Assignment 5 …

3. Consider the following relational schema and solve the following queries.

Customer(cust_id, cust_name, annual_revenue, cust_type)
Here cust_id is primary key

Shipment(shipment_no, cust_id, weight, truck_no, destination, ship_date)
Here cust_id, weight, truck_no & destination are foreign key & shipment_no & cust_id together are primary key

Truck(truck_no, driver_name)
Here truck_no is primary key

City(city_name, population)
Here city name is primary key

Queries:
(a) List all cities that have received shipments from every customer.
(b) Find the average weight of a shipment sent to height population city.
(c) List the name and annual_revenue of customers where shipments have been delivered by truck driver 'Amiya'.
(d) Which city in the database the smallest population.

```
mysql>  create database a5mouli;
Query OK, 1 row affected (0.29 sec)

mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| a5moul             |
| information_schema |
| mysql              |
| performance_schema |
| sakila             |
| sys                |
| world              |
+--------------------+
7 rows in set (0.11 sec)

mysql> use a5mouli;
Database changed

mysql> create table Customer
   -> (cust_id varchar(8) primary key,
   -> cust_name varchar(20),
   -> annual_revenue decimal(10,2),
   -> cust_type varchar(12));
Query OK, 0 rows affected (0.40 sec)


mysql> desc Customer;
```

```
+----------------------+------------------+-------+------+----------+----------+
| Field                | Type             | Null | Key | Default | Extra   |
+----------------------+------------------+-------+------+----------+----------+
| cust_id              | varchar(8)      | NO   | PRI | NULL    |          |
| cust_name        | varchar(20)    | YES  |       | NULL    |          |
| annual_revenue | decimal(10,2) | YES  |       | NULL    |          |
| cust_type          | varchar(12)    | YES  |       | NULL    |          |
+----------------------+------------------+-------+------+----------+----------+
4 rows in set (0.01 sec)

mysql> create table Truck
   -> (truck_no varchar(20) primary key,
   -> driver_name varchar(20));
Query OK, 0 rows affected (0.04 sec)

mysql> desc Truck;
+-----------------+----------------+-------+------+----------+--------+
| Field           | Type           | Null | Key | Default | Extra |
+-----------------+----------------+-------+------+----------+--------+
| truck_no       | varchar(20) | NO   | PRI | NULL    |         |
| driver_name | varchar(20) | YES  |       | NULL    |         |
+-----------------+----------------+-------+------+----------+--------+
2 rows in set (0.00 sec)

mysql> create table City
   -> (city_name varchar(20) primary key,
   -> population integer);
Query OK, 0 rows affected (0.05 sec)

mysql> desc City;
+---------------+----------------+-------+------+----------+---------+
| Field         | Type           | Null | Key | Default | Extra |
+---------------+----------------+-------+------+----------+---------+
| city_name  | varchar(20) | NO   | PRI  | NULL    |          |
| population | int             | YES  |       | NULL    |         |
+---------------+----------------+------+------+----------+--------+
2 rows in set (0.03 sec)

mysql> create table Shipment
   -> (spmt_no varchar(8),
   -> cust_id varchar(8) references Customer,
   -> weight integer,
   -> truck_no varchar(8) references Truck,
   -> destination varchar(20) references City,
   -> ship_date Date,
   -> primary key(spmt_no,cust_id));
Query OK, 0 rows affected (0.05 sec)

mysql> desc Shipment;
+---------------+----------------+-------+------+----------+--------+
| Field         | Type           | Null | Key | Default | Extra |
+---------------+----------------+-------+------+----------+--------+
| spmt_no    | varchar(8)   | NO   | PRI  | NULL    |         |
| cust_id      | varchar(8)   | NO   | PRI  | NULL    |         |
| weight       | int            | YES  |       | NULL    |         |
```

```
| truck_no    | varchar(8)  | YES  |      | NULL    |         |
| destination | varchar(20) | YES  |      | NULL    |         |
| ship_date   | date        | YES  |      | NULL    |         |
+-------------+-------------+------+------+---------+---------+
6 rows in set (0.00 sec)

mysql> insert into Customer VALUES ('Cust1','Mouli',100000,'Impulse');
Query OK, 1 row affected (0.08 sec)
mysql> insert into Customer VALUES ('Cust2','Noorain',90000.0,'Internal');
Query OK, 1 row affected (0.00 sec)
mysql> insert into Customer VALUES ('Cust3','Ammrisha',80000.0,'External');
Query OK, 1 row affected (0.00 sec)
mysql> insert into Customer VALUES ('Cust4','Maya',75000.0,'Internal');
Query OK, 1 row affected (0.04 sec)
mysql> insert into Customer VALUES ('Cust5','Preetha',85000.0,'External');
Query OK, 1 row affected (0.00 sec)

mysql> select *from Customer;
+----------+-------------+----------------------+-------------+
| cust_id | cust_name | annual_revenue | cust_type |
+----------+-------------+----------------------+-------------+
| Cust1   | Mouli       |          100000.00 | Impulse   |
| Cust2   | Noorain     |           90000.00 | Internal  |
| Cust3   | Ammrisha    |           80000.00 | External  |
| Cust4   | Maya        |           75000.00 | Internal  |
| Cust5   | Preetha     |           85000.00 | External  |
+----------+-------------+----------------------+-------------+
5 rows in set (0.00 sec)

mysql> insert into City VALUES ('Kalyani',25000);
Query OK, 1 row affected (0.00 sec)
mysql> insert into City VALUES ('Kolkata',75000);
Query OK, 1 row affected (0.00 sec)
mysql> insert into City VALUES ('Hooghly',85000);
Query OK, 1 row affected (0.00 sec)
mysql> insert into City VALUES ('Barasat',45000);
Query OK, 1 row affected (0.00 sec)
mysql> insert into City VALUES ('Nadia',64251);
Query OK, 1 row affected (0.00 sec)

mysql> select *from City;
+-------------+-------------+
| city_name | population |
+-------------+-------------+
| Barasat    |       45000 |
| Hooghly    |       85000 |
| Kalyani    |       25000 |
| Kolkata    |       75000 |
| Nadia      |       64251 |
+-------------+-------------+
5 rows in set (0.00 sec)

mysql> insert into Truck VALUES ('TRA1','AMIYA');
Query OK, 1 row affected (0.00 sec)
mysql> insert into Truck VALUES ('TRA2','ABIR');
Query OK, 1 row affected (0.03 sec)
```

```
mysql> insert into Truck VALUES ('TRA3','UTSAB');
Query OK, 1 row affected (0.00 sec)
mysql> insert into Truck VALUES ('TRA4','ARITRA');
Query OK, 1 row affected (0.00 sec)
mysql> insert into Truck VALUES ('TRA5','SUMAN');
Query OK, 1 row affected (0.00 sec)
mysql> insert into Truck VALUES ('TRA6','ARNAB');
Query OK, 1 row affected (0.03 sec)

mysql> select *from Truck;
+-------------+------------------+
| truck_no | driver_name  |
+-------------+------------------+
| TRA1       | AMIYA          |
| TRA2       | ABIR           |
| TRA3       | UTSAB          |
| TRA4       | ARITRA         |
| TRA5      | SUMAN          |
| TRA6      | ARNAB          |
+-------------+------------------+
6 rows in set (0.00 sec)

mysql> insert into Shipment VALUES ('SH1','Cust2',45,'TRA1','Kalyani','2000-01-13');
Query OK, 1 row affected (0.08 sec)
mysql> insert into Shipment VALUES ('SH2','Cust1',65,'TRA1','Kolkata','2008-05-12');
Query OK, 1 row affected (0.00 sec)
mysql> insert into Shipment VALUES ('SH3','Cust4',74,'TRA6','Kalyani','2012-03-31');
Query OK, 1 row affected (0.00 sec)
mysql> insert into Shipment VALUES ('SH4','Cust1',52,'TRA1','Kalyani','2000-01-13');
Query OK, 1 row affected (0.00 sec)
mysql> insert into Shipment VALUES ('SH5','Cust1',68,'TRA5','Barasat','2022-05-19');
Query OK, 1 row affected (0.00 sec)
mysql> insert into Shipment VALUES ('SH6','Cust3',45,'TRA3','Kalyani','2022-09-27');
Query OK, 1 row affected (0.00 sec)
mysql> insert into Shipment VALUES ('SH6','Cust2',75,'TRA2','Hooghly','2022-12-12');
Query OK, 1 row affected (0.00 sec)
mysql> insert into Shipment VALUES ('SH7','Cust5',92,'TRA2','Kalyani','2022-12-12');
Query OK, 1 row affected (0.00 sec)


mysql> select *from Shipment;
+-------------+-----------+----------+-------------+----------------+----------------+
| spmt_no | cust_id | weight | truck_no | destination | ship_date    |
+-------------+-----------+----------+-------------+----------------+----------------+
| SH1        | Cust2   |       45 | TRA1       | Kalyani        | 2000-01-13 |
| SH2        | Cust1   |       65 | TRA1       | Kolkata        | 2008-05-12 |
| SH3        | Cust4   |       74 | TRA6       | Kalyani        | 2012-03-31 |
| SH4        | Cust1   |       52 | TRA1       | Kalyani        | 2000-01-13 |
| SH5        | Cust1   |       68 | TRA5       | Barasat       | 2022-05-19 |
| SH6        | Cust2   |       75 | TRA2       | Hooghly       | 2022-12-12 |
| SH6        | Cust3   |       45 | TRA3       | Kalyani        | 2022-09-27 |
| SH7        | Cust5   |       92 | TRA2       | Kalyani        | 2022-12-12 |
+-------------+-----------+----------+-------------+----------------+----------------+
8 rows in set (0.00 sec)
```

(a) List all cities that have received shipments from every customer.

```
mysql> select destination from Shipment
    -> group by destination
    -> having count(distinct
    -> cust_id) = (select count(cust_id)from customer);
+-----------------+
| destination  |
+-----------------+
| Kalyani        |
+-----------------+
1 row in set (0.06 sec)
```

(b) Find the average weight of a shipment sent to height population city.

```
mysql>  select avg(weight) from shipment s, city c
    -> where s.destination = c.city_name
    -> and population = (select max(population) from city);
+-----------------+
| avg(weight) |
+-----------------+
|    75.0000   |
+-----------------+
1 row in set (0.00 sec)
```

(c) List the name and annual_revenue of customers where shipments have been delivered by truck driver 'Amiya'.

```
mysql> select cust_name, annual_revenue from customer c, shipment s, truck t
    -> where c.cust_id = s.cust_id
    -> and s.truck_no = t.truck_no
    -> and driver_name = 'AMIYA';
+---------------+----------------------+
| cust_name | annual_revenue |
+---------------+----------------------+
| Noorain      |           90000.00 |
| Mouli        |          100000.00 |
| Mouli        |          100000.00 |
+---------------+----------------------+
3 rows in set (0.03 sec)
```

(d) Which city in the database the smallest population?

```
mysql> select city_name from city
    -> where population = (
    -> select min(population) from city);

+---------------+
| city_name |
+---------------+
| Kalyani      |
+---------------+
1 row in set (0.00 sec)
```