PRODUCTNAME	'1992 Porsche Cayenne Turbo Silver'
PRODUCTLINE	'Classic Cars'
PRODUCTSCALE	'1:24'
PRODUCTVENDOR	'Exoto Designs'
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.'
QUANTITYINSTOCK	6582
BUYPRICE	69.78
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
PROD_LINE_FK	Foreign_Key	PRODUCTLINE		DBS211_PROUDUCTLIN
SYS_C004026423	Check	PRODUCTCODE	"PRODUCTCODE" IS NOT NULL	
SYS_C004026424	Check	PRODUCTNAME	"PRODUCTNAME" IS NOT NULL	
SYS_C004026425	Check	PRODUCTLINE	"PRODUCTLINE" IS NOT NULL	
SYS_C004026426	Check	PRODUCTSCALE	"PRODUCTSCALE" IS NOT NULL	
SYS_C004026427	Check	PRODUCTVENDOR	"PRODUCTVENDOR" IS NOT NULL	
SYS_C004026428	Check	PRODUCTDESCRIPTION	"PRODUCTDESCRIPTION" IS NOT NULL	
SYS_C004026429	Check	QUANTITYINSTOCK	"QUANTITYINSTOCK" IS NOT NULL	
SYS_C004026430	Check	BUYPRICE	"BUYPRICE" IS NOT NULL	
SYS_C004026431	Check	MSRP	"MSRP" IS NOT NULL	
SYS_C004026432	Primary_Key	PRODUCTCODE		

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

Table Name	Column in Common
PROUDCTLINES	PRODUCTLINE
ORDERDETAILS	PRODUCTCODE

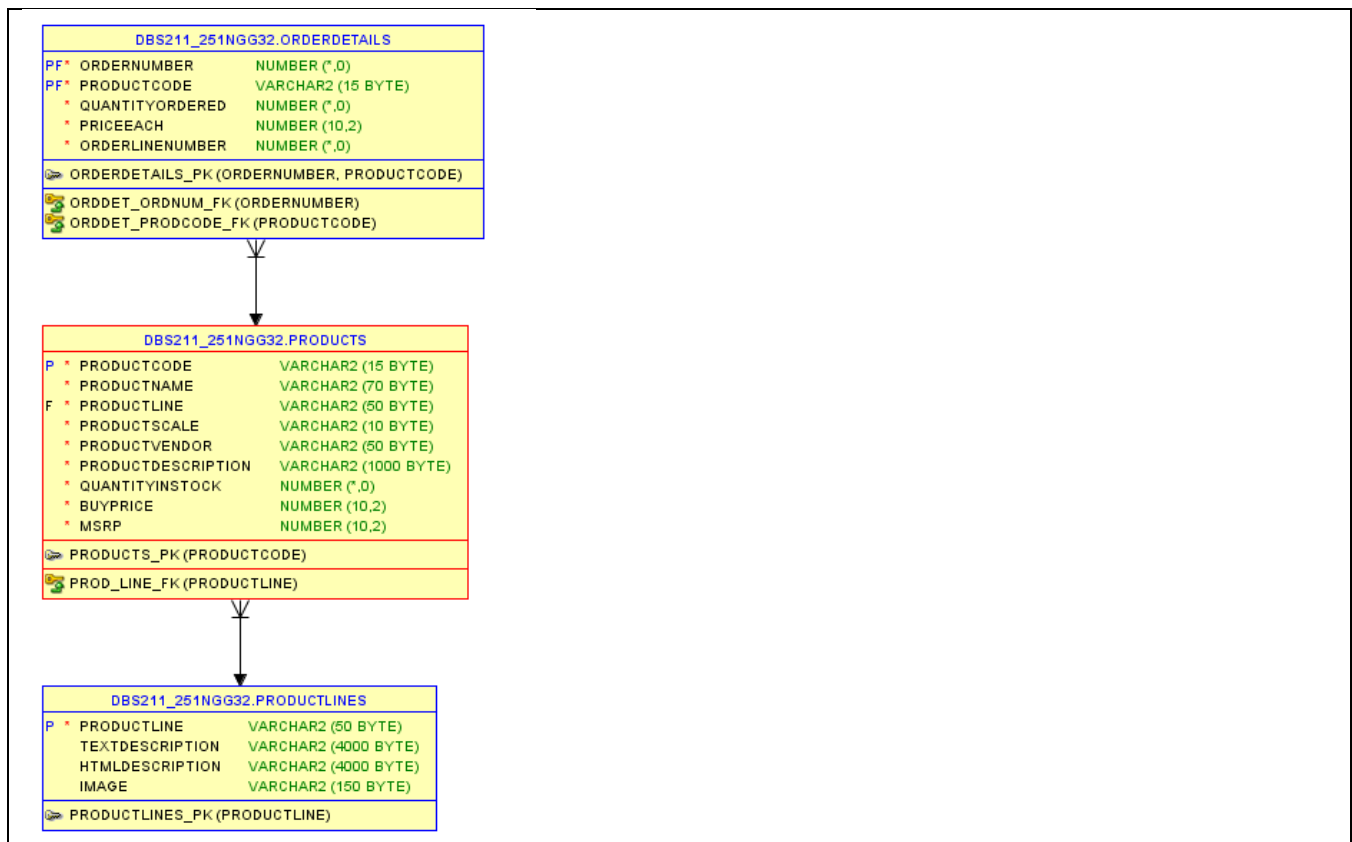
7) What is the model for this table relationships?

NOTE: ∇ means MANY

↓ means ONE

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

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



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

One product can have many orderdetails

Many products can have one productline

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
SALESREPEMPOYEEENUMBER	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'
SALESREPEMPOYEEENUMBER	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	SALESREPEMPOYEEENUMBER		EMPLOYEES
SYS_C004026411	Check	CUSTOMERNUMBER	"CUSTOMERNUMBER" IS NOT NULL	
SYS_C004026412	Check	CUSTOMERNAME	"CUSTOMERNAME" IS NOT NULL	
SYS_C004026413	Check	CONTACTLASTNAME	"CONTACTLASTNAME" IS NOT NULL	

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SYS_C004026414	Check	CONTACTFIRSTNAME	"CONTACTFIRSTNAME" IS NOT NULL	
SYS_C004026415	Check	PHONE	"PHONE" IS NOT NULL	
SYS_C004026416	Check	ADDRESSLINE1	"ADDRESSLINE1" IS NOT NULL	
SYS_C004026417	Check	CITY	"CITY" IS NOT NULL	
SYS_C004026418	Check	COUNTRY	"COUNTRY" IS NOT NULL	
SYS_C004026419	Primary_Key	CUSTOMERNUMBER		

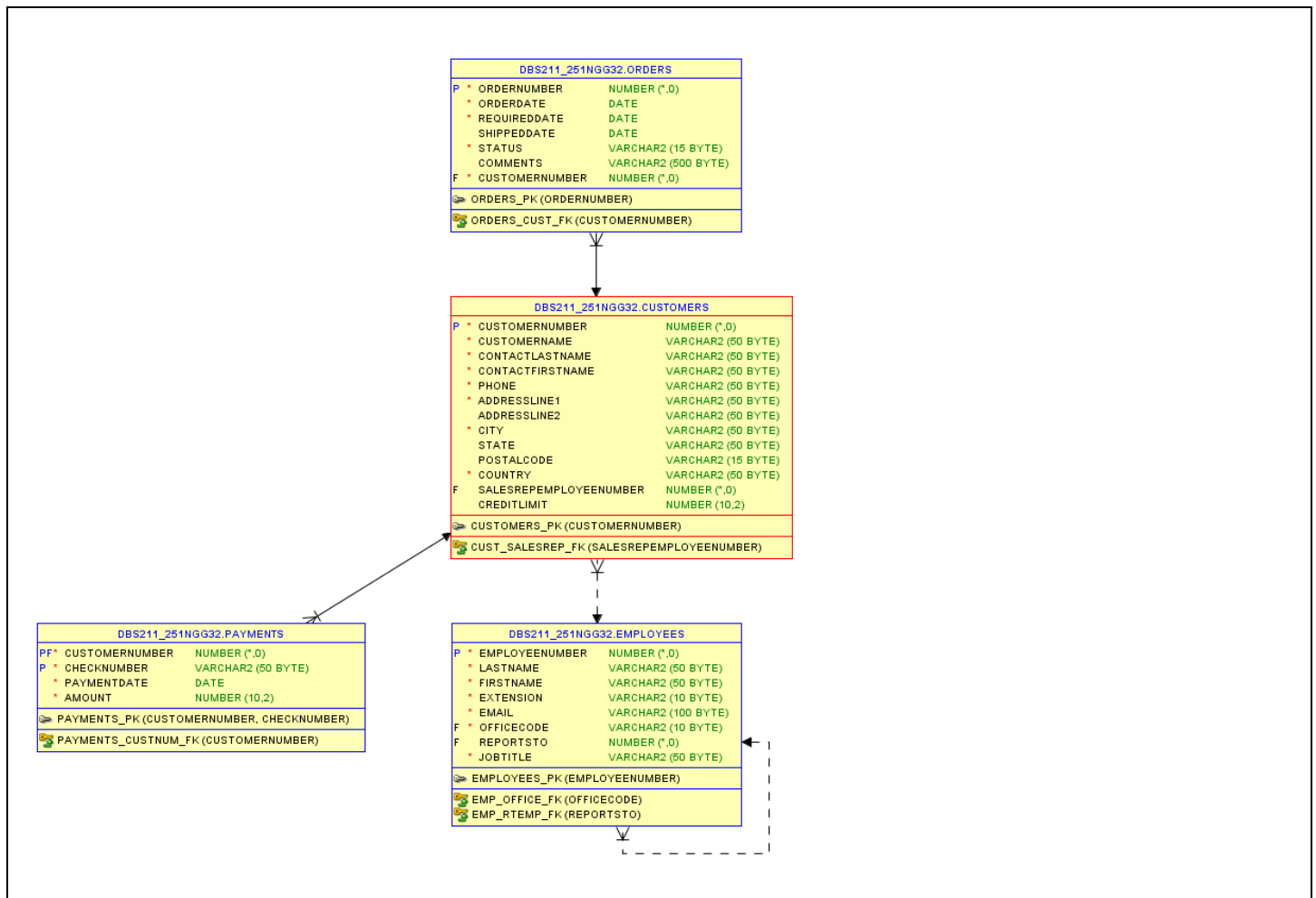
6) What tables are in relationship with this table? List them below.

Table Name	Column in Common
ORDERS	CUSTOMERNUMBER
Payments	CUSTOMERNUMBER
Employees	EMPLOYEENUMBER

7) What is the model for this table relationships?

NOTE: ∇ means MANY

↓ means ONE



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

One customer can place many orders.  
 One customer can make many payments.  
 One employee can be a sales representative for many customers.

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		OFFICES
EMP_RTEMP_FK	Foreign_Key	REPORTSTO		EMPLOYEES

SYS_C004026401	Check	EMPLOYEENUMBER	"EMPLOYEENUMBER" IS NOT NULL	
SYS_C004026402	Check	LASTNAME	"LASTNAME" IS NOT NULL	
SYS_C004026403	Check	FIRSTNAME	"FIRSTNAME" IS NOT NULL	
SYS_C004026404	Check	EXTENSION	"EXTENSION" IS NOT NULL	
SYS_C004026405	Check	EMAIL	"EMAIL" IS NOT NULL	
SYS_C004026406	Check	OFFICECODE	"OFFICECODE" IS NOT NULL	
SYS_C004026407	Check	JOBTITLE	"JOBTITLE" IS NOT NULL	
SYS_C004026408	Primary_Key	EMPLOYEENUMBER		

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

Table Name	Column in Common
customers	SALESREPEMPLYEENUMBER
offices	OFFICECODE

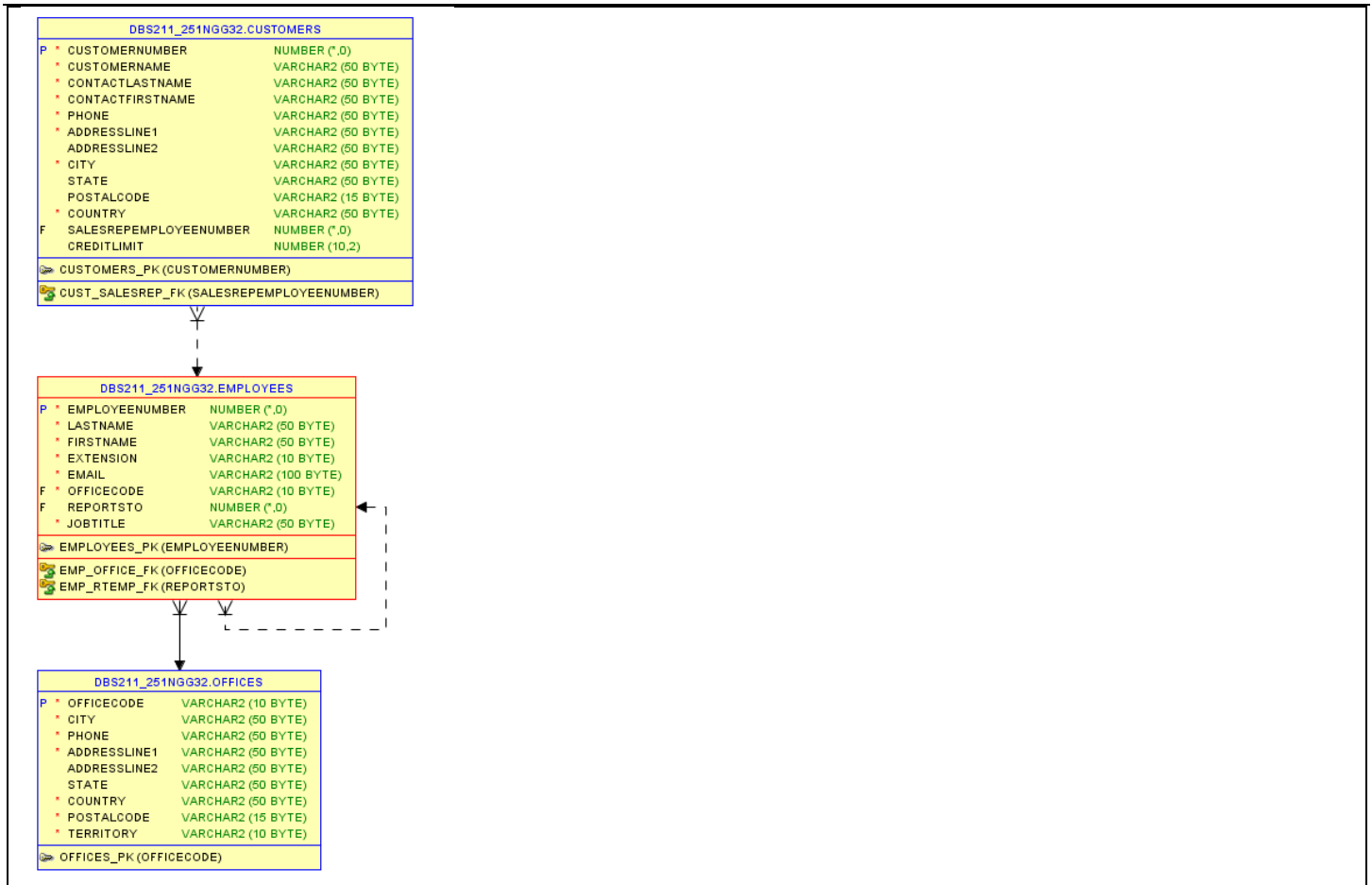
7) What is the model for this table relationships?

NOTE: ∇ means MANY

↓ means ONE

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

One customer can have one sales representative.  
 One sales representative can serve many customers.  
 One employee can work in one office.  
 One office can have many employees.  
 many employee can report to one employee.

d) Answer the following Question for the **DBS211\_ORDERS** table.

- How many columns (attributes) are there in this table? \_\_\_\_\_ 7 \_\_\_\_\_
- How many rows are there in this table? \_\_\_\_\_ 326 \_\_\_\_\_
- 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	'06-JAN-03'
REQUIREDDATE	'13-JAN-03'
SHIPPEDDATE	'10-JAN-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	CUSTOMERNUMBER		CUSTOMERS
SYS_C004026434	Check	ORDERNUMBER	"ORDERNUMBER" IS NOT NULL	
SYS_C004026435	Check	ORDERDATE	"ORDERDATE" IS NOT NULL	
SYS_C004026436	Check	REQUIREDDATE	"REQUIREDDATE" IS NOT NULL	
SYS_C004026437	Check	STATUS	"STATUS" IS NOT NULL	
SYS_C004026438	Check	CUSTOMERNUMBER	"CUSTOMERNUMBER" IS NOT NULL	
SYS_C004026439	Primary_Key	ORDERNUMBER		

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

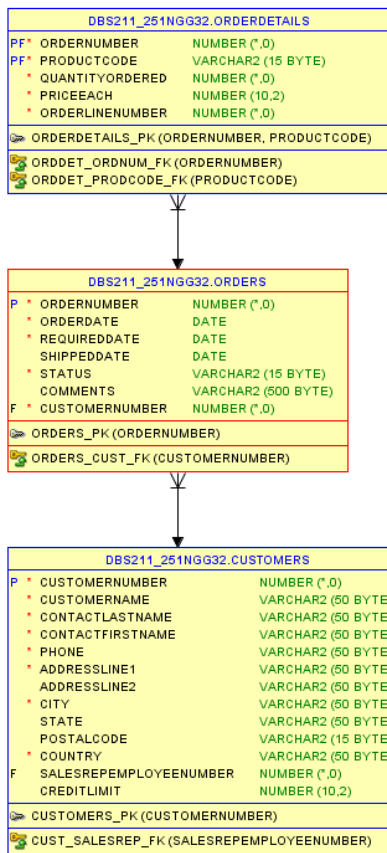
Table Name	Column in Common	Refers to
orderdetails	ORDERNUMBER	orders
customers	CUSTOMERNUMBER	

- 7) What is the model for this table relationships?

NOTE: ∇ means MANY

↓ means ONE

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

One order can have many order details.  
 One customer can place many orders.  
 One order detail belongs to one order  
 One order is placed by one customer

## Part B

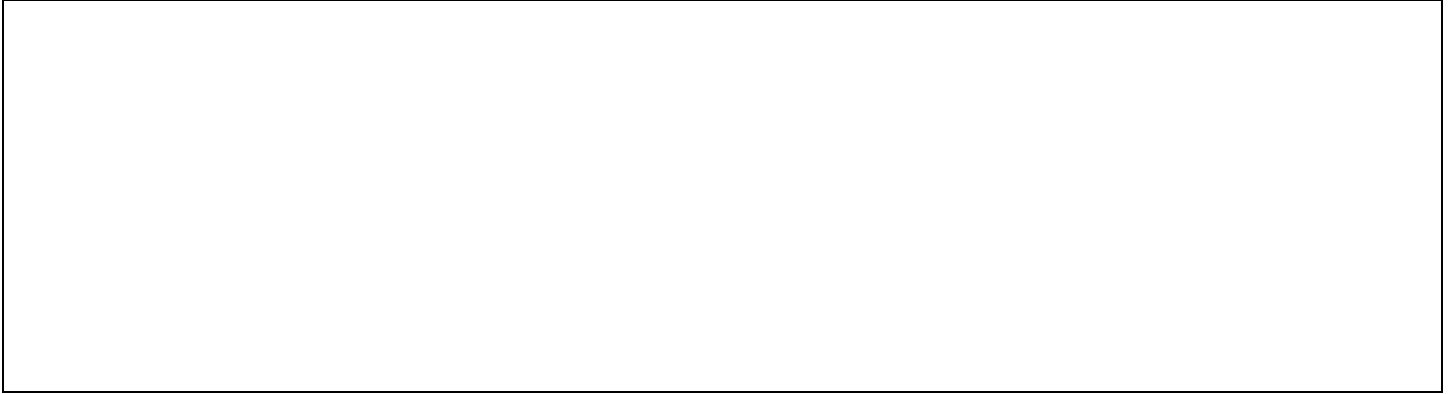
Create a relationship diagram for all the tables in the database. Use the MODEL tab to see the tables (entities) and their relationships.

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



Good Luck.