1. Consider the following relational database, where the primary keys are underlined.
   Employee (person-name, street, city)
   Works (person-name, company-name, salary)
   Company (company-name, city)
   Manages (person-name, manager-name)

a)Create the above tables in MySQL

```
MariaDB [database_one]> create table employee(person_name varchar(40) primary key, street varch
ar(50), city varchar(50));
Query OK, 0 rows affected (0.011 sec)

MariaDB [database_one]> create table company(company_name varchar(30) primary key, city varchar
(40));
Query OK, 0 rows affected (0.009 sec)

MariaDB [database_one]> create table works(person_name varchar(30), company_name varchar(40), s
alary decimal(10,2), primary key(person_name), foreign key(person_name) references employee(per
son_name), foreign key(company_name) references company(company_name));
Query OK, 0 rows affected (0.020 sec)

MariaDB [database_one]> create table manages(person_name varchar(40), manager_name varchar(50),
 primary key(person_name), foreign key (person_name) references employee(person_name), foreign
key(manager_name) references employee(person_name));
Query OK, 0 rows affected (0.010 sec)
```

```
MariaDB [database_one]> desc employee;
+-------------+-------------+------+-----+---------+-------+
| Field       | Type        | Null | Key | Default | Extra |
+-------------+-------------+------+-----+---------+-------+
| person_name | varchar(40) | NO   | PRI | NULL    |       |
| street      | varchar(50) | YES  |     | NULL    |       |
| city        | varchar(50) | YES  |     | NULL    |       |
+-------------+-------------+------+-----+---------+-------+
3 rows in set (0.020 sec)

MariaDB [database_one]> desc company;
+--------------+-------------+------+-----+---------+-------+
| Field        | Type        | Null | Key | Default | Extra |
+--------------+-------------+------+-----+---------+-------+
| company_name | varchar(30) | NO   | PRI | NULL    |       |
| city         | varchar(40) | YES  |     | NULL    |       |
+--------------+-------------+------+-----+---------+-------+
2 rows in set (0.032 sec)
```

```
MariaDB [database_one]> desc works;
+--------------+--------------+------+-----+---------+-------+
| Field        | Type         | Null | Key | Default | Extra |
+--------------+--------------+------+-----+---------+-------+
| person_name  | varchar(30)  | NO   | PRI | NULL    |       |
| company_name | varchar(40)  | YES  | MUL | NULL    |       |
| salary       | decimal(10,2)| YES  |     | NULL    |       |
+--------------+--------------+------+-----+---------+-------+
3 rows in set (0.023 sec)

MariaDB [database_one]> desc manages;
+--------------+-------------+------+-----+---------+-------+
| Field        | Type        | Null | Key | Default | Extra |
+--------------+-------------+------+-----+---------+-------+
| person_name  | varchar(40) | NO   | PRI | NULL    |       |
| manager_name | varchar(50) | YES  | MUL | NULL    |       |
+--------------+-------------+------+-----+---------+-------+
2 rows in set (0.021 sec)
```

b)Insert any three records in each above table and display them.

```
MariaDB [database_one]> insert into employee values("Arjun","Devinagar 10","Kathmandu"),("Sitar
am","Nayaneshwor 21","Lalitpur"),("Roman","Madhevstan 4","Bhaktapur");
Query OK, 3 rows affected (0.003 sec)
Records: 3  Duplicates: 0  Warnings: 0

MariaDB [database_one]> insert into company values("First Bank Corporation",
"Kathmandu"),("Logix Computer","Bhaktapur"),("Tech Innovators","Lalitpur");
Query OK, 3 rows affected (0.004 sec)
Records: 3  Duplicates: 0  Warnings: 0

MariaDB [database_one]> insert into works values("Arjun","First Bank Corporation",40000),("Sita
ram","Logix Computer", 35000),("Roman","Tech Innovators",30000);
Query OK, 3 rows affected (0.004 sec)
Records: 3  Duplicates: 0  Warnings: 0

MariaDB [database_one]> insert into manages values("Arjun","Sitaram"),("Roman",
"Arjun"),("Sitaram","Roman");
Query OK, 3 rows affected (0.003 sec)
Records: 3  Duplicates: 0  Warnings: 0
```

```
MariaDB [database_one]> select * from employee;
+-------------+----------------+-----------+
| person_name | street         | city      |
+-------------+----------------+-----------+
| Arjun       | Devinagar 10   | Kathmandu |
| Roman       | Madhevstan 4   | Bhaktapur |
| Sitaram     | Nayaneshwor 21 | Lalitpur  |
+-------------+----------------+-----------+
3 rows in set (0.001 sec)

MariaDB [database_one]> select * from company;
+-----------------------+-----------+
| company_name          | city      |
+-----------------------+-----------+
| First Bank Corporation | Kathmandu |
| Logix Computer        | Bhaktapur |
| Tech Innovators       | Lalitpur  |
+-----------------------+-----------+
3 rows in set (0.001 sec)

MariaDB [database_one]> select * from works;
+-------------+-----------------------+----------+
| person_name | company_name          | salary   |
+-------------+-----------------------+----------+
| Arjun       | First Bank Corporation | 40000.00 |
| Roman       | Tech Innovators       | 30000.00 |
| Sitaram     | Logix Computer        | 35000.00 |
+-------------+-----------------------+----------+
3 rows in set (0.001 sec)

MariaDB [database_one]> select * from manages;
+-------------+--------------+
| person_name | manager_name |
+-------------+--------------+
| Roman       | Arjun        |
| Sitaram     | Roman        |
| Arjun       | Sitaram      |
+-------------+--------------+
3 rows in set (0.000 sec)
```

c)Write the SQL for each of the following queries.

a). Find the names of all employees who work for First Bank Corporation.

```
MariaDB [database_one]> select person_name from works where company_name="First
 Bank Corporation";
+-------------+
| person_name |
+-------------+
| Arjun       |
+-------------+
1 row in set (0.001 sec)
```

b). Find the names and cities of residence of all employees who work for First Bank Corporation.

```
MariaDB [database_one]> select E.person_name, E.city from employee E, works W
where E.person_name=W.person_name and W.company_name="First Bank Corporation";
+-------------+-----------+
| person_name | city      |
+-------------+-----------+
| Arjun       | Kathmandu |
+-------------+-----------+
1 row in set (0.001 sec)
```

c). Find the names, street addresses, and cities of residence of all employees who work for First Bank Corporation and earn more than Rs 10,000 per annum.

```
MariaDB [database_one]> select E.person_name, E.street, E.city from employee E
, works W where E.person_name=W.person_name and W.company_name="First Bank Cor
poration" and W.salary > 10000;
+-------------+-------------+-----------+
| person_name | street      | city      |
+-------------+-------------+-----------+
| Arjun       | Devinagar 10 | Kathmandu |
+-------------+-------------+-----------+
1 row in set (0.001 sec)
```

d) Find the names of all employees in this database who do not work for First Bank Corporation.

```
MariaDB [database_one]> select E.person_name from employee E where E.person_name
not in(select person_name from works where company_name ="First Bank Corporation"
);
+-------------+
| person_name |
+-------------+
| Roman       |
| Sitaram     |
+-------------+
2 rows in set (0.001 sec)
```

e) Find all employees in the database who live in the same cities as the companies for which they work.

```
MariaDB [database_one]> select E.person_name from employee E, works W, company C
where E.person_name=W.person_name and W.company_name=C.company_name and E.city=C.
city;
+-------------+
| person_name |
+-------------+
| Arjun       |
+-------------+
1 row in set (0.001 sec)
```

f) Find all companies in which the average salary of an employee is more than 5000.

```
MariaDB [database_one]> select company_name from works group by company_name
 having AVG(salary)>5000;
+------------------------+
| company_name           |
+------------------------+
| First Bank Corporation |
| Logix Computer         |
| Tech Innovators        |
+------------------------+
3 rows in set (0.001 sec)
```

g) Update the salary of all the employees who work for First Bank Corporation by 10%.

```
MariaDB [database_one]> update works set salary=salary*1.10 where company_na
me="First Bank Corporation";
Query OK, 1 row affected (0.003 sec)
Rows matched: 1  Changed: 1  Warnings: 0

MariaDB [database_one]> select * from works;
+-------------+------------------------+----------+
| person_name | company_name           | salary   |
+-------------+------------------------+----------+
| Arjun       | First Bank Corporation | 44000.00 |
| Roman       | Tech Innovators        | 30000.00 |
| Sitaram     | Logix Computer         | 35000.00 |
+-------------+------------------------+----------+
3 rows in set (0.000 sec)
```

h) Delete the records of all employees who work for First Bank Corporation.

```
MariaDB [database_one]> delete from works where company_name="First Bank Cor
poration";
Query OK, 1 row affected (0.003 sec)

MariaDB [database_one]> select * from works;
+-------------+-----------------+----------+
| person_name | company_name    | salary   |
+-------------+-----------------+----------+
| Roman       | Tech Innovators | 30000.00 |
| Sitaram     | Logix Computer  | 35000.00 |
+-------------+-----------------+----------+
2 rows in set (0.001 sec)
```

i) Create a view to find the names, street addresses, and cities of residence of all employees who work for First Bank Corporation and earn more than Rs 10,000 per annum.

```
MariaDB [database_one]> create view HighEarners as select E.person_name, E.street,
 E.city from employee E, works W where E.person_name=W.person_name and
 W.company_name="First Bank Corporation" and W.salary > 10000;
Query OK, 0 rows affected (0.003 sec)

MariaDB [database_one]> select * from HighEarners;
Empty set (0.001 sec)
```

After inserting values:

```
MariaDB [database_one]> insert into employee values("Arjun Mijar","Madan Bha
ndari Margh 08", "Kathmandu");
Query OK, 1 row affected (0.003 sec)

MariaDB [database_one]> insert into works values("Arjun Mijar", "First Bank
Corporation", 21500);
Query OK, 1 row affected (0.004 sec)

MariaDB [database_one]> select * from HighEarners;
+-------------+-------------------------+-----------+
| person_name | street                  | city      |
+-------------+-------------------------+-----------+
| Arjun Mijar | Madan Bhandari Margh 08 | Kathmandu |
+-------------+-------------------------+-----------+
1 row in set (0.001 sec)
```