

The University of Texas, Arlington



Master's in Information Systems

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INSY 5335 Section-001: Applied Database Management

Professor

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INSY 5335 Project Office Supplies Inc.

Part -I

Entities:

1. Sales Representatives
2. Customer
3. Order
4. Truck
5. Driver
6. Item
7. Employee

Definitions:

1. **Sales Representatives:** They are the type of employees. They have salary and commission. They use attached form to take orders.
2. **Customer:** Buyers who purchase orders from the Office supplies Inc.
3. **Order:** Items order by a customer which includes deliver address and pick preference.
4. **Truck:** Vehicles owned by OSI for delivering customer orders.
5. **Driver:** Employees assigned to drive the trucks, each with a driver's license number and expiration date.
6. **Item:** Types of office supplies sold by OSI, each identify by a unique item code and has a unit price.
7. **Employee:** Individuals working for OSI, including Sales Representatives and drivers.

Relationship Matrix:

Entities	Sales_Rep	Customer	Order	Truck	Driver	Item	Employee
Sales_Rep			Takes				IS A
Customer			Gives				
Order	Created By	Given By		Are Delivered By		Has	
Truck			Delivers		Assigned to		
Driver				Assigned			IS A
Item			Included In				
Employee	Can Be				Can Be		

Business Rules:

1.Each Sales Representative always takes one or more orders.

Each order is created by one sales Representative.

2.Sales Representative is a kind of employee.

Employee can be a sales Representative.

3.Each Customer always gives one or more orders.

Each order is always given by one customer.

4.Each truck sometimes delivers one or more orders.

Each order is sometimes delivered by one truck.

5.Each order always has one or more items.

Each item is sometimes included in one or more orders.

6.Each truck is always assigned to one driver.

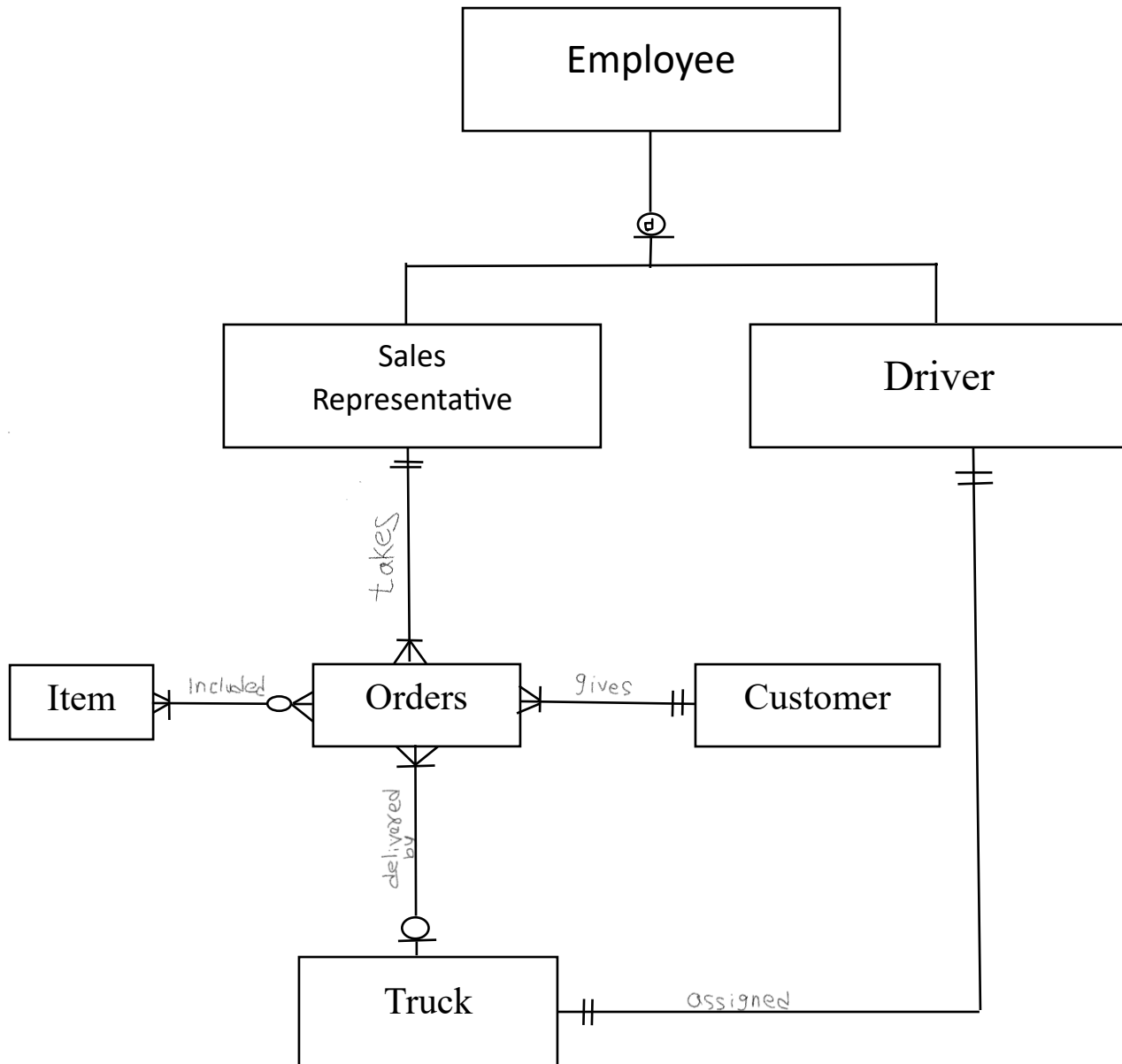
Each driver is always assigned to one truck.

7.Driver is a kind of employee.

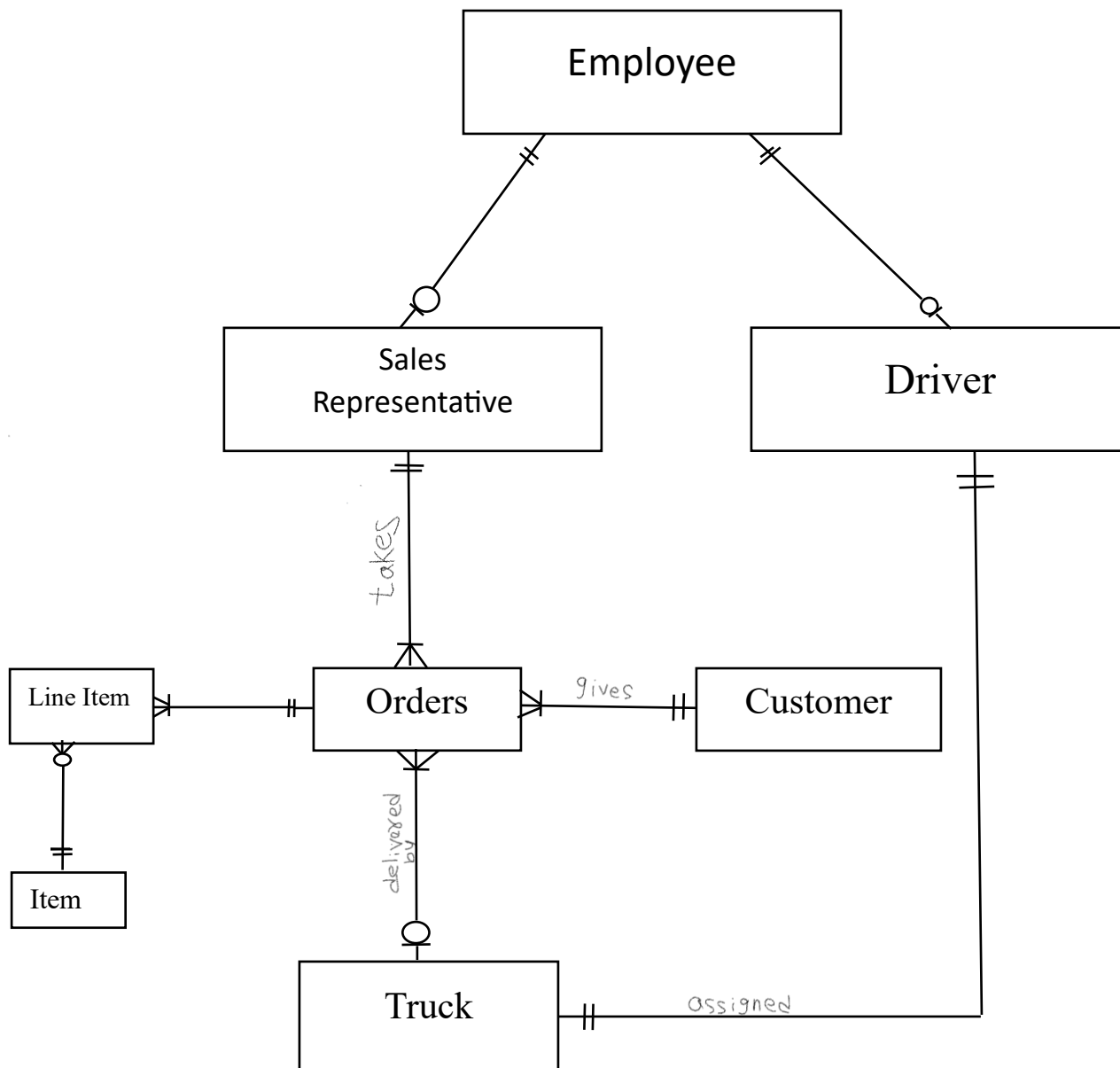
Employee can be a drive

Part -II

B) ER Diagrams



ENTITY RELATIONSHIP DIAGRAM -1



ENTITY RELATIONSHIP DIAGRAM -2

C) RELATIONAL SCHEMA:

Schema used the following format:

- Primary key attributes are Uppercase and underlined.
 - Foreign key attributes are lowercase and underlined.
 - Attributes, which are both Primary Key and Foreign Key are uppercase, underlined, and bold.
1. Employee (EMP_ID, FName, LName, Street, City, Zipcode, SSN, Ph_no, Salary)
 2. Sales_Rep (SAL_EMP_ID, Commission)
 3. Driver (DRI_EMP_ID, driver_lic_no, lic_exp_date)
 4. Order (ORDER_ID, Order_date, bill_Street, bill_City, bill_Zipcode, sal_Emp_id, Account_no, Vechile_no)
 5. Customer (ACCOUNT_NO, Cust_FName, Cust_Lname, Contact_person, cust_Street, cust_City, cust_Zipcode, Cust_Phone_no)
 6. Truck (VECHILE_NO, Lic_plate_no, Inspection_exp_date, Lic_exp_date, dri_Emp_id)
 7. Line_Item (ORDER_ID, Item_id, Quantity, Unit_price)
 8. Item (ITEM_ID, Item_name, Unit_price, No_of_units)

D) DATA DICTIONARY

The schema used for creation of data dictionary is **vxb9140**.

TABLE NAME	ATTRIBUTE NAME	CONTENTS	TYPE	FORMAT	RANGE	REQUIRED	PK OR FK	FK REFERENCED TABLE
Employee	EMP_ID	Employee ID	Number (5)	99999	00000-99999	YES	PK	
	FName	Employee First Name	Varchar2(30)	XXXXXXXXXX		YES	NN	
	LName	Employee	Varchar2(30)	XXXXXXXXXX		YES	NN	

		Last Name						
	Street	Employee Street	Varchar2(30)	Xxxxxxxxxxxx				
	City	Employee City	Varchar2(20)	Xxxxxxxxxxxx				
	Zip code	Employee Zip code	Number (6)	999999	000000-999999			
	SSN	Employee SSN	Number (9)	999999999	000000000-999999999	YES	NN	
	Ph_no	Employee Phone number	Number (10)	9999999999	0000000000-9999999999			
	Salary	Employee Salary	Number					
Sales_Rep	SAL_EMP_ID	Employee ID	NUMBER			YES	PK & FK	Employee
	Commission	Sales Commission	NUMBER					
Driver	DRI_EMP_ID	Employee ID	NUMBER			YES	FK	Employee
	Driver_lic_no	Driver license number	NUMBER (8)	9999999	00000000-99999999	YES	NN	
	Lic_exp_date	License expired date	DATE			YES	NN	
Customer	ACCOUNT_NO	Account number	NUMBER (10)	9999999999	0000000000-9999999999	YES	PK	
	Cust_Fname	Customer	VARCHAR 2(40)	Xxxxxxxxxxxx xxx				

		First name						
	Cust_lname	Customer Last name	VARCHAR2(40)	Xxxxxxxxxxxx				
	Contact_person	Contact person	VARCHAR2(40)	Xxxxxxxxxxxx		YES	NN	
	Street	Customer street	VARCHAR2(30)	Xxxxxxxxxxxx				
	City	Customer City	VARCHAR2(20)	Xxxxxxxxxxxx				
	Zipcode	Customer Zip Code	NUMBER(6)	999999	000000-999999			
	Phone_no	Customer Phone number	NUMBER(10)	9999999999	00000000000-9999999999			
Order	ORDER_ID	Order ID	NUMBER(15)	999999999999999	0000000000000000-999999999999999	YES	PK	
	Order_date	Order date	DATE	DD-MM-YYYY				
	Street	Street	Varchar2(30)	Xxxxxxxxxxxx				
	City	City	Varchar2(20)	Xxxxxxxxxxxx				
	Zipcode	Zipcode	NUMBER(6)	999999	000000-999999			
	Sal_Emp_ID	Employee ID	NUMBER			YES	FK	Sales_Rep
	Account_no	Account number	NUMBER(10)	9999999999	00000000000-9999999999	YES	FK	Customer
	Vechile_no	Vehicle number	NUMBER(4)	9999	0000-9999	YES	FK	Truck

Truck	VECHILE_NO	Truck vehicle number	NUMBER (4)	9999	0000-9999	YES	PK	
	Lic_plate_no	Licence plate number	Varchar2(6)	xxxxxxx		YES	NN	
	Inspection_exp_date	Inspection expired date	Date	DD-MM-YYYY				
	Lic_exp_date	Truck expired date	Date	DD-MM-YYYY		YES	NN	
	Dri_Emp_id	Employee ID	Number			YES	FK	Driver
Item	ITEM_ID	Item ID	NUMBER (5)	99999	00000-99999	YES	PK	
	Item_name	Item name	Varchar2(30)	xxxxxxxxxxx		YES	NN	
	Unit_price	Unit price	NUMBER (6,2)					
	No_of_units	Number of units	NUMBER (3,0)					
Line Item	ORDER_ID	Line-item Order ID	NUMBER (15)	999999999999999	0000000000000000-99999999999999999999	YES	FK	Order
	Item_ID	Line-item ID	NUMBER (5)	99999	00000-99999	YES	FK	Item
	Quantity	Line-item Quantity	NUMBER					
	Unit_Price	Line item Unit price	NUMBER (6,2)	999999	00000-99999			

E) OSI DATABASE – SCHEMA OF EACH TABLE

1)Employee

SQL> Describe Employee;

Name	Null?	Type

EMP_ID	NOT NULL	NUMBER
FNAME	NOT NULL	VARCHAR2(30)
LNAME	NOT NULL	VARCHAR2(30)
STREET	NOT NULL	VARCHAR2(30)
CITY	NOT NULL	VARCHAR2(20)
ZIPCODE	NOT NULL	NUMBER(6)
SSN	NOT NULL	NUMBER(9)
PH_NO	NOT NULL	NUMBER(10)
SALARY		NUMBER

SQL> SELECT * FROM Employee;

EMP_ID	FNAME	LNAME		

STREET	CITY	ZIPCODE	SSN	

PH_NO	SALARY			

10001	Srikanth	Bharam		
Greek row	Dallas	75205	78051120	
6823064775	520000			

10002 Mukesh Malepati
Cooper st Austin 78703 58071005
6823025008 4823.15

EMP_ID FNAME LNAME

STREET CITY ZIPCODE SSN

PH_NO SALARY

10003 Yaswini perni
E Abram st Houston 77007 25032350
6523012308 825402

10004 Chanukya Orsu
Dublin st Miami 33116 95011320
EMP_ID FNAME LNAME

STREET CITY ZIPCODE SSN

PH_NO SALARY

6825081175 383215

10005 Sravani pavuluri
Creekdn sanjose 95111 110095520
6823675246 9234.16

10006 Sara Vanralapati

EMP_ID FNAME LNAME

STREET CITY ZIPCODE SSN

PH_NO SALARY

West drive Charlotte 28214 230087780
7702175641 6842.34

10007 Srivalli Pentyala

WestMitchell Arlington 76018 560329950
6823597052 693254

EMP_ID FNAME LNAME

STREET CITY ZIPCODE SSN

PH_NO SALARY

10008 Vamsi Varma

Casual Avenue Carolina 95314 965311003
6825094952 696543

10009 Sireesha Rajesh

Pine Riverside 79015 652051432

6825425552 643215

EMP_ID	FNAME	LNAME	

STREET	CITY	ZIPCODE	SSN

PH_NO	SALARY		

10010 Mahesh	Kumar		
Oak	Midtown	85521	52093532
6953923059	591432		

10000 Vineetha	Raj		
Avenue	Parkplace	89013	120031111

EMP_ID	FNAME	LNAME	

STREET	CITY	ZIPCODE	SSN

PH_NO	SALARY		

6823055192 230459

10015 Teju	Popuri		
Deans	Downtown	99250	3015925
6951151952	6901.32		

12 rows selected.

2)Sales_Representative:

SQL> DESCRIBE sales_rep;

Name	Null?	Type
------	-------	------

SAL_EMP_ID	NOT NULL	NUMBER
------------	----------	--------

COMMISSION		NUMBER
------------	--	--------

SQL> SELECT * FROM sales_rep;

SAL_EMP_ID	COMMISSION
------------	------------

10001	1000
-------	------

10003	2000
-------	------

10005	5000
-------	------

10002	6000
-------	------

10009	2500
-------	------

10010	7000
-------	------

3)DRIVER

SQL> DESCRIBE DRIVER;

Name	Null?	Type
------	-------	------

DRI_EMP_ID	NOT NULL	NUMBER
------------	----------	--------

DRIVER_LIC_NO	NOT NULL	NUMBER(8)
---------------	----------	-----------

EXP_DATE	NOT NULL	DATE
----------	----------	------

SQL> SELECT * FROM DRIVER;

DRI_EMP_ID DRIVER_LIC_NO EXP_DATE

10004	12356710	31-JUL-23
10006	54326721	21-AUG-27
10007	62341071	15-JAN-25

4)Customer

SQL> DESCRIBE Customer;

Name	Null?	Type

ACCOUNT_NO		NOT NULL NUMBER(10)
CUST_FNAME		NOT NULL VARCHAR2(40)
CUST_LNAME		NOT NULL VARCHAR2(40)
CONTACT_PERSON		NOT NULL VARCHAR2(40)
CUST_STREET		NOT NULL VARCHAR2(30)
CUST_CITY		NOT NULL VARCHAR2(20)
CUST_ZIPCODE		NOT NULL NUMBER(6)
CUST_PHONE_NO		NOT NULL NUMBER(10)

SQL> SELECT * FROM customer;

ACCOUNT_NO CUST_FNAME

CUST_LNAME

CONTACT_PERSON	CUST_STREET
----------------	-------------

CUST_CITY	CUST_ZIPCODE	CUST_PHONE_NO
-----------	--------------	---------------

8319754891 John

Abraham

Julie Bourbone st

Baltimore 21206 995432319

ACCOUNT_NO CUST_FNAME

CUST_LNAME

CONTACT_PERSON CUST_STREET

CUST_CITY CUST_ZIPCODE CUST_PHONE_NO

9184038443 Joe

Johnson

Jessia Broad way

Arlington 76013 6825043392

ACCOUNT_NO CUST_FNAME

CUST_LNAME

CONTACT_PERSON CUST_STREET

CUST_CITY CUST_ZIPCODE CUST_PHONE_NO

7845327816 Jack

Brown

Daavidchen Kings avenue

cary 27519 6838945921

ACCOUNT_NO CUST_FNAME

CUST_LNAME

CONTACT_PERSON CUST_STREET

CUST_CITY CUST_ZIPCODE CUST_PHONE_NO

6785432143 Swith

Thomson

Janeswith fifth avenue

Durham 27713 5993052319

ACCOUNT_NO CUST_FNAME

CUST_LNAME

CONTACT_PERSON CUST_STREET

CUST_CITY CUST_ZIPCODE CUST_PHONE_NO

8976453219 Selena

gomez

Jhohnson

lombard st

fair fax

22034 9849395335

ACCOUNT_NO CUST_FNAME

CUST_LNAME

CONTACT_PERSON

CUST_STREET

CUST_CITY CUST_ZIPCODE CUST_PHONE_NO

9432518307 Alexa

Doe

Emila

Sunset BLVD

Spring field

65806 6824231709

6 rows selected.

5)TRUCK

SQL> DESCRIBE TRUCK;

Name

Null? Type

VECHILE_NO

NOT NULL NUMBER(4)

LIC_PLATE_NO

NOT NULL VARCHAR2(6)

INSPECTION_EXP_DATE	DATE
LIC_EXP_DATE	NOT NULL DATE
DRI_EMP_ID	NOT NULL NUMBER(5)

SQL> SELECT * FROM TRUCK;

VECHILE_NO LIC_PL INSPECTIO LIC_EXP_D DRI_EMP_ID

```

-----
1 ABC594 19-MAR-23 16-FEB-24 10004
2 DDD323 13-JUL-26 20-MAY-28 10006
3 DDE197 11-NOV-27 25-MAR-19 10007
4 ADB005 07-MAY-28 05-JAN-24 10008
5 GHI345 03-SEP-25 10-OCT-25 10000
6 IJK132 28-JAN-29 28-MAY-30 10015

```

6 rows selected.

6)ORDERS

SQL> DESCRIBE ORDERS;

Name	Null?	Type

ORDER_ID	NOT NULL	NUMBER(15)
ORDER_DATE	NOT NULL	DATE
BILL_STREET	NOT NULL	VARCHAR2(30)
BILL_CITY	NOT NULL	VARCHAR2(20)
BILL_ZIPCODE	NOT NULL	NUMBER(6)
SAL_EMP_ID		NUMBER
ACCOUNT_NO		NUMBER(10)
VECHILE_NO		NUMBER(4)

```
SQL> SELECT * FROM ORDERS;
```

ORDER_ID	ORDER_DAT	BILL_STREET	BILL_CITY
102306	15-AUG-23	bourbone st	Baltimore
21206	10001	8319754891	1
202408	21-MAY-23	broad way	Arlington
76013	10003	9184038443	2
405678	02-APR-23	kings avenue	Cary
27519	10005	9432518307	3

ORDER_ID	ORDER_DAT	BILL_STREET	BILL_CITY
105432	17-JAN-23	fifth avenue	Durham
27713	10002	6785432143	4
168972	03-OCT-23	lombard st	Fairfax
22034	10009	8976453219	5
256498	29-MAY-23	Sunset BLVD	Springfield
65806	10010	7845327816	6

6 rows selected.

7)Item

SQL> DESCRIBE ITEM;

Name	Null?	Type

ITEM_ID	NOT NULL	NUMBER(5)
ITEM_NAME	NOT NULL	VARCHAR2(30)
UNIT_PRICE	NOT NULL	NUMBER(6,2)
NO_OF_UNITS		NUMBER(3)

SQL> SELECT * FROM ITEM;

ITEM_ID	ITEM_NAME	UNIT_PRICE	NO_OF_UNITS

10012	Books	32	5
10013	Laptop	5	6
10014	Cell Phone	49	8
10015	shirt	23	20
10016	Microwave oven	9	25
10017	Television	18	32

6 rows selected.

8)LINE_ITEM

SQL> DESCRIBE LINE_ITEM;

Name	Null?	Type
ORDER_ID	NOT NULL	NUMBER(15)
ITEM_ID	NOT NULL	NUMBER(5)
QUANTITY		NUMBER
UNIT_PRICE	NOT NULL	NUMBER(6,2)

SQL> SELECT * FROM LINE_ITEM;

ORDER_ID	ITEM_ID	QUANTITY	UNIT_PRICE
102306	10012	5	32
202408	10013	6	5
405678	10014	8	49
105432	10015	20	23
168972	10016	25	9
256498	10017	32	23

6 rows selected.

F) SQL QUERIES:

1. List all customer names, addresses, contact person names and phone numbers.

SQL query:- select Cust_fname||' '||Cust_lname as cust_name, Cust_street||' '||Cust_city||' '||Cust_zipcode as billing_address, contact_person, cust_phone_no as contact_person_number from customer;

CUST_NAME

BILLING_ADDRESS

CONTACT_PERSON

CONTACT_PERSON_NUMBER

John Abraham

Bourbone st Baltimore 21206

Julie 995432319

Joe Johnson

Broad way Arlington 76013

Jessia 6825043392

CUST_NAME

BILLING_ADDRESS

CONTACT_PERSON

CONTACT_PERSON_NUMBER

Jack Brown

Kings avenue cary 27519

Daavidchen

6838945921

Swith Thomson

fifth avenue Durham 27713

CUST_NAME

BILLING_ADDRESS

CONTACT_PERSON

CONTACT_PERSON_NUMBER

Janeswith

5993052319

Selena gomez

lombard st fair fax 22034

Jhohnson

9849395335

Alexa Doe

CUST_NAME

BILLING_ADDRESS

CONTACT_PERSON

CONTACT_PERSON_NUMBER

Sunset BLVD Spring field 65806

Emila

6824231709

6 rows selected.

2. Pick an order, and get all the information about that order that appear in the order form. You don't need to compute taxes and totals. This query may be split into two sql statements.

SQL query:- select order_id, o.account_no as customer_id, sal_emp_id, cust_fname||' '||cust_lname as customer_name, contact_person, Cust_street||' '||Cust_City||' '||Cust_zipcode as Billing_address, Bill_street||' '||Bill_City||' '||Bill_zipcode as Delivery_address from orders o, customer c where o.account_no = c.account_no and order_id = 102306;

ORDER_ID CUSTOMER_ID SAL_EMP_ID

CUSTOMER_NAME

CONTACT_PERSON

BILLING_ADDRESS

DELIVERY_ADDRESS

102306 8319754891 10001

John Abraham

Julie

ORDER_ID CUSTOMER_ID SAL_EMP_ID

CUSTOMER_NAME

CONTACT_PERSON

BILLING_ADDRESS

DELIVERY_ADDRESS

Bourbone st Baltimore 21206

bourbone st Baltimore 21206

3. What is the phone number of the sales rep who took the order in the query above?

SQL query:- select e.ph_no as Phone_Number from employee e, orders o where e.emp_id = o.sal_emp_id and order_id = 102306;

PHONE_NUMBER

6823064775

4. Pick a driver and list all orders (order numbers only) delivered by him/her.

SQL query:- select o.order_id as order_number from orders o, driver d, truck t where o.vechile_no = t.vechile_no and t.dri_emp_id = d.dri_emp_id and d.dri_emp_id = 10006;

ORDER_NUMBER

202408

5. What is the total value (Quantity times unit price) of all inventory items that have unit prices exceeding \$25 ?

SQL query:- select sum(Unit_price* No_of_Units) as Total_Value from item where unit_price > 25;

TOTAL_VALUE

552

