Lab 2 DBMS

106119029

Question 1

Consider the COVID-19 database in India and create the following tables with necessary details.

Patient (P_ID, Patient_Name, Sex, Age, Area, City, H_ID)

Test_Report (T_ID,P_ID,H_ID,Reporting_date,Test_result, Discharge_date)

Hospital (H_ID, Hospital_Name, Location, State,T_ID)

(i) Find the name of all patients who is lesser than 15 years old.

(ii) Find the nameof patients who has admitted in Apollo hospital.

(iii) Find the name of hospital that has a fastest recovery ratio.

(iv) Create a view on test results based on reporting date of last three months.

(v) Find name and age of all patients whose test result is negative.

(vi) Find the hotspot area in a district based on the test results.

(vii) List out the states, which has reported with maximum child COVID cases.

(viii) Find the name of the patients who belongs to same are in a particular city.

(ix) Find the number of female patient(s) who has admitted in her city itself.

(x) Find the name of hospital that has admitted with maximum COVID positive cases in a particular state.

Creating tables

```
-- CREATE a table named Patient with P_id, Patient_name, sex, age, area, city, H_id,
CREATE table Patient(
    P_id int primary key,
    Patient_name varchar(20),
    sex varchar(1),
    age int,
    area varchar(20),
    city varchar(20),
    H_id int
```

```
);

-- CREATE a table named Test_Report with T_id, P_id, H_id, reporting_date, test_result, dis
CREATE table Test_Report(
    T_id int primary key,
    P_id int,
    H_id int,
    reporting_date date,
    test_result varchar(20),
    discharge_date date
);

-- CREATE a table named Hosptial with H_id, Hospital_Name, Location, State, T_id
CREATE table Hospital(
    H_id int primary key,
    Hospital_Name varchar(20),
    Location varchar(20),
    State varchar(20)
);

-- Alter table Hospital H_id is foriegn key to Hospital
alter table Patient add constraint FK_H_id foreign key(H_id) references Hospital(H_id);

-- Alter Table Test_Report P_id is foriegn key to Patient, H_id is foriegn key to Hospital
alter table Test_Report add constraint FK_P_id foreign key(P_id) references Patient(P_id);
alter table Test_Report add constraint FK_H_id foreign key(H_id) references Hospital(H_id);
```

Populating table

```
-- Inserting Hospitals
insert into Hospital values(1, 'Apollo Hospital', 'City1', 'Maharashtra');
insert into Hospital values(2, 'Hospital2', 'City2', 'Maharashtra');
insert into Hospital values(3, 'Hospital3', 'Delhi', 'Tamil Nadu');
insert into Hospital values(4, 'Hospital4', 'City4', 'UP');
insert into Hospital values(5, 'Hospital5', 'City5', 'Karnataka');

-- Inserting Patients
insert into Patient values(1, 'Patient1', 'M', 13, 'Area1', 'City1', 1);
insert into Patient values(2, 'Patient2', 'F', 14, 'Area1', 'City1', 1);
insert into Patient values(3, 'Patient3', 'M', 17, 'Area2', 'City1', 2);
insert into Patient values(4, 'Patient4', 'F', 20, 'Area2', 'City1', 3);
insert into Patient values(5, 'Patient5', 'M', 25, 'Area2', 'City1', 3);
insert into Patient values(6, 'Patient6', 'F', 35, 'Area1', 'City2', 2);
insert into Patient values(7, 'Patient7', 'M', 47, 'Area2', 'City2', 4);
insert into Patient values(8, 'Patient8', 'F', 59, 'Area1', 'Delhi', 5);
insert into Patient values(9, 'Patient9', 'M', 65, 'Area2', 'Delhi', 1);
```

```
insert into Patient values(10, 'Patient10', 'F', 75, 'Area1', 'City4', 2);

-- Insert test_reports for the given patients AND hospitals
insert into Test_Report values(1, 1, 1, '2021-05-01', 'Positive', '2021-05-20');
insert into Test_Report values(2, 2, 1, '2021-05-02', 'Positive', '2021-05-25');
insert into Test_Report values(3, 3, 2, '2021-05-03', 'Negative', '2021-05-13');
insert into Test_Report values(4, 4, 3, '2021-05-04', 'Negative', '2021-05-10');
insert into Test_Report values(5, 5, 3, '2021-05-05', 'Negative', '2021-05-13');
insert into Test_Report values(6, 6, 2, '2021-07-06', 'Positive', '2021-08-03');
insert into Test_Report values(7, 7, 4, '2021-07-07', 'Positive', '2021-08-07');
insert into Test_Report values(8, 8, 5, '2021-07-08', 'Positive', '2021-07-28');
insert into Test_Report values(9, 9, 1, '2021-07-09', 'Positive', '2021-08-05');
insert into Test_Report values(10, 10, 2, '2021-07-10', 'Negative', '2021-08-09');
```

1.1

```
-------------------------------------------------------------------------------
-- 1.1
-- Q1 Find the name of all patients who is lesser than 15 years old.
-------------------------------------------------------------------------------
SELECT Patient_name FROM Patient WHERE age < 15;
```

Output

```
SELECT Patient_name FROM Patient WHERE age < 15;
 patient_name
--------------
 Patient1
 Patient2
(2 rows)
```

1.2

```
-------------------------------------------------------------------------------
-- 1.2
-- Q2 Find the nameof patients who has admitted in Apollohospital.
-------------------------------------------------------------------------------

SELECT Patient_name FROM Patient, Hospital
    WHERE Patient.H_id = Hospital.H_id
    AND Hospital_Name = 'Apollo Hospital';
```

Output

```
SELECT Patient_name FROM Patient, Hospital
    WHERE Patient.H_id = Hospital.H_id
    AND Hospital_Name = 'Apollo Hospital';
```

```
 patient_name
--------------
 Patient1
 Patient2
 Patient9
(3 rows)
```

1.3

```
-------------------------------------------------------------------------------
-- 1.3
-- Q3 Find the name of hospital that has a fastest recovery ratio.
-------------------------------------------------------------------------------

SELECT Hospital_Name, avg(discharge_date - reporting_date)
    as days FROM Test_Report, Hospital
    WHERE Test_Report.H_id = Hospital.H_id AND test_result = 'Negative'
    GROUP BY Hospital_Name ORDER by days LIMIT 1;
```

Output

```
SELECT Hospital_Name, avg(discharge_date - reporting_date)
    as days FROM Test_Report, Hospital
    WHERE Test_Report.H_id = Hospital.H_id AND test_result = 'Negative'
    GROUP BY Hospital_Name ORDER by days LIMIT 1;
 hospital_name |        days
---------------+--------------------
 Hospital3     | 7.0000000000000000
(1 row)
```

1.4

```
-------------------------------------------------------------------------------
-- 1.4
-- Q4 Create a view on test results based on reporting date of last three months.
-------------------------------------------------------------------------------
DROP VIEW if exists last_three_months;

-- If we just want test_result , use this
CREATE view last_three_months as
    SELECT test_result FROM Test_Report
        WHERE reporting_date > (NOW() - INTERVAL '3 MONTHS')::DATE;

-- For all details, use  this
--  CREATE view last_three_months as
    --  SELECT * FROM Test_Report
```

```
        --  WHERE reporting_date > (NOW() - INTERVAL '3 MONTHS')::DATE;
SELECT * FROM last_three_months;
```

Output

```
SELECT * FROM last_three_months;
 test_result
-------------
 Positive
 Positive
 Positive
 Positive
 Negative
(5 rows)
```

1.5

```
-------------------------------------------------------------------------------
-- 1.5
-- Q5 Find name AND age of all patients whose test result is Negative
-- FROM patient AND test_report.
-------------------------------------------------------------------------------

SELECT Patient_name, age FROM Patient, Test_Report
    WHERE Patient.P_id = Test_Report.P_id
    AND test_result = 'Negative';
```

Output

```
SELECT Patient_name, age FROM Patient, Test_Report
    WHERE Patient.P_id = Test_Report.P_id
    AND test_result = 'Negative';
 patient_name | age
--------------+-----
 Patient3     |  17
 Patient4     |  20
 Patient5     |  25
 Patient10    |  75
(4 rows)
```

1.6

```
-------------------------------------------------------------------------------
-- 1.6
-- Q6 Find the hotspot area in a district based on the test results.
-------------------------------------------------------------------------------
DROP view IF EXISTS hotspot_view;
```

```
CREATE view hotspot_view as SELECT area, city, count(*) as cases
    FROM Patient, Test_Report
        WHERE Patient.P_id = Test_Report.P_id
        AND test_result = 'Positive' GROUP BY city, area;


SELECT DISTINCT temp.city, hotspot_view.area, temp.cases
FROM (SELECT city, max(cases) as cases FROM hotspot_view GROUP BY city)
as temp,hotspot_view WHERE temp.cases = hotspot_view.cases
    AND temp.city = hotspot_view.city;
```

Output

```
SELECT DISTINCT temp.city, hotspot_view.area, temp.cases
FROM (SELECT city, max(cases) as cases FROM hotspot_view GROUP BY city)
as temp,hotspot_view WHERE temp.cases = hotspot_view.cases
    AND temp.city = hotspot_view.city;
 city  | area  | cases
-------+-------+-------
 City1 | Area1 |     2
 City2 | Area1 |     1
 City2 | Area2 |     1
 Delhi | Area1 |     1
 Delhi | Area2 |     1
(5 rows)
```

1.7

```
-------------------------------------------------------------------------------
-- 1.7
-- Q7 List out the states, which has reported with maximum COVID
--cases WHERE age is less than 18
-------------------------------------------------------------------------------
SELECT State, count(*) as case_count FROM Patient, Test_Report, Hospital
    WHERE Patient.P_id = Test_Report.P_id
    AND Test_Report.H_id = Hospital.H_id
    AND age < 18
    GROUP BY State
    order by case_count desc LIMIT 1;
```

Output

```
SELECT State, count(*) as case_count FROM Patient, Test_Report, Hospital
    WHERE Patient.P_id = Test_Report.P_id
    AND Test_Report.H_id = Hospital.H_id
    AND age < 18
```

```
    GROUP BY State
    order by case_count desc LIMIT 1;
    state    | case_count
-------------+------------
 Maharashtra |          3
(1 row)
```

1.8

```
-------------------------------------------------------------------------------
-- 1.8
-- Q8 Find the name of the patients who belongs to same area in a particular city.
-------------------------------------------------------------------------------

SELECT area, array_agg(Patient_name) as people
    FROM Patient
    WHERE city = 'City1' GROUP BY area;
```

Output

```
SELECT area, array_agg(Patient_name) as people
    FROM Patient
    WHERE city = 'City1' GROUP BY area;
 area  |            people
-------+------------------------------
 Area1 | {Patient1,Patient2}
 Area2 | {Patient3,Patient4,Patient5}
(2 rows)
```

1.9

```
-------------------------------------------------------------------------------
-- 1.9
-- Q9 Find the number of female patient(s) who has admitted in her city itself
-------------------------------------------------------------------------------

SELECT count(*) FROM Patient, Hospital
    WHERE Patient.H_id = Hospital.H_id
    AND Patient.city = Hospital.location
    AND Patient.sex='F';
```

Output

```
SELECT count(*) FROM Patient, Hospital
    WHERE Patient.H_id = Hospital.H_id
    AND Patient.city = Hospital.location
    AND Patient.sex='F';
```

```
 count
-------
     2
(1 row)
```

1.10

```
-------------------------------------------------------------------------------
-- 1.10
-- Q10 find the name of hospital that has the highest number
-- of Positive patients in a particular state.
-------------------------------------------------------------------------------
SELECT Hospital_Name, count(*) as patient_count
    FROM Patient, Test_Report, Hospital
        WHERE Patient.P_id = Test_Report.P_id
        AND Test_Report.H_id = Hospital.H_id
        AND State = 'Maharashtra'
        AND test_result = 'Positive'
        GROUP BY Hospital.H_id
        order by patient_count desc LIMIT 1;
```

Output

```
SELECT Hospital_Name, count(*) as patient_count
    FROM Patient, Test_Report, Hospital
        WHERE Patient.P_id = Test_Report.P_id
        AND Test_Report.H_id = Hospital.H_id
        AND State = 'Maharashtra'
        AND test_result = 'Positive'
        GROUP BY Hospital.H_id
        order by patient_count desc LIMIT 1;
  hospital_name  | patient_count
-----------------+---------------
 Apollo Hospital |             3
(1 row)
```