ASSIGNMENT-5

DBMS LAB

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2020CSB046

- CREATION OF TABLES:

Creation of Customer Table:

```
CREATE TABLE Customer
(cust_id int(10) PRIMARY KEY CHECK(cust_id BETWEEN 100 AND 10000),
annual_revenue int(10),
cust_type varchar(30) CHECK(cust_type IN
('MANUFACTURER','WHOLESALER','RETAILER')));
```

Inserting Values in Customer Table:

```
INSERT into Customer
values
(103,150000,'RETAILER','Akash'),
(104,200000,'RETAILER','Sai'),
(105,400000,'RETAILER','Prasad'),
(107,275000,'WHOLESALER','Subhajit'),
(108,800000,'MANUFACTURER','Anubhav'),
(109,250000,'RETAILER','Tahha'),
(112,1000000,'MANUFACTURER','Vijay'),
(116,650000,'WHOLESALER','Vicky'),
(118,600000,'WHOLESALER','Pradip'),
(120,400000,'WHOLESALER','Ram');
```

Customer table after insertion of values:

```
mysql> select *
    -> from Customer;
+---------+----------------+--------------+-----------+
| cust_id | annual_revenue | cust_type    | cust_name |
+---------+----------------+--------------+-----------+
|     103 |         150000 | RETAILER     | Akash     |
|     104 |         200000 | RETAILER     | Sai       |
|     105 |         400000 | RETAILER     | Prasad    |
|     107 |         275000 | WHOLESALER   | Subhajit  |
|     108 |         800000 | MANUFACTURER | Anubhav   |
|     109 |         250000 | RETAILER     | Tahha     |
|     112 |        1000000 | MANUFACTURER | Vijay     |
|     116 |         650000 | WHOLESALER   | Vicky     |
|     118 |         600000 | WHOLESALER   | Pradip    |
|     120 |         400000 | WHOLESALER   | Ram       |
+---------+----------------+--------------+-----------+
```

Creation of Truck table:

```
CREATE TABLE Truck
(truck_no int(10) PRIMARY KEY,
driver_name varchar(30));
```

Inserting values in Truck table:

```
INSERT into Truck
values
(1,'IQBAL'),
(2,'RAHIM'),
(3,'RAM'),
(4,'MADAN'),
(5,'SURYA'),
(6,'MOHAN'),
(7,'MITHUN');
```

Truck table after insertion of values:

```
mysql> select *
    -> from Truck;
+----------+-------------+
| truck_no | driver_name |
+----------+-------------+
|        1 | IQBAL       |
|        2 | RAHIM       |
|        3 | RAM         |
|        4 | MADAN       |
|        5 | SURYA       |
|        6 | MOHAN       |
|        7 | MITHUN      |
+----------+-------------+
```

Creation of table City:

```
CREATE TABLE City
(city_name varchar(30) PRIMARY KEY,
population int(20));
```

Inserting values in table City:

```
INSERT into City
values
('Kolkata',55000000),
('Chennai',60000000),
('Mumbai',80000000),
('Delhi',70000000),
('Pune',10000000),
('Medinipur',600000);
```

City table after insertion of values:

```
mysql> select *
    -> from City;
+-----------+------------+
| city_name | population |
+-----------+------------+
| Chennai   |   60000000 |
| Delhi     |   70000000 |
| Kolkata   |   55000000 |
| Medinipur |     600000 |
| Mumbai    |   80000000 |
| Pune      |   10000000 |
+-----------+------------+
```

Creation of table Shipment:

```
CREATE TABLE Shipment
(shipment_no int(10),
cust_id int(10),
weight int(10) CHECK(weight<1000),
truck_no int(10),
destination varchar(30),
ship_date date,
PRIMARY KEY(shipment_no,cust_id),
constraint cust_id foreign key(cust_id) references Customer(cust_id) on delete
cascade,
constraint truck_no foreign key(truck_no) references Truck(truck_no) on delete
set null,
constraint destination foreign key(destination) references City(city_name) on
delete cascade);
```

Inserting values in Shipment:

```
INSERT into Shipment
values
(100,103,220,2,'Kolkata','2021-12-31'),
(100,104,210,4,'Chennai','2021-12-30'),
(100,105,200,5,'Kolkata','2021-12-29'),
(101,105,400,5,'Chennai','2021-12-28'),
(101,107,50,7,'Mumbai','2021-12-27'),
(102,105,101,5,'Mumbai','2021-12-26'),
(102,108,66,6,'Kolkata','2022-12-25'),
(102,109,202,7,'Chennai','2022-12-24'),
(102,112,350,1,'Delhi','2022-12-23'),
(103,116,320,1,'Medinipur','2022-12-22'),
(105,118,460,2,'Pune','2022-12-21'),
(105,120,60,6,'Chennai','2022-12-20'),
(106,105,70,5,'Delhi','2022-12-19'),
(107,105,100,5,'Medinipur','2022-12-18'),
(109,105,70,5,'Pune','2022-12-17'),
(109,103,120,4,'Kolkata','2022-12-16');
```

Shipment table after insertion of values:

```
mysql> select *
    -> from Shipment;
+-------------+---------+--------+----------+-------------+------------+
| shipment_no | cust_id | weight | truck_no | destination | ship_date  |
+-------------+---------+--------+----------+-------------+------------+
|         100 |     103 |    220 |        2 | Kolkata     | 2021-12-31 |
|         100 |     104 |    210 |        4 | Chennai     | 2021-12-30 |
|         100 |     105 |    200 |        5 | Kolkata     | 2021-12-29 |
|         101 |     105 |    400 |        5 | Chennai     | 2021-12-28 |
|         101 |     107 |     50 |        7 | Mumbai      | 2021-12-27 |
|         102 |     105 |    101 |        5 | Mumbai      | 2021-12-26 |
|         102 |     108 |     66 |        6 | Kolkata     | 2022-12-25 |
|         102 |     109 |    202 |        7 | Chennai     | 2022-12-24 |
|         102 |     112 |    350 |        1 | Delhi       | 2022-12-23 |
|         103 |     116 |    320 |        1 | Medinipur   | 2022-12-22 |
|         105 |     118 |    460 |        2 | Pune        | 2022-12-21 |
|         105 |     120 |     60 |        6 | Chennai     | 2022-12-20 |
|         106 |     105 |     70 |        5 | Delhi       | 2022-12-19 |
|         107 |     105 |    100 |        5 | Medinipur   | 2022-12-18 |
|         109 |     103 |    120 |        4 | Kolkata     | 2022-12-16 |
|         109 |     105 |     70 |        5 | Pune        | 2022-12-17 |
+-------------+---------+--------+----------+-------------+------------+
```

- QUERIES:

1. Give names of customer who have sent packages (shipments) to Kolkata, Chennai and Mumbai. (You have to solve this problem using set theoretic operation)

```
select cust_name from Customer
where cust_id in (select cust_id
from Shipment
where destination='Kolkata')
AND
cust_id in (select cust_id
from Shipment
where destination='Mumbai')
AND
cust_id in (select cust_id
from Shipment
where destination='Chennai');
```

```
mysql> select cust_name from Customer
    -> where cust_id in (select cust_id
    -> from Shipment
    -> where destination='Kolkata')
    -> AND
    -> cust_id in (select cust_id
    -> from Shipment
    -> where destination='Mumbai')
    -> AND
    -> cust_id in (select cust_id
    -> from Shipment
    -> where destination='Chennai');
+-----------+
| cust_name |
+-----------+
| Prasad    |
+-----------+
```

2. List the names of the driver who have delivered shipments weighing over 200 pounds.

```
select driver_name

from Truck
where truck_no in (select truck_no
from Shipment
where weight>200);
```

```
mysql> select driver_name
    -> from Truck
    -> where truck_no in (select truck_no
    -> from Shipment
    -> where weight>200);
+-------------+
| driver_name |
+-------------+
| IQBAL       |
| RAHIM       |
| MADAN       |
| SURYA       |
| MITHUN      |
+-------------+
```

3. Retrieve the maximum and minimum weights of the shipments. Rename the output as Max_Weight and Min_Weight respectively.

```
select max(weight) MAX_WEIGHT,min(weight) MIN_WEIGHT
from Shipment;
```

```
mysql> select max(weight) MAX_WEIGHT,min(weight) MIN_WEIGHT
    -> from Shipment;
+------------+------------+
| MAX_WEIGHT | MIN_WEIGHT |
+------------+------------+
|        460 |         50 |
+------------+------------+
```

4. For each customer, what is the average weight of package sent by the customer?

```
select cust_id,avg(weight)
from Shipment
group by cust_id;
```

```
mysql> select cust_id,avg(weight)
    -> from Shipment
    -> group by cust_id;
+---------+-------------+
| cust_id | avg(weight) |
+---------+-------------+
|     103 |    170.0000 |
|     104 |    210.0000 |
|     105 |    156.8333 |
|     107 |     50.0000 |
|     108 |     66.0000 |
|     109 |    202.0000 |
|     112 |    350.0000 |
|     116 |    320.0000 |
|     118 |    460.0000 |
|     120 |     60.0000 |
+---------+-------------+
```

5. List the names and populations of cities that have received shipments weighing over 100 pounds.

```
select city_name,population

from City
where city_name in (select destination
from Shipment
where weight>100);
```

```
mysql> select city_name,population
    -> from City
    -> where city_name in (select destination
    -> from Shipment
    -> where weight>100);
+-----------+------------+
| city_name | population |
+-----------+------------+
| Chennai   |   60000000 |
| Delhi     |   70000000 |
| Kolkata   |   55000000 |
| Medinipur |     600000 |
| Mumbai    |   80000000 |
| Pune      |   10000000 |
+-----------+------------+
```

6. List cities that have received shipments from every customer.

```
select destination

from Shipment
group by cust_id
having count(distinct destination)=(select count(*)
from City);
```

```
mysql> select destination
    -> from Shipment
    -> group by cust_id
    -> having count(distinct destination)=(select count(*)
    -> from City);
+-------------+
| destination |
+-------------+
| Kolkata     |
+-------------+
```

7. For each city, what is the maximum weight of a package sent to that city?

```
select destination,max(weight)

from Shipment
group by destination;
```

```
mysql> select destination,max(weight)
    -> from Shipment
    -> group by destination;
+-------------+-------------+
| destination | max(weight) |
+-------------+-------------+
| Chennai     |         400 |
| Delhi       |         350 |
| Kolkata     |         220 |
| Medinipur   |         320 |
| Mumbai      |         101 |
| Pune        |         460 |
+-------------+-------------+
```

8. List the name and annual revenue of customers whose shipments have been delivered by truck driver ‘IQBAL’.

```
select cust_name,annual_revenue

from Customer
where cust_id in (select cust_id
from Shipment
where truck_no in (select truck_no
from Truck
where driver_name='IQBAL'));
```

```
mysql> select cust_name,annual_revenue
    -> from Customer
    -> where cust_id in (select cust_id
    -> from Shipment
    -> where truck_no in (select truck_no
    -> from Truck
    -> where driver_name='IQBAL'));
+-----------+----------------+
| cust_name | annual_revenue |
+-----------+----------------+
| Vijay     |        1000000 |
| Vicky     |         650000 |
+-----------+----------------+
```

9. List drivers who have delivered shipments to every city.

```
select driver_name

from Truck
where truck_no in (select truck_no
from Shipment
group by truck_no
having count(distinct destination)=(select count(*) from City));
```

```
mysql> select driver_name
    -> from Truck
    -> where truck_no in (select truck_no
    -> from Shipment
    -> group by truck_no
    -> having count(distinct destination)=(select count(*) from City));
+-------------+
| driver_name |
+-------------+
| SURYA       |
+-------------+
```

10. For each city, with population over 1 million, what is the minimum weight of a package sent to that city.

```
select destination,min(weight)

from Shipment
where destination in (select city_name
from City
where population>1000000)
group by destination;
```

```
mysql> select destination,min(weight)
    -> from Shipment
    -> where destination in (select city_name
    -> from City
    -> where population>1000000)
    -> group by destination;
+-------------+-------------+
| destination | min(weight) |
+-------------+-------------+
| Chennai     |          60 |
| Delhi       |          70 |
| Kolkata     |          66 |
| Mumbai      |          50 |
| Pune        |          70 |
+-------------+-------------+
```