Name: Mohd Adil
Roll No: 20BCS042
Assignment 8

Q) 1

```
mysql> create table Passenger(
    -> pid int,
    -> pname varchar(10),
    -> age int);
Query OK, 0 rows affected (0.07 sec)

mysql> create table Reservation(
    -> pid int,
    -> class varchar(2),
    -> tid int);
Query OK, 0 rows affected (0.03 sec)


mysql> insert into Passenger
    -> values
    -> (0,'Sachin',65),
    -> (1,'Rahul',66),
    -> (2,'Sourav',67),
    -> (3,'Anil',69);
Query OK, 4 rows affected (0.01 sec)
Records: 4  Duplicates: 0  Warnings: 0

mysql> insert into Reservation
    -> values
    -> (0,'AC',8200),
    -> (1,'AC',8201),
    -> (2,'SC',8201),
    -> (5,'AC',8203),
    -> (1,'SC',8204),
    -> (3,'AC',8202);
Query OK, 6 rows affected (0.01 sec)
Records: 6  Duplicates: 0  Warnings: 0



mysql> select * from passenger;
+------+--------+------+
| pid  | pname  | age  |
+------+--------+------+
|    0 | Sachin |   65 |
|    1 | Rahul  |   66 |
|    2 | Sourav |   67 |
|    3 | Anil   |   69 |
```

```
+------+--------+------+
4 rows in set (0.00 sec)

mysql> select * from reservation;
+------+-------+------+
| pid  | class | tid  |
+------+-------+------+
|    0 | AC    | 8200 |
|    1 | AC    | 8201 |
|    2 | SC    | 8201 |
|    5 | AC    | 8203 |
|    1 | SC    | 8204 |
|    3 | AC    | 8202 |
+------+-------+------+
6 rows in set (0.00 sec)

mysql> SELECT pid
    -> FROM Reservation
    -> WHERE class='AC' AND
    -> EXISTS (SELECT *
    -> FROM Passenger
    -> WHERE age > 65 AND
    -> Passenger.  pid = Reservation.pid);
+------+
| pid  |
+------+
|    1 |
|    3 |
+------+
2 rows in set (0.00 sec)

Ans :  1,3


Q)2

mysql> create table Suppliers(
    -> sid int,
    -> sname varchar(10),
    -> city varchar(10));
Query OK, 0 rows affected (0.04 sec)

mysql> create table Parts(
    -> pid int,
    -> pname varchar(10),
    -> color varchar(10));
Query OK, 0 rows affected (0.03 sec)

mysql> create table Catalog(
    -> sid int,
    -> pid int,
    -> cost float);
```

```
Query OK, 0 rows affected (0.03 sec)

mysql> insert into Suppliers
    -> values
    -> (1, 'Rahul', 'Mumbai'),
    -> (2, 'Manoj', 'Delhi'),
    -> (3, 'Suraj', 'Chennai');
Query OK, 3 rows affected (0.01 sec)
Records: 3  Duplicates: 0  Warnings: 0

mysql> insert into Parts
    -> values
    -> (1, 'Engine', 'Blue'),
    -> (2, 'Motor', 'Red'),
    -> (3, 'Wheel', 'Yellow'),
    -> (4, 'Brakes', 'Green'),
    -> (5, 'Clutch', 'Blue');
Query OK, 5 rows affected (0.02 sec)
Records: 5  Duplicates: 0  Warnings: 0

mysql> insert into Catalog
    -> values
    -> (1, 2, 450.78),
    -> (2, 1, 567.78),
    -> (3, 3, 234.89),
    -> (3, 2, 675.45),
    -> (1, 4, 345.45),
    -> (3, 5, 678.23),
    -> (2, 4, 345.45);
Query OK, 7 rows affected (0.01 sec)
Records: 7  Duplicates: 0  Warnings: 0


mysql> select * from Suppliers;
+------+-------+---------+
| sid  | sname | city    |
+------+-------+---------+
|    1 | Rahul | Mumbai  |
|    2 | Manoj | Delhi   |
|    3 | Suraj | Chennai |
+------+-------+---------+
3 rows in set (0.00 sec)

mysql> select * from parts;
+------+--------+--------+
| pid  | pname  | color  |
+------+--------+--------+
|    1 | Engine | Blue   |
|    2 | Motor  | Red    |
|    3 | Wheel  | Yellow |
|    4 | Brakes | Green  |
|    5 | Clutch | Blue   |
```

```
+------+--------+--------+
5 rows in set (0.00 sec)

mysql> select * from Catalog;
+------+------+--------+
| sid  | pid  | cost   |
+------+------+--------+
|    1 |    2 | 450.78 |
|    2 |    1 | 567.78 |
|    3 |    3 | 234.89 |
|    3 |    2 | 675.45 |
|    1 |    4 | 345.45 |
|    3 |    5 | 678.23 |
|    2 |    4 | 345.45 |
+------+------+--------+
7 rows in set (0.00 sec)

mysql> SELECT S.sname
    -> FROM Suppliers S
    -> WHERE S.sid NOT IN (SELECT C.sid FROM Catalog C
    -> WHERE C.pid NOT IN (SELECT P.pid FROM Parts P
    -> WHERE P.color<> 'blue'))
    -> ;
+-------+
| sname |
+-------+
| Rahul |
+-------+
1 row in set (0.01 sec)
```

Ans : Find the names of all suppliers who have not supplied a non-blue part.

Q)3

```
mysql> create table employee3(
    -> name varchar(10),
    -> sex varchar(1),
    -> salary float,
    -> deptName varchar(10));
Query OK, 0 rows affected (0.04 sec)

mysql> insert into employee3
    -> values
    -> ('Rahul', 'M', 45000.00, 'IT'),
    -> ('Simran', 'F', 40000.00, 'HR'),
    -> ('Raj', 'M', 35000.00, 'HR'),
    -> ('Mukesh', 'M', 30000.00, 'ACC'),
    -> ('Aditi', 'F', 30000.00, 'ACC'),
    -> ('Harsh', 'M', 50000.00, 'IT');
Query OK, 6 rows affected (0.01 sec)
```

```
Records: 6  Duplicates: 0  Warnings: 0


mysql> select * from employee3;
+--------+------+--------+----------+
| name   | sex  | salary | deptName |
+--------+------+--------+----------+
| Rahul  | M    |  45000 | IT       |
| Simran | F    |  40000 | HR       |
| Raj    | M    |  35000 | HR       |
| Mukesh | M    |  30000 | ACC      |
| Aditi  | F    |  30000 | ACC      |
| Harsh  | M    |  50000 | IT       |
+--------+------+--------+----------+
6 rows in set (0.00 sec)

mysql> Select deptName
    -> From Employee3
    -> Where sex = 'M'
    -> Group by deptName
    -> Having avg(salary) >
    -> (select avg (salary) from Employee3);
+----------+
| deptName |
+----------+
| IT       |
+----------+
1 row in set (0.01 sec)

Ans : the average salary of male employees is more than the average
salary of
employees in the same department.


Q)4

mysql> create table book
    -> (title varchar(255) not null,
    -> price int not null unique);
Query OK, 0 rows affected (0.07 sec)

mysql> describe book;
+-------+--------------+------+-----+---------+-------+
| Field | Type         | Null | Key | Default | Extra |
+-------+--------------+------+-----+---------+-------+
| title | varchar(255) | NO   |     | NULL    |       |
| price | int          | NO   | PRI | NULL    |       |
+-------+--------------+------+-----+---------+-------+
2 rows in set (0.02 sec)

mysql> insert into book values
    -> ('History',190),
```

```
    -> ('Geography', 200),
    -> ('Mathematics', 210),
    -> ('Data Structure', 250),
    -> ('DBMS', 240),
    -> ('Linux', 180);
Query OK, 6 rows affected (0.01 sec)
Records: 6  Duplicates: 0  Warnings: 0

mysql> select * from book;
+----------------+-------+
| title          | price |
+----------------+-------+
| Linux          |   180 |
| History        |   190 |
| Geography      |   200 |
| Mathematics    |   210 |
| DBMS           |   240 |
| Data Structure |   250 |
+----------------+-------+
6 rows in set (0.00 sec)

mysql> select title
    -> from book as B
    -> where (select count(*) from book as T where T.price >
B.price) < 5;
+----------------+
| title          |
+----------------+
| History        |
| Geography      |
| Mathematics    |
| DBMS           |
| Data Structure |
+----------------+
5 rows in set (0.01 sec)

Ans : Titles of five most expensive books


Q)5

mysql> create table enrolled
    -> (student varchar(255),
    -> course varchar(2),
    -> primary key(student,course));
Query OK, 0 rows affected (0.03 sec)

mysql> describe enrolled;
+---------+--------------+------+-----+---------+-------+
| Field   | Type         | Null | Key | Default | Extra |
+---------+--------------+------+-----+---------+-------+
| student | varchar(255) | NO   | PRI | NULL    |       |
```

```
| course  | varchar(2)   | NO   | PRI | NULL    |       |
+---------+--------------+------+-----+---------+-------+
2 rows in set (0.01 sec)

mysql> create table paid
    -> (student varchar(255),
    -> amount int,
    -> primary key(student));
Query OK, 0 rows affected (0.03 sec)

mysql> describe paid;
+---------+--------------+------+-----+---------+-------+
| Field   | Type         | Null | Key | Default | Extra |
+---------+--------------+------+-----+---------+-------+
| student | varchar(255) | NO   | PRI | NULL    |       |
| amount  | int          | YES  |     | NULL    |       |
+---------+--------------+------+-----+---------+-------+
2 rows in set (0.01 sec)

mysql> insert into enrolled values
    -> ('Mohd Adil', 'CS'),
    -> ('Soban Farooq', 'CS'),
    -> ('Asad', 'EC'),
    -> ('Khalid', 'EC'),
    -> ('Sarfaraz', 'EC'),
    -> ('Atif', 'ME'),
    -> ('Hamza', 'CE'),
    -> ('Ayaz', 'EE');
Query OK, 8 rows affected (0.01 sec)
Records: 8  Duplicates: 0  Warnings: 0

mysql> select * from enrolled;
+--------------+--------+
| student      | course |
+--------------+--------+
| Asad         | EC     |
| Atif         | ME     |
| Ayaz         | EE     |
| Hamza        | CE     |
| Khalid       | EC     |
| Mohd Adil    | CS     |
| Sarfaraz     | EC     |
| Soban Farooq | CS     |
+--------------+--------+
8 rows in set (0.00 sec)


mysql> insert into paid values
    -> ('Soban Farooq', 15000),
    -> ('Sarfaraz', 15000);
Query OK, 2 rows affected (0.01 sec)
Records: 2  Duplicates: 0  Warnings: 0
```

```
mysql> insert into paid values
    -> ('Asad', 15000),
    -> ('Hamza', 15000),
    -> ('Atif', 80000);
Query OK, 3 rows affected (0.01 sec)
Records: 3  Duplicates: 0  Warnings: 0

mysql> select * from paid;
+--------------+--------+
| student      | amount |
+--------------+--------+
| Asad         |  15000 |
| Atif         |  80000 |
| Hamza        |  15000 |
| Sarfaraz     |  15000 |
| Soban Farooq |  15000 |
+--------------+--------+
5 rows in set (0.00 sec)

mysql> select student from enrolled where student in (select
student from paid);
+--------------+
| student      |
+--------------+
| Asad         |
| Atif         |
| Hamza        |
| Sarfaraz     |
| Soban Farooq |
+--------------+
5 rows in set (0.00 sec)

mysql> select student from paid where student in (select student
from enrolled);
+--------------+
| student      |
+--------------+
| Asad         |
| Atif         |
| Hamza        |
| Sarfaraz     |
| Soban Farooq |
+--------------+
5 rows in set (0.01 sec)

mysql> select E.student from enrolled E, paid P
    -> where E.student = P.student;
+--------------+
| student      |
+--------------+
| Asad         |
```

```
| Atif         |
| Hamza        |
| Sarfaraz     |
| Soban Farooq |
+--------------+
5 rows in set (0.00 sec)

mysql> select student from paid where exists
    -> (select * from enrolled where enrolled.student =
paid.student);
+--------------+
| student      |
+--------------+
| Asad         |
| Atif         |
| Hamza        |
| Sarfaraz     |
| Soban Farooq |
+--------------+
5 rows in set (0.00 sec)
```

Ans: All queries return identical row set from any database

Q)6

```
mysql> create table account
    -> (customer varchar(255),
    -> balance int not null,
    -> primary key(customer));
Query OK, 0 rows affected (0.02 sec)

mysql> describe account;
+----------+--------------+------+-----+---------+-------+
| Field    | Type         | Null | Key | Default | Extra |
+----------+--------------+------+-----+---------+-------+
| customer | varchar(255) | NO   | PRI | NULL    |       |
| balance  | int          | NO   |     | NULL    |       |
+----------+--------------+------+-----+---------+-------+
2 rows in set (0.01 sec)

mysql> insert into account values
    -> ('20BCS042', 25000),
    -> ('20BCS049', 30000),
    -> ('20BCS001', 16000),
    -> ('20BCS044', 20000),
    -> ('20BCS083', 35000),
    -> ('20BCS041', 35000);
Query OK, 6 rows affected (0.01 sec)
Records: 6  Duplicates: 0  Warnings: 0
```

```
mysql> select * from account;
+----------+---------+
| customer |  balance |
+----------+---------+
| 20BCS001 |    16000 |
| 20BCS041 |    35000 |
| 20BCS042 |    25000 |
| 20BCS044 |    20000 |
| 20BCS049 |    30000 |
| 20BCS083 |    35000 |
+----------+---------+
6 rows in set (0.00 sec)

mysql> select A.customer,  count(B.customer)
    -> from account A,account B
    -> where A.balance <= B.balance
    -> group by A.customer;
+----------+-------------------+
| customer |  count(B.customer) |
+----------+-------------------+
| 20BCS001 |                 6 |
| 20BCS083 |                 2 |
| 20BCS049 |                 3 |
| 20BCS044 |                 5 |
| 20BCS042 |                 4 |
| 20BCS041 |                 2 |
+----------+-------------------+
6 rows in set (0.01 sec)

mysql> select A.customer,  1+count(B.customer)
    -> from account A,account B
    -> where A.balance <  B.balance
    -> group by A.customer;
+----------+--------------------+
| customer |  1+count(B.customer) |
+----------+--------------------+
| 20BCS049 |                  3 |
| 20BCS044 |                  5 |
| 20BCS042 |                  4 |
| 20BCS001 |                  6 |
+----------+--------------------+
4 rows in set (0.00 sec)
```

Ans : (1) Query1 will produce the same row set as Query2 for some but not all databases.

(4) Neither Query1 nor Query2 is a correct implementation of the specification

Option (c) is correct 1 and 4

Q)7

```
mysql> create table Loan_Records
    -> (BorrowerBank_Manager varchar(255),
    -> Loan_Amount int);
Query OK, 0 rows affected (0.05 sec)

mysql> describe Loan_Records;
+----------------------+-------------+------+-----+---------+-----
--+
| Field                | Type        | Null | Key | Default |
Extra |
+----------------------+-------------+------+-----+---------+-----
--+
| BorrowerBank_Manager | varchar(255) | YES  |     | NULL    |
|
| Loan_Amount          | int          | YES  |     | NULL    |
|
+----------------------+-------------+------+-----+---------+-----
--+
2 rows in set (0.01 sec)

mysql> insert into Loan_Records values
    -> ('Ramesh Sunderajan', 10000),
    -> ('Suresh Ramgopal', 15000),
    -> ('Mahesh Sunderajan', 7000);
Query OK, 3 rows affected (0.01 sec)
Records: 3  Duplicates: 0  Warnings: 0

mysql> select * from Loan_Records;
+----------------------+-------------+
| BorrowerBank_Manager | Loan_Amount |
+----------------------+-------------+
| Ramesh Sunderajan    |       10000 |
| Suresh Ramgopal      |       15000 |
| Mahesh Sunderajan    |        7000 |
+----------------------+-------------+
3 rows in set (0.00 sec)

mysql> select count(*) from ((select BorrowerBank_Manager from
Loan_Records) as S NATURAL JOIN (select
BorrowerBank_Manager,Loan_Amount from Loan_Records) as T);
+----------+
| count(*) |
+----------+
|        3 |
+----------+
1 row in set (0.00 sec)
```

Ans : 3

Q)8

```
mysql> create table employee
    -> (empId int,
    -> name varchar(255),
    -> department varchar(1),
    -> salary int,
    -> primary key(empId));
Query OK, 0 rows affected (0.04 sec)

mysql> describe employee;
+------------+--------------+------+-----+---------+-------+
| Field      | Type         | Null | Key | Default | Extra |
+------------+--------------+------+-----+---------+-------+
| empId      | int          | NO   | PRI | NULL    |       |
| name       | varchar(255) | YES  |     | NULL    |       |
| department | varchar(1)   | YES  |     | NULL    |       |
| salary     | int          | YES  |     | NULL    |       |
+------------+--------------+------+-----+---------+-------+
4 rows in set (0.01 sec)

mysql> insert into employee values
    -> (101,"ABC","2",40000),
    -> (102,"DEF","4",35000),
    -> (103,"GHH","1",80000),
    -> (104,"IJK","5",50000),
    -> (105,"LMN","3",45000),
    -> (106,"PQR","2",55000),
    -> (107,"RST","4",65000),
    -> (108,"UVW","1",100000),
    -> (109,"WXY","5",25000),
    -> (110,"XYZ","3",85000);
Query OK, 10 rows affected (0.01 sec)
Records: 10  Duplicates: 0  Warnings: 0

mysql> select * from employee;
+-------+------+------------+--------+
| empId | name | department | salary |
+-------+------+------------+--------+
|   101 | ABC  | 2          |  40000 |
|   102 | DEF  | 4          |  35000 |
|   103 | GHH  | 1          |  80000 |
|   104 | IJK  | 5          |  50000 |
|   105 | LMN  | 3          |  45000 |
|   106 | PQR  | 2          |  55000 |
|   107 | RST  | 4          |  65000 |
|   108 | UVW  | 1          | 100000 |
|   109 | WXY  | 5          |  25000 |
|   110 | XYZ  | 3          |  85000 |
+-------+------+------------+--------+
10 rows in set (0.00 sec)

mysql> Select e.empId
    -> From employee e
```

```
    -> Where not exists
    ->   (Select * From employee s
    ->    where s.department = "5" and
    ->    s.salary >=e.salary);
+-------+
| empId |
+-------+
|   103 |
|   106 |
|   107 |
|   108 |
|   110 |
+-------+
5 rows in set (0.00 sec)

mysql> Select e.empId
    -> From employee e
    -> Where e.salary > Any
    -> ( Select distinct salary
    -> From employee s
    -> Where s.department = "5");
+-------+
| empId |
+-------+
|   101 |
|   102 |
|   103 |
|   104 |
|   105 |
|   106 |
|   107 |
|   108 |
|   110 |
+-------+
9 rows in set (0.00 sec)
```

Ans: Q2 is correct Query

Q)9

```
mysql> create table r(
    -> w varchar(2),
    -> x varchar(2));
Query OK, 0 rows affected (0.03 sec)

mysql> create table s(
    -> y varchar(2),
    -> z varchar(2));
Query OK, 0 rows affected (0.03 sec)

mysql> insert into r
```

```
    -> values
    -> ('AA', 'AB'),
    -> ('DD', 'CC'),
    -> ('EE', 'FF');
Query OK, 3 rows affected (0.01 sec)
Records: 3  Duplicates: 0  Warnings: 0

mysql> insert into s
    -> values
    -> ('ZZ', 'WW'),
    -> ('ZZ', 'XX');
Query OK, 2 rows affected (0.01 sec)
Records: 2  Duplicates: 0  Warnings: 0

mysql> select distinct w,x from r,s;
+------+------+
| w    | x    |
+------+------+
| AA   | AB   |
| DD   | CC   |
| EE   | FF   |
+------+------+
3 rows in set (0.01 sec)
```

Ans : r has no duplicates and s is non-empty

Q)10

```
mysql> create table Student(
    -> Roll_No int,
    -> Student_Name varchar(10));
Query OK, 0 rows affected (0.11 sec)

mysql> create table Performance(
    -> Roll_No int,
    -> Course varchar(10),
    -> Marks int);
Query OK, 0 rows affected (0.02 sec)

mysql> insert into Student
    -> values
    -> (1, 'Raj'),
    -> (2, 'Rohit'),
    -> (3, 'Raj');
Query OK, 3 rows affected (0.02 sec)
Records: 3  Duplicates: 0  Warnings: 0

mysql> insert into Performance
    -> values
    -> (1, 'Math', 80),
    -> (1, 'English', 70),
```

```
    -> (2, 'Math', 75),
    -> (3, 'English', 80),
    -> (2, 'Physics', 65),
    -> (3, 'Math', 80);
Query OK, 6 rows affected (0.01 sec)
Records: 6  Duplicates: 0  Warnings: 0

mysql> select * from Student;
+---------+--------------+
| Roll_No | Student_Name |
+---------+--------------+
|       1 | Raj          |
|       2 | Rohit        |
|       3 | Raj          |
+---------+--------------+
3 rows in set (0.01 sec)

mysql> select * from Performance;
+---------+---------+-------+
| Roll_No | Course  | Marks |
+---------+---------+-------+
|       1 | Math    |    80 |
|       1 | English |    70 |
|       2 | Math    |    75 |
|       3 | English |    80 |
|       2 | Physics |    65 |
|       3 | Math    |    80 |
+---------+---------+-------+
6 rows in set (0.01 sec)

mysql> SELECT S.Student_Name, sum(P.Marks)
    -> FROM Student S, Performance P
    -> WHERE S.  Roll_No=P.Roll_No
    -> GROUP BY S.Student_Name;
+--------------+--------------+
| Student_Name | sum(P.Marks) |
+--------------+--------------+
| Raj          |          310 |
| Rohit        |          140 |
+--------------+--------------+
2 rows in set (0.01 sec)
```

Ans : 2

Q)11

```
mysql> create table Cinema(
    -> theater varchar(10),
    -> address varchar(10),
    -> capacity int);
Query OK, 0 rows affected (0.04 sec)
```

```
mysql> insert into Cinema
    -> values
    -> ('PVR', 'Delhi', 5000),
    -> ('SRS', 'Mumbai', 4500),
    -> ('Waves', 'Bangalore', 3000),
    -> ('IMAX', 'Chennai', 4200);
Query OK, 4 rows affected (0.01 sec)
Records: 4  Duplicates: 0  Warnings: 0

mysql> select * from Cinema;
+---------+-----------+----------+
| theater | address   | capacity |
+---------+-----------+----------+
| PVR     | Delhi     |     5000 |
| SRS     | Mumbai    |     4500 |
| Waves   | Bangalore |     3000 |
| IMAX    | Chennai   |     4200 |
+---------+-----------+----------+
4 rows in set (0.00 sec)

mysql> SELECT P1.address FROM Cinema P1 WHERE P1.capacity >=
All(select P2. capacity from Cinema P2);
+---------+
| address |
+---------+
| Delhi   |
+---------+
1 row in set (0.00 sec)
```

Ans : WHERE P1.capacity >= All(select P2. capacity from Cinema P2)

Thank You