

Assignment-5

A. Creation of Tables:

Creation of CUSTOMER table:

Query:

```
CREATE TABLE CUSTOMER (  
    CUST_ID int CHECK (CUST_ID BETWEEN 100 AND 1000),  
    CUST_NAME varchar(30),  
    ANNUAL_REVENUE varchar(30),  
    CUST_TYPE varchar(30) CHECK(CUST_TYPE IN ('MANUFACTURER',  
    'WHOLESALE', 'RETAILER'),  
    PRIMARY KEY (CUST_ID));
```

CUSTOMER table after insertion of values:

```
mysql> SELECT * FROM CUSTOMER;
```

CUST_ID	CUST_NAME	ANNUAL_REVENUE	CUST_TYPE
1001	AMARJEET	100000	MANUFACTURER
1002	RAJNISH	70000	WHOLESALE
1003	LUCKY	80000	RETAILER
1004	MITRA	75000	WHOLESALE
1005	GOPAL	85000	MANUFACTURER

Creation of TRUCK table:

Query:

```
CREATE TABLE TRUCK (  
    TRUCK_NO int(11),  
    DRIVER_NAME varchar(30),  
    PRIMARY KEY (TRUCK_NO));
```

TRUCK table after insertion of values:

```
mysql> SELECT * FROM TRUCK;
```

TRUCK_NO	DRIVER_NAME
1225	RATAN
1756	SUDHIR
3612	MADHAV
3702	IQBAL
5903	RAMAKANTA

Creation of CITY table:

Query:

```
CREATE TABLE CITY (  
    CITY_NAME varchar(30),  
    POPULATION int(11),  
    PRIMARY KEY (CITY_NAME));
```

CITY table after insertion of values:

```
mysql> SELECT * FROM CITY;
```

CITY_NAME	POPULATION
BHILAI	625700
CHENNAI	4646732
KOLKATA	4496694
MUMBAI	9356962

Creation of SHIPMENT table:

Query:

```
CREATE TABLE SHIPMENT (  
    SHIPMENT_NO int(11),  
    CUST_ID int(11),
```

WEIGHT float CHECK(WEIGHT < 1000),
 TRUCK_NO int(11),
 DESTINATION varchar(30),
 SHIP_DATE date,
 PRIMARY KEY (SHIPMENT_NO, CUST_ID),
 FOREIGN KEY (CUST_ID) REFERENCES CUSTOMER (CUST_ID) ON
 DELETE CASCADE,
 FOREIGN KEY (TRUCK_NO) REFERENCES TRUCK (TRUCK_NO) ON
 DELETE SET NULL,
 FOREIGN KEY (DESTINATION) REFERENCES CITY (CITY_NAME));

SHIPMENT table after insertion of values:

```
mysql> SELECT * FROM SHIPMENT;
```

SHIPMENT_NO	CUST_ID	WEIGHT	TRUCK_NO	DESTINATION	SHIP_DATE
5001	1001	157	1756	BHILAI	2022-07-25
5002	1002	273	1225	BHILAI	2022-05-12
5004	1003	253	3612	BHILAI	2022-05-15
5005	1004	50	3702	BHILAI	2022-03-13
5006	1005	134	5903	BHILAI	2022-07-20
5007	1002	58	5903	KOLKATA	2022-04-23
5008	1003	289	5903	CHENNAI	2022-07-28
5009	1005	155	5903	MUMBAI	2022-05-23
5010	1002	138	3702	BHILAI	2022-03-26

[Remarks on Table Creation: Assumptions / further clarifications (if any)]

B. Queries and their Solutions

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

```
mysql> SELECT CUST_NAME
→ FROM CUSTOMER
→ WHERE CUST_ID
→ IN (
→ SELECT CUST_ID
→ FROM SHIPMENT
→ WHERE DESTINATION = "KOLKATA")
→ UNION
→ SELECT CUST_NAME
→ FROM CUSTOMER
→ WHERE CUST_ID
→ IN (
→ SELECT CUST_ID
→ FROM SHIPMENT
→ WHERE DESTINATION = "CHENNAI")
→ UNION
→ SELECT CUST_NAME
→ FROM CUSTOMER
→ WHERE CUST_ID
→ IN (
→ SELECT CUST_ID
→ FROM SHIPMENT
→ WHERE DESTINATION = "MUMBAI");
```

CUST_NAME
RAJNISH
LUCKY
GOPAL

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

```
mysql> SELECT DRIVER_NAME
       → FROM TRUCK AS T
       → INNER JOIN SHIPMENT AS S
       → ON T.TRUCK_NO = S.TRUCK_NO
       → WHERE S.WEIGHT > 200;
```

DRIVER_NAME
RATAN
MADHAV
RAMAKANTA

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

```
mysql> SELECT MAX(WEIGHT) AS MAX_WEIGHT, MIN(WEIGHT) AS MIN_WEIGHT
       → FROM SHIPMENT;
```

MAX_WEIGHT	MIN_WEIGHT
289	50

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

```
mysql> SELECT CUST_ID, AVG(WEIGHT)
       → FROM SHIPMENT
       → GROUP BY CUST_ID;
```

CUST_ID	AVG(WEIGHT)
1001	157
1002	156.33333333333334
1003	271
1004	50
1005	144.5

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

```
mysql> SELECT CITY_NAME, POPULATION
       → FROM CITY AS C
       → INNER JOIN SHIPMENT AS S
       → ON S.DESTINATION = C.CITY_NAME
       → WHERE S.WEIGHT < 100
       → ;
```

CITY_NAME	POPULATION
BHILAI	625700
KOLKATA	4496694

6) List 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
BHILAI

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

```
mysql> SELECT DESTINATION, MAX(WEIGHT)
       → FROM SHIPMENT
       → GROUP BY DESTINATION;
```

DESTINATION	MAX(WEIGHT)
BHILAI	273
CHENNAI	289
KOLKATA	58
MUMBAI	155

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

```
mysql> SELECT C.CUST_NAME, C.ANNUAL_REVENUE
→ FROM CUSTOMER AS C
→ INNER JOIN SHIPMENT AS S
→ ON C.CUST_ID = S.CUST_ID
→ WHERE TRUCK_NO = (
→ SELECT TRUCK_NO
→ FROM TRUCK
→ WHERE DRIVER_NAME = 'IQBAL');
+-----+-----+
| CUST_NAME | ANNUAL_REVENUE |
+-----+-----+
| MITRA     | 75000          |
| RAJNISH   | 70000          |
+-----+-----+
```

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

```
mysql> SELECT TRUCK_NO
→ FROM SHIPMENT
→ GROUP BY TRUCK_NO
→ HAVING COUNT(DISTINCT DESTINATION) = (
→ SELECT COUNT(DISTINCT CITY_NAME)
→ FROM CITY);
+-----+
| TRUCK_NO |
+-----+
| 5903     |
+-----+
```

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

```
mysql> SELECT S.DESTINATION, MIN(S.WEIGHT)
→ FROM SHIPMENT AS S
→ INNER JOIN (
→ SELECT *
→ FROM CITY
→ WHERE POPULATION > 1000000) AS T
→ ON S.DESTINATION = T.CITY_NAME
→ GROUP BY DESTINATION;
+-----+-----+
| DESTINATION | MIN(S.WEIGHT) |
+-----+-----+
| CHENNAI     | 289           |
| KOLKATA     | 58            |
| MUMBAI      | 155           |
+-----+-----+
```