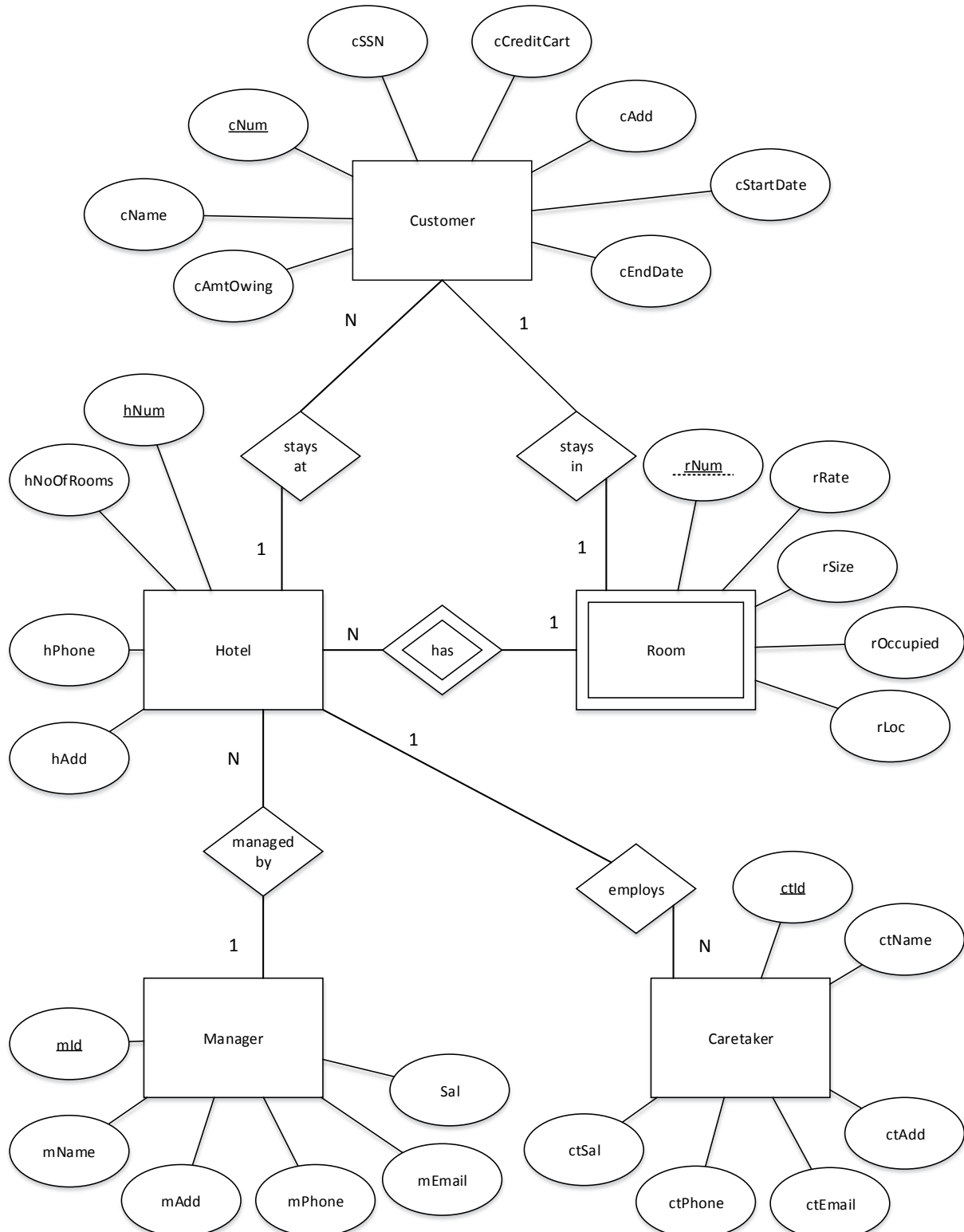


CS443 Assignment 2

Question 1

A) Draw your ERD based on the above assumptions and data



B) Draw tables from the initial ERD and normalize them. Place all tables in 3rd normal form (if necessary)

Customer: (cNum, cSSN, cName, cCreditCart, cAdd, cStartDate, cEndDate, cAmtOwing, hNum)

Hotel: (hNum, hNoOfRooms, hPhone, hAdd, mId)

Room: (hNum, rNum, rRate, rSize, rOccupied, rLoc, cNum)

Manager: (mId, mName, mAdd, mPhone, mEmail, mSal)

Caretaker: (ctId, ctName, ctAdd, ctPhone, ctEmail, ctSal, hNum)

C) Revise your ERD (if necessary)

D) Create your tables based on the given types and restrictions using the following rules:

- a. Create all table primary key constraints on the Create Table statement. Add all Foreign Key constraints after all tables have been created using the 'Alter Table' statement.
- b. Beside the constraint you use for the primary and foreign keys, add the following constraints (on the Create Table statement):

```
CREATE TABLE Customer
(
  cNum NUMBER,
  cSSN CHAR(9) NOT NULL,
  cName VARCHAR2(50),
  cCreditCart VARCHAR2(25),
  cAdd VARCHAR2(20),
  cStartDate DATE,
  cEndDate DATE,
  cAmtOwing NUMBER(7,1),
  hNum NUMBER,
  CONSTRAINT CustomerPK PRIMARY KEY(cNum),
  CONSTRAINT CustomerSSNUnique UNIQUE(cSSN),
  CONSTRAINT CheckSSN CHECK(cSSN > 660000000 AND cSSN <= 609999999)
);
CREATE TABLE Hotel
(
  hNum NUMBER,
  hNoOfRooms NUMBER,
  hPhone CHAR(7) NOT NULL,
  hAdd VARCHAR2(50),
```

```

mId NUMBER,
CONSTRAINT HotelPK PRIMARY KEY(hNum),
CONSTRAINT HotelPhoneUnique UNIQUE(hPhone),
CONSTRAINT CheckNoOfRooms CHECK(hNoOfRooms > 0 AND hNoOfRooms <=
200),
CONSTRAINT CheckPhone CHECK(hPhone >= 2202222 AND hPhone <= 9909999)
);
CREATE TABLE Room
(
hNum NUMBER,
rNum NUMBER,
rRate NUMBER(5,2),
rSize Number,
rOccupied CHAR(5),
rLoc NUMBER,
cNum NUMBER,
CONSTRAINT RoomPk PRIMARY KEY(hNum,rNum),
CONSTRAINT CheckRoomNum CHECK(rNum > 0 AND rNum <= 200),
CONSTRAINT CheckRoomRate CHECK(rRate >= 50),
CONSTRAINT CheckRoomSize CHECK(rSize >= 2 AND rSize <= 4),
CONSTRAINT CheckRoomOccupied CHECK(rOccupied = 'false' AND rOccupied =
'true'),
CONSTRAINT CheckRoomLoc CHECK(rLoc > 0 AND rLoc <= 100)
);
CREATE TABLE Manager
(
mId NUMBER,
mName VARCHAR2(50),
mAdd VARCHAR2(50),
mPhone CHAR(7),
mEmail VARCHAR2(100),
mSal NUMBER(7,2),
CONSTRAINT ManagerPK PRIMARY KEY(mId),
CONSTRAINT CheckManagerId CHECK(mId >= 111111 AND mId <= 999999),
CONSTRAINT CheckManagerPhone CHECK(mPhone >= 2222222 AND mPhone <=
9999999)
);
CREATE TABLE Caretaker
(
ctId NUMBER,
ctName VARCHAR2(50),
ctAdd VARCHAR2(50),
ctPhone CHAR(7),
ctEmail VARCHAR2(200),
ctSal NUMBER(7,2),
hNum NUMBER,

```

```

CONSTRAINT CaretakerPK PRIMARY KEY(ctId),
CONSTRAINT CheckCaretakerId CHECK(ctId >= 111111 AND ctId <= 999999),
CONSTRAINT CheckCaretakerPhone CHECK(ctPhone >= 2222222 AND ctPhone <= 9999999),
CONSTRAINT CheckCaretakerSal CHECK(ctSal > 20000 AND ctSal < 40000)
);

```

```

ALTER TABLE Customer
ADD CONSTRAINT CustomerFK FOREIGN KEY(hNum)
REFERENCES Hotel(hNum);

```

```

ALTER TABLE Hotel
ADD CONSTRAINT HotelFK FOREIGN KEY(mId)
REFERENCES Manager(mId);

```

```

ALTER TABLE Room
ADD CONSTRAINT RoomFK FOREIGN KEY(cNum)
REFERENCES Customer(cNum);

```

```

ALTER TABLE Caretaker
ADD CONSTRAINT CaretakerFK FOREIGN KEY(hNum)
REFERENCES Hotel(hNum);

```

Question 2:

Do the following SQL questions. The resulting columns must all have descriptive names

- 1) Write a select statement to list all the columns from the Offices table. 'Select *' is not allowed. Return the list in Office order.

```

SELECT office, city, region, mgr, target, sales
FROM offices
ORDER BY office;

```

OFFICE	CITY	REGION	MGR	TARGET	SALES
11	New York	Eastern	106	575000	692637
12	Chicago	Eastern	104	800000	735042
13	Atlanta	Eastern	105	350000	367911
21	Los Angeles	Western	108	725000	835915
22	Denver	Western	108	300000	186042

- 2) List the Product Name (its description), and dollar value of quantity on hand (price * quantity) . Return the list in descending order by value.

```

SELECT DESCRIPTION,AVG(PRICE*QTY_ON_HAND) AS "VALUE"
FROM PRODUCTS

```

GROUP BY DESCRIPTION
ORDER BY VALUE DESC;

DESCRIPTION	VALUE
WIDGET INSTALLER	70000
WIDGET REMOVER	68750
LEFT HINGE	54000
RIGHT HINGE	54000
300-LB BRACE	27300
SIZE 3 WIDGET	22149
RETAINER	17550
HOUSING	17020
900-LB BRACE	16875
RATCHET LINK	16590
SIZE 4 WIDGET	16263
DESCRIPTION	VALUE
REDUCER	15747
SIZE 1 WIDGET	15235
BRACE RETAINER	15200
SIZE 2 WIDGET	12692
BRACE HOLDER	12042
500-LB BRACE	7125
BRACE PIN	6000
HINGE PIN	4900
MOTOR MOUNT	3645
HANDLE	1956
WIDGET ADJUSTER	925
DESCRIPTION	VALUE
PLATE	0

- 3) New: List the Order Number, Order Date, Customer Number and Sales Rep Number for orders for part 'XK47' or '775C'. (Use a compound search condition - OR.)

```
SELECT ORDER_NUM, ORDER_DATE, CUST, REP
FROM ORDERS
WHERE PRODUCT = 'XK47' OR PRODUCT = '775C';
```

ORDER_NUM	ORDER_DAT	CUST	REP
113024	20-JAN-90	2114	108
113069	02-MAR-90	2109	107
113065	27-FEB-90	2106	102
113049	10-FEB-90	2118	108

- 4) List the Name and Age for all Sales Reps in the following offices: 12; 21; 13. (Use the set membership test - IN.)

```
SELECT name, age
FROM salesreps
WHERE rep_office IN(12,21,13);
```

NAME	AGE
-----	-----
Bill Adams	37
Sue Smith	48
Bob Smith	33
Dan Roberts	45
Larry Fitch	62
Paul Cruz	29

- 5) List the names of all Sales Reps who have the letter 'o' (this is lower case o) as the second character of their name.

```
SELECT name
FROM salesreps
WHERE name LIKE '_o%';
```

NAME

Bob Smith
Tom Synder

- 6) Return the Sales Rep ID and Name of any Sales Rep not assigned to an office yet.

```
SELECT empl_num, NAME
FROM salesreps
WHERE rep_office IS NULL;
```

EMPL_NUM	NAME
-----	-----
110	Tom Synder

- 7) Show all the sales rep names with last name "Smith".

```
SELECT name
FROM salesreps
WHERE name LIKE '%Smith';
```

NAME

Sue Smith
Bob Smith

- 8) List different titles in the sales reps table. Only list each title once and unknown titles should be ignored.

```
SELECT DISTINCT title
FROM salesreps;
```

```
TITLE
-----
Sales Rep
Sales Mgr
VP Sales
```

- 9) List the description of the products which are at least 6 character and less than 10 character long. No duplicate row is allowed. You can use the built-in function `length()` to do this. For example, `length(name)` returns the number of characters for attribute called "name".

```
SELECT DISTINCT DESCRIPTION
FROM PRODUCTS
WHERE LENGTH(DESCRIPTION) >= 6 AND LENGTH(DESCRIPTION) < 10;
```

```
DESCRIPTION
-----
REDUCER
HANDLE
HOUSING
HINGE PIN
BRACE PIN
RETAINER
```

- 10) List the order numbers with the name of the rep who placed the order and the name of the customer who made the order and the name of the rep for that customer

```
SELECT ORDER_NUM, S.name, COMPANY, R.name
FROM ORDERS, Salesreps S, Salesreps R, CUSTOMERS
WHERE S.empl_num = REP AND CUST = CUST_NUM AND CUST_REP = R.empl_num;
```

ORDER_NUM	NAME	COMPANY	NAME
112987	Bill Adams	Acme Mfg.	Bill Adams
113027	Bill Adams	Acme Mfg.	Bill Adams
112983	Bill Adams	Acme Mfg.	Bill Adams
112963	Bill Adams	Acme Mfg.	Bill Adams
113012	Bill Adams	JCP Inc.	Paul Cruz
113003	Mary Jones	Holm and Landis	Mary Jones
113058	Mary Jones	Holm and Landis	Mary Jones
113065	Sue Smith	Fred Lewis Corp.	Sue Smith
112993	Sue Smith	Fred Lewis Corp.	Sue Smith
113048	Sue Smith	Rico Enterprises	Sue Smith
112979	Sue Smith	Orion Corp.	Sue Smith

ORDER_NUM	NAME	COMPANY	NAME
112989	Sam Clark	Jones Mfg.	Sam Clark
112961	Sam Clark	J.P. Sinclair	Sam Clark
113055	Dan Roberts	Holm and Landis	Mary Jones
112968	Dan Roberts	First Corp.	Dan Roberts
113034	Tom Synder	Ace International	Tom Synder
113036	Tom Synder	Ace International	Tom Synder
113049	Larry Fitch	Midwest Systems	Larry Fitch
112992	Larry Fitch	Midwest Systems	Larry Fitch
113007	Larry Fitch	Zetacorp	Larry Fitch
113024	Larry Fitch	Orion Corp.	Sue Smith
113013	Larry Fitch	Midwest Systems	Larry Fitch

ORDER_NUM	NAME	COMPANY	NAME
113045	Larry Fitch	Zetacorp	Larry Fitch
113051	Larry Fitch	Midwest Systems	Larry Fitch
113057	Paul Cruz	JCP Inc.	Paul Cruz
112975	Paul Cruz	JCP Inc.	Paul Cruz
113069	Nacy Angelli	Chen Associates	Paul Cruz
113062	Nacy Angelli	Peter Brothers	Nacy Angelli
112997	Nacy Angelli	Peter Brothers	Nacy Angelli

Question 3:

- 1) List the Mfr Id, the Product Id, Company and PRICE of all products brought by customers where customer number is one of (2112,2105,2119) and where the amount of the order < \$5000.00. Order the results by ascending Company.

```

SELECT  MFR_ID, PRODUCT_ID, PRICE, COMPANY
FROM ORDERS, PRODUCTS, CUSTOMERS
WHERE CUST IN (2112,2105,2119) AND PRODUCT = PRODUCT_ID AND CUST=
CUST_NUM AND AMOUNT< 5000
ORDER BY COMPANY ASC;

```


MFR	PRODU	PRICE	COMPANY
---	-----	-----	-----
IMM	773C	975	Zetacorp

- 2) List all salesreps (id and names) and all orders (orderNumber) in which the salesrep is the company's (i.e. the customer) rep (Cust Rep), but didn't take the order. Order the result based on name in ascending order.

```
SELECT empl_num,name,ORDER_NUM
FROM salesreps,ORDERS, CUSTOMERS
WHERE CUST = CUST_NUM AND CUST_REP = empl_num AND REP <> empl_num
ORDER BY name ASC;
```

EMPL_NUM	NAME	ORDER_NUM
-----	-----	-----
109	Mary Jones	113055
103	Paul Cruz	113012
103	Paul Cruz	113069
102	Sue Smith	113024

- 3) List all customers (Customer number, Company, and Credit Limit) and orders (Order Number, Amount) where the order is within \$10000.00 of the Credit Limit (less than or equal to \$10000). Sort the result by Customer number in descending order.

```
SELECT CUST_NUM, COMPANY, CREDIT_LIMIT, ORDER_NUM, AMOUNT
FROM CUSTOMERS, ORDERS
WHERE CUST_NUM = CUST AND AMOUNT <=(CREDIT_LIMIT - 10000)
ORDER BY CUST_NUM DESC;
```

CUST_NUM	COMPANY	CREDIT_LIMIT	ORDER_NUM	AMOUNT
2124	Peter Brothers	40000	112997	652
2124	Peter Brothers	40000	113062	2430
2120	Rico Enterprises	50000	113048	3750
2118	Midwest Systems	60000	113051	1420
2118	Midwest Systems	60000	113049	776
2118	Midwest Systems	60000	112992	760
2118	Midwest Systems	60000	113013	652
2114	Orion Corp.	20000	113024	7100
2112	Zetacorp	50000	113007	2925
2111	JCP Inc.	50000	112975	2100
2111	JCP Inc.	50000	113057	600
CUST_NUM	COMPANY	CREDIT_LIMIT	ORDER_NUM	AMOUNT
2111	JCP Inc.	50000	113012	3745
2108	Holm and Landis	55000	113058	1480
2108	Holm and Landis	55000	113003	5625
2108	Holm and Landis	55000	113055	150
2107	Ace International	35000	113036	22500
2107	Ace International	35000	113034	632
2106	Fred Lewis Corp.	65000	112993	1896
2106	Fred Lewis Corp.	65000	113065	2130
2103	Acme Mfg.	50000	112983	702
2103	Acme Mfg.	50000	112963	3276
2103	Acme Mfg.	50000	113027	4104
CUST_NUM	COMPANY	CREDIT_LIMIT	ORDER_NUM	AMOUNT
2103	Acme Mfg.	50000	112987	27500
2102	First Corp.	65000	112968	3978
2101	Jones Mfg.	65000	112989	1458

- 4) List all salesreps names and their managers' names where the salesrep is at least as old as the manager.

```
SELECT R.name, M.name
FROM salesreps R, salesreps M
WHERE R.manager = M.empl num And R.age >= M.age;
```

NAME	NAME
-----	-----
Bill Adams	Bob Smith
Dan Roberts	Bob Smith
Larry Fitch	Sam Clark

- 5) List all salesreps (Name) and the City they work in where the sales of the salesrep < Quota and the sales for the office is < Target.

```
SELECT name, city
FROM salesreps, offices
WHERE rep_office = office AND salesreps.sales < quota AND offices.sales < target;
```

NAME	CITY
Bob Smith	Chicago
Nacy Angelli	Denver

- 6) List the name, id, and hire date of the salesreps where at least one of the two conditions hold:
- The salesrep sales should be greater than the quota
 - The salesrep has taken an order from Customer number 2117, 2111, or 2101.
- Sort the result by the salesrep's id.

```
SELECT DISTINCT name, empl_num, hire_date
FROM salesreps, ORDERS
WHERE empl_num = REP AND sales > quota OR (CUST IN(2117,2111,2101) AND
empl_num = REP)
ORDER BY empl_num;
```

NAME	EMPL_NUM	HIRE_DATE
Dan Roberts	101	20-OCT-86
Sue Smith	102	10-DEC-86
Paul Cruz	103	01-MAR-87
Bill Adams	105	12-FEB-88
Sam Clark	106	14-JUN-88
Larry Fitch	108	12-OCT-89
Mary Jones	109	12-OCT-89

- 7) List all orders (Order Number) over \$25000 showing the company placing the order, the Customer Rep assign to the company, the Office id and the city where the Customer Rep works in, such that the Customer Rep's manager is not the person who actually took the order.

```
SELECT ORDER_NUM, COMPANY, name, rep_office, city
FROM ORDERS, CUSTOMERS, salesreps, offices
WHERE CUST= CUST_NUM AND CUST_REP = empl_num AND rep_office = office
AND manager <> REP AND AMOUNT >25000;
```

ORDER_NUM	COMPANY	NAME	REP_OFFICE	CITY
113045	Zetacorp	Larry Fitch	21	Los Angeles
113069	Chen Associates	Paul Cruz	12	Chicago
112987	Acme Mfg.	Bill Adams	13	Atlanta

- 8) List all customer reps (their name and their id) and their managers name in which the manager has taken an order for the customer Rep's company or the manager is based in New York or Denver. Use appropriate column header

```
SELECT DISTINCT R.name,R. empl_num, M.name AS "MANAGER",
```

```

FROM salesreps R, salesreps M, ORDERS, CUSTOMERS, offices
  WHERE R.manager = M.empl_num AND R.empl_num= CUST_REP AND office
    =M.rep_office AND(REP = M.empl_num OR city IN('New York', 'Denver'))

```

NAME	EMPL_NUM	MANAGER
Mary Jones	109	Sam Clark
Sue Smith	102	Larry Fitch
Tom Synder	110	Dan Roberts
Larry Fitch	108	Sam Clark
Nacy Angelli	107	Larry Fitch
Bob Smith	104	Sam Clark

- 9) List all products (ProductId, and Description), customers (CustNum, Company) who have bought that product, and orders (Order Number, and Order Date) where the order < \$1000. Sort the rows by the OrderDate.

```

SELECT PRODUCT_ID, DESCRIPTION, CUST_NUM, COMPANY, ORDER_NUM,
ORDER_DATE
FROM PRODUCTS, CUSTOMERS, ORDERS
WHERE PRODUCT= PRODUCT_ID AND CUST= CUST_NUM AND AMOUNT <1000
ORDER BY ORDER_DATE;

```

ORDER_NUM	NAME	COMPANY	NAME
112987	Bill Adams	Acme Mfg.	Bill Adams
113027	Bill Adams	Acme Mfg.	Bill Adams
112983	Bill Adams	Acme Mfg.	Bill Adams
112963	Bill Adams	Acme Mfg.	Bill Adams
113012	Bill Adams	JCP Inc.	Paul Cruz
113003	Mary Jones	Holm and Landis	Mary Jones
113058	Mary Jones	Holm and Landis	Mary Jones
113065	Sue Smith	Fred Lewis Corp.	Sue Smith
112993	Sue Smith	Fred Lewis Corp.	Sue Smith
113048	Sue Smith	Rico Enterprises	Sue Smith
112979	Sue Smith	Orion Corp.	Sue Smith

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113036	Tom Synder	Ace International	Tom Synder
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112992	Larry Fitch	Midwest Systems	Larry Fitch
113007	Larry Fitch	Zetacorp	Larry Fitch
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113069	Nacy Angelli	Chen Associates	Paul Cruz
113062	Nacy Angelli	Peter Brothers	Nacy Angelli
112997	Nacy Angelli	Peter Brothers	Nacy Angelli

- 10) List the name of the salesreps and the name of their managers only if the manager has taken care of some orders.

```

SELECT DISTINCT R.name, M.name
FROM salesreps R, salesreps M, ORDERS
WHERE R.manager = M.empl_num AND REP = M.empl_num;

```

NAME	NAME
-----	-----
Tom Synder	Dan Roberts
Sue Smith	Larry Fitch
Nacy Angelli	Larry Fitch
Larry Fitch	Sam Clark
Bob Smith	Sam Clark
Mary Jones	Sam Clark