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**ENROLLMENT NO: 2020CSB010**

**SECTION: GX**

**SUBJECT: DBMS Lab**

## **ASSIGNMENT NO. - 5**

### **A.Creation of Tables:**

#### **Creating Customer table:**

##### **Query:**

```
create table Customer (  
  cust_id int primary key  
  check (cust_id between 100 and 10000),  
  cust_name varchar(20),  
  annual_revenue int,  
  cust_type varchar(20)  
  check (cust_type in ('MANUFACTURER','WHOLESALE', 'RETAILER'))  
);
```

```
mysql> DESC Customer;  
+-----+-----+-----+-----+-----+-----+  
| Field          | Type          | Null | Key | Default | Extra |  
+-----+-----+-----+-----+-----+-----+  
| cust_id        | int(11)       | NO   | PRI | NULL    |       |  
| cust_name      | varchar(20)   | YES  |     | NULL    |       |  
| annual_revenue | int(11)       | YES  |     | NULL    |       |  
| cust_type      | varchar(20)   | YES  |     | NULL    |       |  
+-----+-----+-----+-----+-----+-----+  
4 rows in set (0.00 sec)
```

## Customer table after insertion of values:

```
mysql> SELECT * from Customer;
```

cust_id	cust_name	annual_revenue	cust_type
110	gourav	20000	MANUFACTURER
200	mohit	30000	MANUFACTURER
3000	ronit	80000	WHOLESALE
4090	sounak	78000	RETAILER
4400	vikash	60000	WHOLESALE
4800	prakash	6070	RETAILER
6789	aksat	73000	MANUFACTURER
6800	harsh	9000	RETAILER
8000	yaman	67000	WHOLESALE

9 rows in set (0.00 sec)

## Creating Shipment table :

### Query:

```
create table Shipment (  
shipment_no int,  
cust_id int references cust_id(Customer)  
on delete cascade,  
weight int check(weight < 1000),  
truck_no int references truck_no(Truck) on delete set NULL,  
destination varchar(20) references city_name(City),  
ship_date date ,  
primary key (shipment_no, cust_id)  
);
```

```
mysql> desc Shipment;
```

Field	Type	Null	Key	Default	Extra
shipment_no	int(11)	NO	PRI	NULL	
cust_id	int(11)	NO	PRI	NULL	
weight	int(11)	YES		NULL	
truck_no	int(11)	YES		NULL	
destination	varchar(20)	YES		NULL	
ship_date	date	YES		NULL	

6 rows in set (0.00 sec)

## Shipment table after insertion of values:

```
mysql> select * from Shipment;
```

shipment_no	cust_id	weight	truck_no	destination	ship_date
1	110	150	1010	Kolkata	2022-03-10
2	200	250	1020	Bangalore	2022-02-01
3	3000	500	1030	Chennai	2021-02-11
4	4090	600	1040	Mumbai	2020-02-20
5	4400	80	1050	Hydrabad	2020-06-07
6	4800	800	1060	Delhi	2021-06-07
7	6789	900	1070	Rajasthan	2019-08-07
8	6800	700	1080	Dhanbad	2011-09-08
9	8000	780	1090	Bangalore	2021-08-18
10	110	150	1090	Kolkata	2022-03-10
11	200	250	1090	Chennai	2022-02-01
12	3000	500	1090	Delhi	2021-02-11
13	4090	600	1090	Mumbai	2020-02-20
14	4400	80	1090	Hydrabad	2020-06-07
15	4800	800	1090	Dhanbad	2021-06-07
16	6789	900	1090	Rajasthan	2019-08-07
17	110	900	1010	Kolkata	2019-08-07
18	200	90	1020	Kolkata	2019-08-08
19	3000	98	1030	Kolkata	2018-08-08
20	4090	80	1040	Kolkata	2017-08-06
21	4400	600	1050	Kolkata	2017-08-06
22	4800	600	1060	Kolkata	2017-08-06
23	6789	700	1070	Kolkata	2022-08-06
24	6800	900	1080	Kolkata	2022-08-06
25	8000	950	1080	Kolkata	2022-08-06

25 rows in set (0.00 sec)

## Creating Truck table :

### Query:

```
create table Truck (  
truck_no int primary key,  
driver_name varchar(20)  
);
```

```
mysql> desc Truck;
```

Field	Type	Null	Key	Default	Extra
truck_no	int(11)	NO	PRI	NULL	
driver_name	varchar(20)	YES		NULL	

2 rows in set (0.01 sec)

## Truck table after insertion of values:

```
mysql> SELECT * FROM Truck;
```

truck_no	driver_name
1010	IQBAL
1020	SOHAN
1030	MOHAN
1040	RIHAN
1050	RISHAV
1060	MANISH
1070	AISH
1080	SID
1090	JOHN

9 rows in set (0.00 sec)

## Creating City table :

### Query:

```
create table City (  
city_name varchar (20) primary key,  
population int  
);
```

```
mysql> desc City;  
+-----+-----+-----+-----+-----+-----+  
| Field      | Type          | Null | Key | Default | Extra |  
+-----+-----+-----+-----+-----+-----+  
| city_name  | varchar(20)   | NO   | PRI | NULL     |       |  
| population | int(11)       | YES  |     | NULL     |       |  
+-----+-----+-----+-----+-----+-----+  
2 rows in set (0.00 sec)
```

### City table after insertion of values:

```
mysql> select * from City;  
+-----+-----+  
| city_name | population |  
+-----+-----+  
| Bangalore | 600000    |  
| Chennai   | 500000    |  
| Delhi     | 6000000   |  
| Dhanbad   | 670000    |  
| Hyderabad | 2100000   |  
| Kolkata   | 100000    |  
| Mumbai    | 1100000   |  
| Rajasthan | 680000    |  
+-----+-----+  
8 rows in set (0.00 sec)
```

## B. Queries and their Solutions:

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)

```
mysql> select cust_name from Customer
  -> where cust_id in ( select cust_id from Shipment where destination = 'Kolkata'
  -> UNION select cust_id from Shipment where destination = 'Chennai'
  -> UNION select cust_id from Shipment where destination = 'Mumbai');
+-----+
| cust_name |
+-----+
| gourav   |
| mohit    |
| ronit    |
| sounak   |
| vikash   |
| prakash  |
| aksat    |
| harsh    |
| yaman    |
+-----+
9 rows in set (0.00 sec)
```

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

```
mysql> select distinct(cust_name)
  -> from Customer c, Shipment s
  -> where weight >200 and c.cust_id = s.cust_id;
+-----+
| cust_name |
+-----+
| mohit    |
| ronit    |
| sounak   |
| prakash  |
| aksat    |
| harsh    |
| yaman    |
| gourav   |
| vikash   |
+-----+
9 rows in set (0.00 sec)
```

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 |
+-----+-----+
|          950 |          80 |
+-----+-----+
1 row in set (0.00 sec)
```

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

```
mysql> select distinct (cust_name),
-> avg(weight) from Customer c, Shipment s
-> where c.cust_id= s.cust_id
-> group by cust_name;
+-----+-----+
| cust_name | avg(weight) |
+-----+-----+
| aksat     | 833.3333    |
| gourav    | 400.0000    |
| harsh     | 800.0000    |
| mohit     | 196.6667    |
| prakash   | 733.3333    |
| ronit     | 366.0000    |
| sounak    | 426.6667    |
| vikash    | 253.3333    |
| yaman     | 865.0000    |
+-----+-----+
9 rows in set (0.00 sec)
```

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

```
mysql> select distinct(city_name),
-> population from City ct, Shipment s
-> where weight>100
-> and ct.city_name=s.destination;
+-----+-----+
| city_name | population |
+-----+-----+
| Kolkata   | 100000     |
| Bangalore | 600000     |
| Chennai   | 500000     |
| Mumbai    | 1100000    |
| Delhi     | 6000000    |
| Rajesthan | 680000     |
| Dhanbad   | 670000     |
+-----+-----+
7 rows in set (0.00 sec)
```

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



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

```
mysql> select city_name,max(weight)
-> from Shipment, City
-> where Shipment.destination = City.city_name
-> group by city_name;
```

city_name	max(weight)
Bangalore	780
Chennai	500
Delhi	800
Dhanbad	800
Hydrabad	80
Kolkata	950
Mumbai	600
Rajasthan	900

8 rows in set (0.00 sec)

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

```
mysql> select distinct(cust_name),
-> annual_revenue from Customer c,
-> Truck t, Shipment s
-> where driver_name='IQBAL'
-> and c.cust_id= s.cust_id
-> and t.truck_no = s. truck_no;
```

cust_name	annual_revenue
gourav	20000

1 row in set (0.00 sec)

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

```
mysql> select driver_name from Truck,  
-> Shipment where Shipment.truck_no=Truck.truck_no  
-> group by driver_name  
-> having count(distinct destination)=(select count(city_name)  
-> from City);  
+-----+  
| driver_name |  
+-----+  
| JOHN        |  
+-----+  
1 row in set (0.00 sec)
```

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

```
mysql> select destination, min(weight)  
-> from Shipment, City where  
-> city_name = destination  
-> and population>1000000  
-> group by destination;  
+-----+-----+  
| destination | min(weight) |  
+-----+-----+  
| Delhi       | 500         |  
| Hyderabad   | 80          |  
| Mumbai      | 600         |  
+-----+-----+  
3 rows in set (0.01 sec)
```