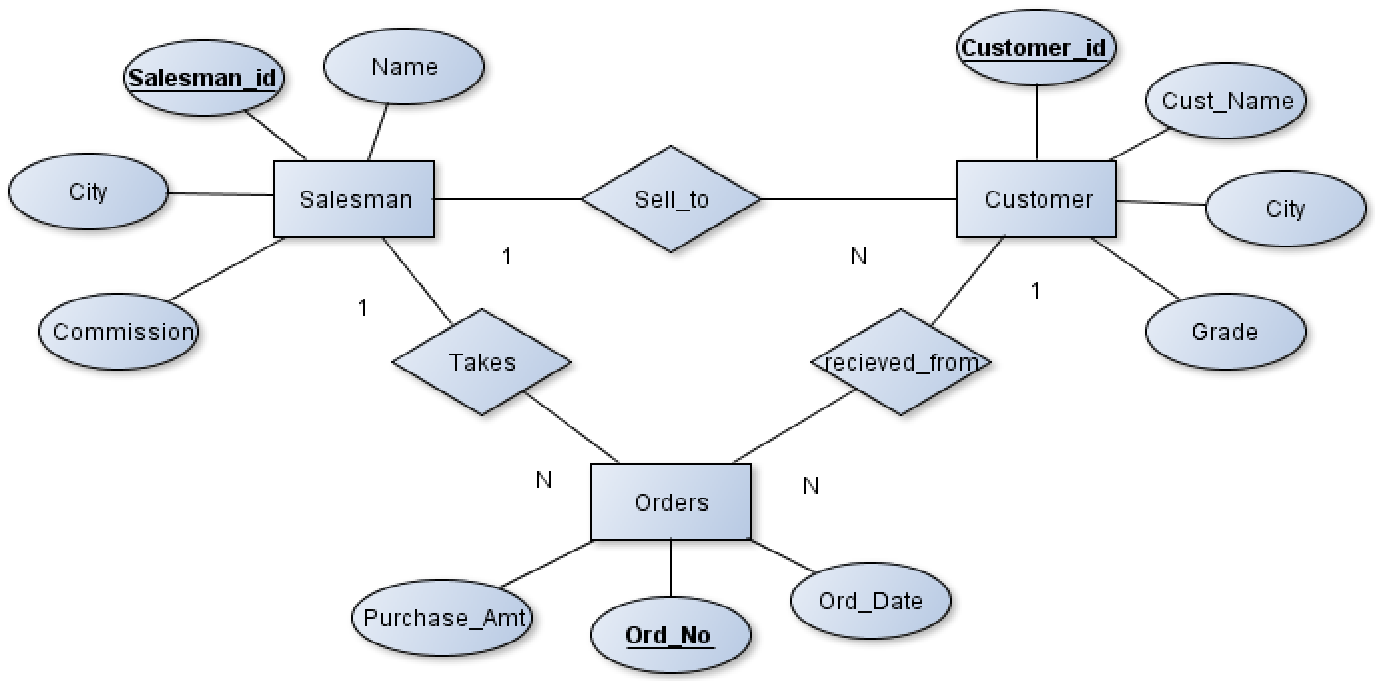
B. Consider the following schema for Order Database:

SALESMAN (*Salesman_id, Name, City, Commission*)
CUSTOMER (*Customer_id, Cust_Name, City, Grade, Salesman_id*)
ORDERS (*Ord_No, Purchase_Amt, Ord_Date, Customer_id, Salesman_id*)
Write SQL queries to

1. **Count the customers with grades above Bangalore's average.**
2. **Find the name and numbers of all salesmen who had more than one customer.**
3. **List all salesmen and indicate those who have and don't have customers in their cities (Use UNION operation.)**
4. **Create a view that finds the salesman who has the customer with the highest order of a day.**
5. **Demonstrate the DELETE operation by removing salesman with id 1000. All his orders must also be deleted.**

Solution:

Entity-Relationship Diagram



Schema Diagram

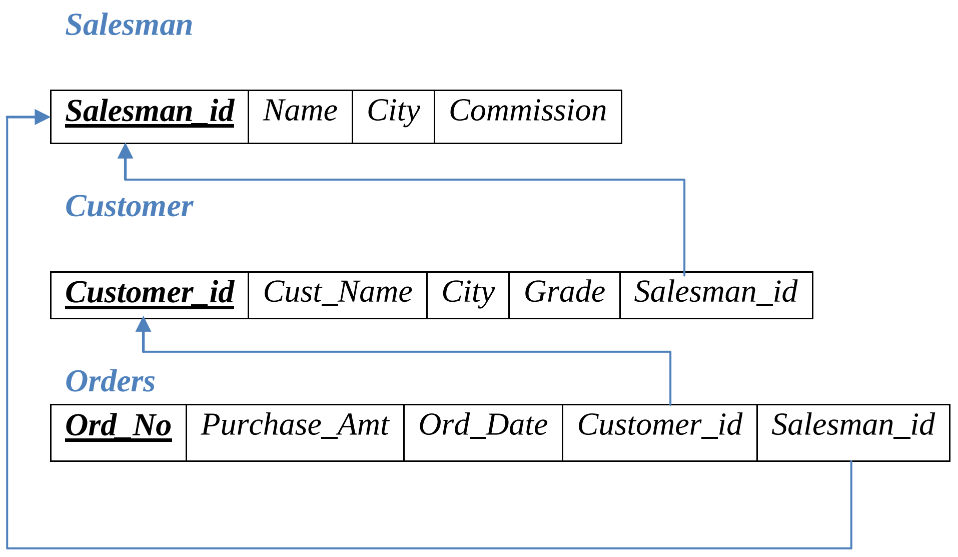


Table Creation

```
CREATE TABLE SALESMAN
(SALESMAN_ID INT PRIMARY KEY, NAME VARCHAR(20), CITY VARCHAR(20),
COMMISSION VARCHAR(20));

CREATE TABLE CUSTOMER (CUSTOMER_ID INT  PRIMARY KEY, CUST_NAME
VARCHAR(20), CITY  VARCHAR(20), GRADE  INT,SALESMAN_ID  INT, FOREIGN
KEY(SALESMAN_ID) REFERENCES SALESMAN(SALESMAN_ID) ON DELETE SET
NULL);

CREATE TABLE ORDERS
(ORD_NO INT  PRIMARY KEY, PURCHASE_AMT  INT, ORD_DATE DATE,
CUSTOMER_ID  INT, SALESMAN_ID  INT, FOREIGN KEY(CUSTOMER_ID)
REFERENCES CUSTOMER (CUSTOMER_ID) ON DELETE CASCADE, FOREIGN
KEY(SALESMAN_ID) REFERENCES SALESMAN (SALESMAN_ID) ON DELETE
CASCADE);
```

Table Descriptions

```
DESC SALESMAN;

DESC CUSTOMER;

DESC ORDERS;
```

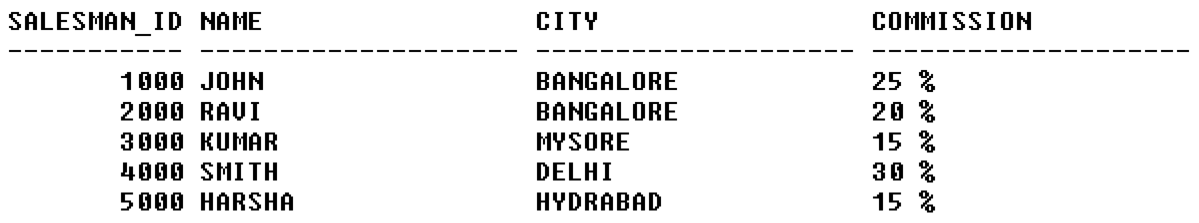
<u>Insertion of Values to Tables</u>

INSERT INTO SALESMAN VALUES (1000, ‘JOHN’,’BANGALORE’,’25 %’);
INSERT INTO SALESMAN VALUES (2000, ‘RAVI’,’BANGALORE’,’20 %’);
INSERT INTO SALESMAN VALUES (3000, ‘KUMAR’,’MYSORE’,’15 %’);
INSERT INTO SALESMAN VALUES (4000, ‘SMITH’,’DELHI’,’30 %’);
INSERT INTO SALESMAN VALUES (5000, ‘HARSHA’,’HYDRABAD’,’15 %’);

INSERT INTO CUSTOMER VALUES (10, ‘PREETHI’,’BANGALORE’, 100, 1000);
INSERT INTO CUSTOMER VALUES (11, ‘VIVEK’,’MANGALORE’, 300, 1000);
INSERT INTO CUSTOMER VALUES (12, ‘BHASKAR’,’CHENNAI’, 400, 2000);
INSERT INTO CUSTOMER VALUES (13, ‘CHETHAN’,’BANGALORE’, 200, 2000);
INSERT INTO CUSTOMER VALUES (14, ‘MAMATHA’,’BANGALORE’, 400, 3000);

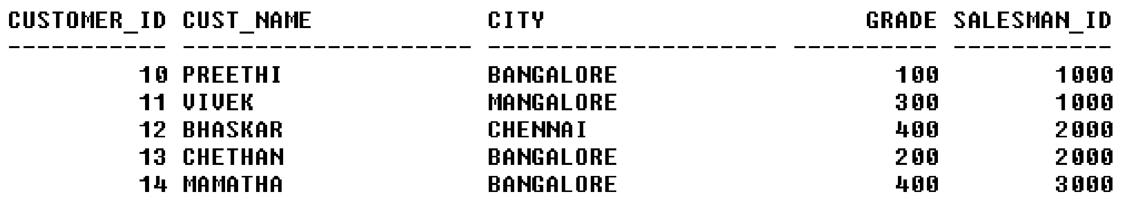
INSERT INTO ORDERS VALUES (50, 5000, ‘2017-05-04’, 10, 1000);
INSERT INTO ORDERS VALUES (51, 450, ‘2017-01-17’, 10, 2000);
INSERT INTO ORDERS VALUES (52, 1000, ‘2017-01-17’, 13, 2000);
INSERT INTO ORDERS VALUES (53, 3500, ‘2017-05-04’, 14, 3000);
INSERT INTO ORDERS VALUES (54, 550, ‘2019-03-09’, 12, 2000);

SELECT * FROM SALESMAN;



```
SALESMAN_ID NAME                 CITY                 COMMISSION
----------- -------------------- -------------------- --------------------
       1000 JOHN                 BANGALORE            25 %
       2000 RAVI                 BANGALORE            20 %
       3000 KUMAR                MYSORE               15 %
       4000 SMITH                DELHI                30 %
       5000 HARSHA               HYDRABAD             15 %
```

SELECT * FROM CUSTOMER;



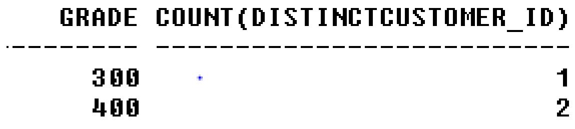
```
CUSTOMER_ID CUST_NAME            CITY                      GRADE SALESMAN_ID
----------- -------------------- -------------------- ---------- -----------
         10 PREETHI              BANGALORE                   100        1000
         11 VIVEK                MANGALORE                   300        1000
         12 BHASKAR              CHENNAI                     400        2000
         13 CHETHAN              BANGALORE                   200        2000
         14 MAMATHA              BANGALORE                   400        3000
```

SELECT * FROM ORDERS;

<u>Queries:</u>

1. **Count the customers with grades above Bangalore’s average.**

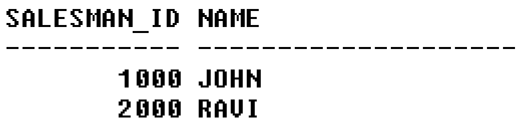
SELECT GRADE, COUNT (DISTINCT CUSTOMER_ID) FROM CUSTOMER GROUP BY GRADE HAVING GRADE > (SELECT AVG(GRADE) FROM CUSTOMER WHERE CITY='BANGALORE');



```
   GRADE COUNT(DISTINCTCUSTOMER_ID)
-------- --------------------------
     300                          1
     400                          2
```

2. **Find the name and numbers of all salesmen who had more than one customer.**

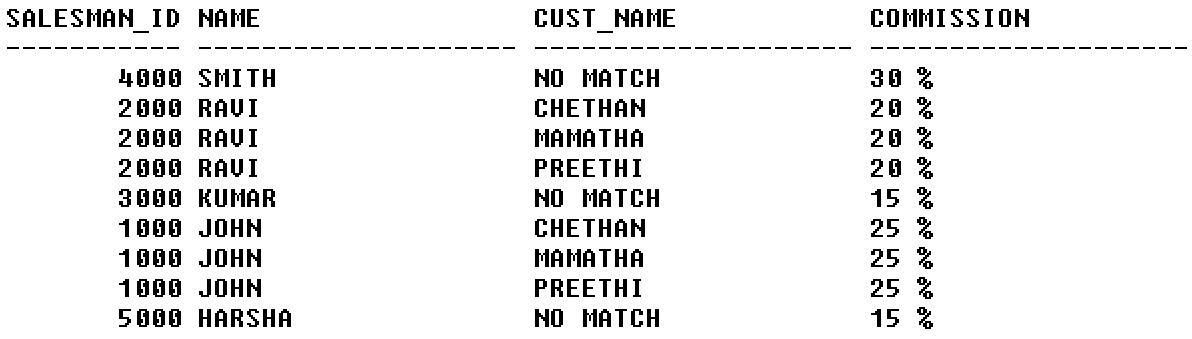
SELECT SALESMAN_ID, NAME FROM SALESMAN A WHERE 1 < (SELECT COUNT (*) FROM CUSTOMER WHERE SALESMAN_ID=A.SALESMAN_ID);



```
SALESMAN_ID NAME
----------- --------------------
       1000 JOHN
       2000 RAVI
```

3. **List all salesmen and indicate those who have and don't have customers in their cities (Use UNION operation.)**

SELECT S.SALESMAN_ID, S.NAME, C.CUST_NAME, S.COMMISSION FROM SALESMAN S, CUSTOMER C WHERE S.CITY = C.CITY
UNION
SELECT SALESMAN_ID, NAME, 'NO MATCH', COMMISSION FROM SALESMAN WHERE NOT CITY = ANY (SELECT CITY FROM CUSTOMER) ORDER BY 2 DESC;



```
SALESMAN_ID NAME                 CUST_NAME            COMMISSION
----------- -------------------- -------------------- --------------------
       4000 SMITH                NO MATCH             30 %
       2000 RAVI                 CHETHAN              20 %
       2000 RAVI                 MAMATHA              20 %
       2000 RAVI                 PREETHI              20 %
       3000 KUMAR                NO MATCH             15 %
       1000 JOHN                 CHETHAN              25 %
       1000 JOHN                 MAMATHA              25 %
       1000 JOHN                 PREETHI              25 %
       5000 HARSHA               NO MATCH             15 %
```

4. **Create a view that finds the salesman who has the customer with the highest order of a day.**

```
CREATE VIEW V_SALESMAN AS SELECT B.ORD_DATE, A.SALESMAN_ID,
A.NAME FROM SALESMAN A, ORDERS B WHERE A.SALESMAN_ID =
B.SALESMAN_ID AND B.PURCHASE_AMT = (SELECT MAX (PURCHASE_AMT)
FROM ORDERS C WHERE C.ORD_DATE = B.ORD_DATE);

SELECT * FROM V_SALESMAN;
```

5. **Demonstrate the DELETE operation by removing salesman with id 1000. All his orders must also be deleted.**

   Use ON DELETE CASCADE at the end of foreign key definitions while creating child table orders and then execute the following:

   Use ON DELETE SET NULL at the end of foreign key definitions while creating child table customers and then executes the following:

```
DELETE FROM SALESMAN WHERE SALESMAN_ID=1000;

SELECT * FROM SALESMAN;
```