

Homework 3 Report

Question 1: Show the name, age, sales and quota of the sales representative whose last name ends with letter "s".

SQL Query

```
SELECT Name, Age, Sales, Quota FROM SALESREPS
```

```
WHERE name LIKE '%s';
```

Output:

Name	Age	Sales	Quota
Dan Roberts	45	305673	300000
Bill Adams	37	367911	350000
Mary Jones	31	392725	300000

Question 2: List the customer company names and product descriptions of all the products each customer/company has ordered. Arrange the output ascending by the company name.

SQL Query

```
SELECT Company, Description
```

```
FROM Customers
```

```
INNER JOIN Orders ON Customers.Cust_Num=Orders.Cust
```

```
INNER JOIN Products ON Orders.Product=Products.Product_ID
```

```
ORDER BY Company ASC
```

Output:

Company	Description
Ace International	Ratchet Link
Ace International	Size 1 Widget
Acme Mfg.	Size 4 Widget
Acme Mfg.	Size 2 Widget

Acme Mfg.	Size 4 Widget
Acme Mfg.	Widget Remover
Chen Associates	500 -lb Brace
First Corp.	Size 4 Widget
Fred Lewis Corp.	Reducer
Fred Lewis Corp.	Ratchet Link
Holm & Landis	Widget Adjuster
Holm & Landis	Housing
Holm & Landis	900 -lb Brace
Ian & Schmidt	Right Hinge
J.P. Sinclair	Left Hinge
JCP Inc.	Handle
JCP Inc.	Widget Adjuster
JCP Inc.	Hinge Pin
JCP Inc.	Size 3 Widget
Jones Mfg.	Motor Mount
Miswest Sytems	Handle
Miswest Sytems	Size 3 Widget
Miswest Sytems	Size 2 Widget
Miswest Sytems	Reducer
Miswest Sytems	Reducer
Orion Corp.	Reducer
Orion Corp.	Size 1 Widget
Peter Brothers	Handle
Peter Brothers	Motor Mount

Peter Brothers Size 3 Widget

Rico Enterprises 900 -lb Brace

Zetacorp Right Hinge

Zetacorp 300-lb Brace

Question 3: Show the total value of the inventory on hand for each product. Arrange in descending order by total value.

SQL Query

```
SELECT Product_ID, Unit_Price*Qty_On_Hand as 'Total Value'
```

```
FROM Products
```

```
ORDER BY Unit_Price*Qty_On_Hand DESC;
```

Output:

Product_ID	Total Value
------------	-------------

4101	70000
------	-------

4100Y	68750
-------	-------

2A44R	54000
-------	-------

2A44L	54000
-------	-------

773C	27300
------	-------

XK48	27202
------	-------

41003	22149
-------	-------

41089	17550
-------	-------

112	17020
-----	-------

779C	16875
------	-------

2A45C	16590
-------	-------

41004	16263
-------	-------

4100Z	15235
-------	-------

887X	15200
41002	12692
887H	12042
775C	7125
XK48A	6549
887P	6000
XK47	5325
2A44G	4900
41003	1956
114	1215
4100X	925
41675	0

Question 4: How many customers are there?

SQL Query

```
SELECT Count(Cust_Num) FROM Customers;
```

Output:

21

Question 5: List the cities where the local offices have their targets less than \$550,000.

SQL Query

```
SELECT City FROM Offices
```

```
WHERE Target < 550000;
```

Output:

City

Atlanta

Denver

Question 6: List order numbers and quantities for all the orders that are over \$20,000; include also the name of the salesperson who took the order and the name of the company (i.e. customer) who placed it.

SQL Query

```
SELECT Orders.Order_Num, Orders.QTY, Customers.Company, Salesreps.Name
```

```
FROM Orders
```

```
INNER JOIN Customers ON Orders.Cust=Customers.Cust_Num
```

```
INNER JOIN Salesreps ON Customers.Cust_Rep=Salesreps.Emp_Num
```

```
WHERE Total_Amount>20000;
```

Output:

Order_Num	QTY	Company	Name
112961	7	J.P. Sinclair	Sam Clark
112987	11	Acme Mfg.	Bill Adams
113036	9	Ace International	Tom Snyder
113042	5	Ian & Schmidt	Bob Smith
113045	10	Zetacorp	Larry Fitch
113069	22	Chen Associates	Paul Cruz

Question 7: List all the companies which have ordered any size widget (i.e., Size 1, 2, and 3 widgets), and the widget they ordered. Make sure you print out only unique pairs of attribute values.

SQL Query

```
SELECT DISTINCT Company, Description
```

```
FROM Customers, Products
```

```
WHERE Description LIKE 'Size%'
```

```
ORDER BY Company;
```

Output:

Company	Description
AAA Investments	Size 2 Widget
AAA Investments	Size 1 Widget
AAA Investments	Size 4 Widget
AAA Investments	Size 3 Widget
Ace International	Size 3 Widget
Ace International	Size 4 Widget
Ace International	Size 2 Widget
Ace International	Size 1 Widget
Acme Mfg.	Size 4 Widget
Acme Mfg.	Size 2 Widget
Acme Mfg.	Size 1 Widget
Acme Mfg.	Size 3 Widget
Carter & sons	Size 3 Widget
Carter & sons	Size 1 Widget
Carter & sons	Size 4 Widget
Carter & sons	Size 2 Widget
Chen Associates	Size 2 Widget
Chen Associates	Size 1 Widget
Chen Associates	Size 3 Widget
Chen Associates	Size 4 Widget
First Corp.	Size 3 Widget
First Corp.	Size 2 Widget
First Corp.	Size 4 Widget
First Corp.	Size 1 Widget

Fred Lewis Corp. Size 3 Widget

Fred Lewis Corp. Size 2 Widget

Fred Lewis Corp. Size 1 Widget

Fred Lewis Corp. Size 4 Widget

Holm & Landis Size 1 Widget

Holm & Landis Size 4 Widget

Holm & Landis Size 2 Widget

Holm & Landis Size 3 Widget

Ian & Schmidt Size 1 Widget

Ian & Schmidt Size 2 Widget

Ian & Schmidt Size 4 Widget

Ian & Schmidt Size 3 Widget

J.P. Sinclair Size 1 Widget

J.P. Sinclair Size 2 Widget

J.P. Sinclair Size 3 Widget

J.P. Sinclair Size 4 Widget

JCP Inc. Size 4 Widget

JCP Inc. Size 2 Widget

JCP Inc. Size 1 Widget

JCP Inc. Size 3 Widget

Jones Mfg. Size 1 Widget

Jones Mfg. Size 2 Widget

Jones Mfg. Size 3 Widget

Jones Mfg. Size 4 Widget

Miswest Sytems Size 1 Widget

Miswest Sytems Size 2 Widget

Miswest Sytems Size 4 Widget

Miswest Sytems Size 3 Widget

Orion Corp. Size 1 Widget

Orion Corp. Size 2 Widget

Orion Corp. Size 4 Widget

Orion Corp. Size 3 Widget

Peter Brothers Size 1 Widget

Peter Brothers Size 3 Widget

Peter Brothers Size 2 Widget

Peter Brothers Size 4 Widget

QMA Assoc. Size 1 Widget

QMA Assoc. Size 4 Widget

QMA Assoc. Size 3 Widget

QMA Assoc. Size 2 Widget

Rico Enterprises Size 4 Widget

Rico Enterprises Size 3 Widget

Rico Enterprises Size 1 Widget

Rico Enterprises Size 2 Widget

Smithson Corp. Size 2 Widget

Smithson Corp. Size 1 Widget

Smithson Corp. Size 3 Widget

Smithson Corp. Size 4 Widget

Solomon Inc. Size 1 Widget

Solomon Inc. Size 4 Widget

Solomon Inc. Size 2 Widget

Solomon Inc. Size 3 Widget

Three-Way Lines Size 4 Widget

Three-Way Lines Size 2 Widget

Three-Way Lines Size 3 Widget

Three-Way Lines Size 1 Widget

Zetacorp Size 3 Widget

Zetacorp Size 1 Widget

Zetacorp Size 2 Widget

Zetacorp Size 4 Widget

Question 8: List the office, city, region and amount that sales are over (or under) target for each office (if sales are over the target the number needs to be positive, if under –I want to see a negative number).

SQL Query

```
SELECT Office_Num, City, Region, Sales-Target AS 'Over/Under Target'
```

```
FROM Offices;
```

Output:

Office_Num	City	Region	Over/Under Target
11	New York	Eastern	117637
12	Chicago	Eastern	-64958
13	Atlanta	Eastern	17911
21	Los Angeles	Western	110915
22	Denver	Western	-113958

Question 9: Are there any customers who are over their credit limit? If so, list the customer, the total amount the customer has on order, the credit limit, and the difference between total amount and credit limit.

SQL Query

```
SELECT Orders.Order_Num, Customers.Company, Customers.Credit_Limit, Orders.Total_Amount,  
Credit_Limit-Total_Amount AS 'Credit Remaining After Order'
```

```
FROM Customers
```

```
INNER JOIN Orders ON Customers.Cust_Num=Orders.Cust
```

```
WHERE Credit_Limit-Total_Amount < 0;
```

Output:

Order_Num	Company	Credit_Limit	Total_Amount	Credit Remaining After Order
113042	Ian & Schmidt	20000	22500	-2500
113069	Chen Associates	25000	31350	-6350

Question 10: What is the total order amount for each salesperson? Order output by decreasing total order amount; do not print the same names multiple times

SQL Query

```
SELECT Name, SUM(Total_Amount)
```

```
FROM Salesreps
```

```
INNER JOIN Orders on Salesreps.Emp_Num=Orders.Rep
```

```
GROUP BY Name
```

```
ORDER BY SUM(Total_Amount) DESC;
```

Output:

Larry Fitch	58633
Bill Adams	39327
Nancy Angelli	34432
Sam Clark	32958
Dan Roberts	26628
Tom Snyder	23132
Sue Smith	22776

Mary Jones	7105
Paul Cruz	2700

Question 11: What is the total amount (i.e. value!) of orders for each salesperson whose orders total for more than \$40,000? Order output by amounts, in decreasing manner.

SQL Query

```
Select Name, SUM(Qty*Total_Amount) AS 'Value'
FROM Salesreps
INNER JOIN Orders ON Salesreps.Emp_Num=Orders.Rep
GROUP BY Name
HAVING SUM(Qty*Total_Amount)>40000
ORDER BY SUM(Qty*Total_Amount) DESC
```

Output:

Name	Value
Bill Adams	751131
Nancy Angelli	714652
Larry Fitch	616259
Dan Roberts	248652
Sam Clark	229248
Tom Snyder	207556
Sue Smith	155784

Question 12: List the offices and the target amounts for every office where the target for the office exceeds the sum of the individual salespeople's quotas.

SQL Query

```
SELECT Office_Num, Target
FROM Offices
INNER JOIN Salesreps ON Offices.Office_Num=Salesreps.Rep_Office
WHERE Target>Quota;
```

Output:

Office_Num	Target
11	575000
11	575000
12	800000
12	800000
12	800000
21	725000
21	725000

Question 13: List the salespeople whose quotas are equal to or higher than the target of the Denver sales office (note: you are not allowed to just write SQL command with “office=22” explicitly, you must use word “Denver” somewhere in your command).

SQL Query

```
SELECT Name
FROM Salesreps
WHERE Quota >=
(SELECT Target
FROM Offices
WHERE City='Denver');
```

Output:

Name

Sue Smith

Bill Adams

Larry Fitch

Question 14: List the names of companies who placed an order with a sales representative that is not the sales representative that usually calls on them (i.e. he/she is not specified in an appropriate record

of the CUSTOMER table, as the regular sales representative for this client/company). Include also the names of these salesreps, indicating in attribute TEMPORARY_SALES_REP name of salesrep, who took the order.

SQL Query

```
SELECT Order_Num, Company, Name AS 'TEMPORARY_SALES_REP'
FROM Customers
INNER JOIN Orders ON Customers.Cust_Num=Orders.Cust
INNER JOIN Salesreps ON Orders.Rep=Salesreps.Emp_Num
WHERE Orders.Rep!=Customers.Cust_Rep
ORDER BY Company
```

Output:

Order_Num	Company	TEMPORARY_SALES_REP
113069	Chen Associates	Nancy Angelli
113055	Holm & Landis	Dan Roberts
113042	Ian & Schmidt	Dan Roberts
113012	JCP Inc.	Bill Adams
113024	Orion Corp.	Larry Fitch

Question 15: Reverse engineer the relational design, and identify the foreign key relationships among the tables. Using alter table statements, add these constraints to your tables.

drop table if exists ORDERS;

drop table if exists PRODUCTS;

drop table if exists CUSTOMERS;

drop table if exists OFFICES;

drop table if exists SALESREPS;

create table ORDERS(

ORDER_NUM varchar(6),

ORDER_DATA date,

CUST char(4),

REP char(3),

MFR char(3),
PRODUCT varchar(10),
QTY int,
TOTAL_AMOUNT decimal (10,2),
constraint pk_orders primary key (ORDER_NUM)

ALTER TABLE ORDERS

ADD CONSTRAINT FK_Product

FOREIGN KEY (PRODUCT) REFERENCES Products(PRODUCT_ID)

ADD CONSTRAINT FK_MFR

FOREIGN KEY (MFR) REFERENCES Products(MFR_ID)

ADD CONSTRAINT FK_CUSTNO

FOREIGN KEY (CUST) REFERENCES Customers(Cust_Num)

);

create table PRODUCTS(
MFR_ID char(3),
PRODUCT_ID varchar(10),
DESCRIPTION varchar(20),
UNIT_PRICE decimal (10,2),
QTY_ON_HAND int,
constraint pk_products primary key(MFR_ID, PRODUCT_ID)
);

create table CUSTOMERS(
CUST_NUM char(4),
COMPANY varchar(20),
CUST_REP char(3),
CREDIT_LIMIT decimal (10,2),

```
constraint pk_customers primary key (CUST_NUM)
);
```

```
create table OFFICES(
OFFICE_NUM char(2),
CITY varchar(20),
REGION varchar(10),
MGR char(3),
TARGET decimal (10,2),
SALES decimal (10,2),
constraint pk_offices primary key (OFFICE_NUM)
);
```

```
create table SALESREPS(
EMP_NUM char(3),
NAME varchar(20),
AGE int,
REP_OFFICE char(2),
TITLE varchar(10),
MANAGER char(3),
HIRE_DATE date,
QUOTA decimal (10,2),
SALES decimal (10,2),
constraint pk_salesRep primary key (EMP_NUM)
```

```
ALTER TABLE Salesreps
ADD CONSTRAINT FK_Offno
FOREIGN KEY (Offno) REFERENCES Offices(OFFICE_NUM)
);
```