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COURSE – B SC MATHEMATICS (HONOURS)

GE - DATABASE MANAGEMENT SYSTEMS

ASSIGNMENT -2

SUBMITTED TO-MAAM SHRUTI SHIKHA

QUESTION 1) Create the following tables with appropriate data type for attributes and integrity constraints on the tables. Enter at least 5 records in each table and answer the queries given below.

Suppliers (SNo, Sname, Status, SCity)

Parts (PNo, Pname, Colour, Weight, City)

Project (JNo, Jname, Jcity)

Shipment (Sno, Pno, Jno, Quantity)

ANSWER –

```
mysql> select * from suppliers;
+------+----------+--------+---------+
| SNo  | SName    | Status | Scity   |
+------+----------+--------+---------+
| S1   | Dushyant |     18 | Ajmer   |
| S2   | Rishi    |     26 | Gurgaon |
| S3   | Anshul   |     20 | Kolkata |
| S4   | Devis    |     12 | Mandi   |
| S5   | Vansh    |      8 | Jaipur  |
| S6   | Aayush   |     32 | Mandi   |
| S7   | Devduth  |     15 | Kolkata |
+------+----------+--------+---------+
7 rows in set (0.00 sec)

mysql> select * from parts;
+------+-------+--------+---------------+---------+
| PNo  | Pname | Colour | Weight_in_kgs | City    |
+------+-------+--------+---------------+---------+
| P1   | Screw | Red    |            10 | Ajmer   |
| P2   | Bolt  | Blue   |            15 | Gurgaon |
| P3   | Nut   | Green  |             8 | Kolkata |
| P4   | Screw | Yellow |            12 | Mandi   |
| P5   | Cog   | Purple |            20 | Jaipur  |
| P6   | Bolt  | Orange |             5 | Mandi   |
| P7   | Cam   | Black  |            18 | Kolkata |
+------+-------+--------+---------------+---------+
7 rows in set (0.00 sec)
```

```
mysql> select * from project;
+------+---------+-----------+
| JNo  | Jname   | Jcity     |
+------+---------+-----------+
| J1   | Console | Ajmer     |
| J2   | Tape    | Mandi     |
| J3   | Display | Chennai   |
| J4   | RAID    | Mumbai    |
| J5   | OCR     | Bnagalore |
| J6   | Sorter  | Mandi     |
| J7   | EDS     | Kolkata   |
+------+---------+-----------+
7 rows in set (0.00 sec)
```

```
mysql> select * from shipment;
+------+------+------+-------------------+
| Sno  | Pno  | Jno  | Quantity_in_units |
+------+------+------+-------------------+
| S1   | P3   | J4   |                13 |
| S1   | P1   | J2   |                15 |
| S1   | P3   | J3   |                20 |
| S2   | P7   | J1   |                25 |
| S2   | P6   | J6   |                30 |
| S2   | P1   | J2   |                35 |
| S2   | P7   | J3   |                40 |
| S3   | P2   | J1   |                10 |
| S3   | P3   | J4   |                15 |
| S4   | P4   | J3   |                24 |
| S4   | P7   | J4   |                35 |
| S4   | P6   | J5   |                30 |
| S4   | P5   | J3   |                45 |
| S5   | P4   | J7   |                40 |
| S5   | P3   | J6   |                10 |
| S5   | P2   | J2   |                25 |
| S5   | P4   | J7   |                20 |
| S5   | P5   | J4   |                25 |
| S6   | P5   | J1   |                38 |
| S6   | P1   | J6   |                35 |
| S6   | P2   | J5   |                40 |
| S6   | P3   | J3   |                15 |
| S6   | P6   | J6   |                15 |
| S6   | P5   | J4   |                23 |
| S7   | P4   | J4   |                25 |
| S7   | P5   | J1   |                30 |
| S7   | P2   | J3   |                31 |
| S7   | P1   | J5   |                45 |
+------+------+------+-------------------+
28 rows in set (0.00 sec)
```

QUESTIONS –

1. Find supplier numbers for suppliers in Mandi with status less than 20.

```
mysql> select SNo from suppliers where Scity="mandi" and Status<=20;
+------+
| SNo  |
+------+
| S4   |
+------+
1 row in set (0.37 sec)
```

2. Find supplier details for suppliers who supply part P2. Display the supplier list in decreasing order of supplier numbers

```
mysql> select suppliers.sno,suppliers.sname,suppliers.status,suppliers.scity from suppliers inner join shipment on suppl
iers.sno=shipment.sno where shipment.pno='P2' order by suppliers.sno desc;
+------+---------+--------+---------+
| sno  | sname   | status | scity   |
+------+---------+--------+---------+
| S7   | Devduth |     15 | Kolkata |
| S6   | Aayush  |     32 | Mandi   |
| S5   | Vansh   |      8 | Jaipur  |
| S3   | Anshul  |     20 | Kolkata |
+------+---------+--------+---------+
4 rows in set (0.35 sec)
```

3. Find suppliers names for suppliers who do not supply part P2.

```
mysql> select distinct suppliers.sname from suppliers left join shipment on suppliers.sno=shipment.sno and shipment.pno=
'P2' where shipment.sno is null;
+----------+
| sname    |
+----------+
| Dushyant |
| Rishi    |
| Devis    |
+----------+
```

4. For each shipment get full shipment details, including total shipment weights computed as Weight*Quantity of corresponding parts.

```
mysql> select shipment.*,parts.weight_in_kgs , (shipment.quantity_in_units*parts.weight_in_kgs) as Total_Shipment from shipment left join parts on shipment
.pno=parts.pno;
+------+------+------+------------------+--------------+----------------+
| Sno  | Pno  | Jno  | Quantity_in_units | weight_in_kgs | Total_Shipment |
+------+------+------+------------------+--------------+----------------+
| S1   | P3   | J4   |               13 |            8 |            104 |
| S1   | P1   | J2   |               15 |           10 |            150 |
| S1   | P3   | J3   |               20 |            8 |            160 |
| S2   | P7   | J1   |               25 |           18 |            450 |
| S2   | P6   | J6   |               30 |            5 |            150 |
| S2   | P1   | J2   |               35 |           10 |            350 |
| S2   | P7   | J3   |               40 |           18 |            720 |
| S3   | P2   | J1   |               10 |           15 |            150 |
| S3   | P3   | J4   |               15 |            8 |            120 |
| S4   | P4   | J3   |               24 |           12 |            288 |
| S4   | P7   | J4   |               35 |           18 |            630 |
| S4   | P6   | J5   |               30 |            5 |            150 |
| S4   | P5   | J3   |               45 |           20 |            900 |
| S5   | P4   | J7   |               40 |           12 |            480 |
| S5   | P3   | J6   |               10 |            8 |             80 |
| S5   | P2   | J2   |               25 |           15 |            375 |
| S5   | P4   | J7   |               20 |           12 |            240 |
| S5   | P5   | J4   |               25 |           20 |            500 |
| S6   | P5   | J1   |               38 |           20 |            760 |
| S6   | P1   | J6   |               35 |           10 |            350 |
| S6   | P2   | J5   |               40 |           15 |            600 |
| S6   | P3   | J3   |               15 |            8 |            120 |
| S6   | P6   | J6   |               15 |            5 |             75 |
| S6   | P5   | J4   |               23 |           20 |            460 |
| S7   | P4   | J4   |               25 |           12 |            300 |
| S7   | P5   | J1   |               30 |           20 |            600 |
| S7   | P2   | J3   |               31 |           15 |            465 |
| S7   | P1   | J5   |               45 |           10 |            450 |
+------+------+------+------------------+--------------+----------------+
28 rows in set (0.00 sec)
```

5. Get all the shipments where the quantity is in the range 300 to 750 inclusive.

```
mysql> select * from shipment where quantity_in_units between 300 and 750;
Empty set (0.00 sec)
```

6. Get part numbers for parts that either weigh more than 1Kg or are supplied by suppliers S2 or both.

```
mysql> select distinct parts.pno from parts,shipment where parts.pno<1 or shipment.sno="S2";
+------+
| pno  |
+------+
| P7   |
| P6   |
| P5   |
| P4   |
| P3   |
| P2   |
| P1   |
+------+
7 rows in set, 196 warnings (0.36 sec)
```

7. Get the names of cities that store more than two red parts. Change the column name in the output to "City-Parts".

```
mysql> select distinct parts.city as "City_Parts" from parts
    -> join shipment on parts.pno=shipment.pno
    -> join project on shipment.jno=project.jno
    -> join suppliers on shipment.sno=suppliers.sno
    -> where colour="Red" and quantity_in_units>=2;
+------------+
| City_Parts |
+------------+
| Ajmer      |
+------------+
1 row in set (0.34 sec)
```

8. Update the city of supplier S1 to "Delhi".

```
mysql>  SELECT * FROM SUPPLIERS
    ->  LIMIT 1;
+------+----------+--------+-------+
| SNo  | SName    | Status | Scity |
+------+----------+--------+-------+
| S1   | Dushyant |     18 | Delhi |
+------+----------+--------+-------+
```

9. Get part numbers for parts supplied by a supplier in Kolkata to a project in Bangalore.

```
mysql> select distinct parts.PNo from parts
    -> join shipment on parts.pno=shipment.pno
    -> join project on shipment.jno=project.jno
    -> join suppliers on shipment.sno=suppliers.sno
    -> where scity="Kolkata" and jcity="Bangalore";
+------+
| PNo  |
+------+
| P1   |
+------+
1 row in set (0.00 sec)
```

10. Find the names of all parts whose color starts with the letter b.

```
mysql> select parts.Pname from parts where colour like "b%";
+-------+
| Pname |
+-------+
| Bolt  |
| Cam   |
+-------+
2 rows in set (0.35 sec)
```

11. Change the datatype of the weight attribute in the Parts table from int to float.

```
mysql> ALTER TABLE Parts
    -> MODIFY COLUMN weight_in_kgs FLOAT;
Query OK, 7 rows affected (3.09 sec)
Records: 7  Duplicates: 0  Warnings: 0

mysql> desc parts;
+---------------+----------+------+-----+---------+-------+
| Field         | Type     | Null | Key | Default | Extra |
+---------------+----------+------+-----+---------+-------+
| PNo           | char(20) | YES  |     | NULL    |       |
| Pname         | char(20) | YES  |     | NULL    |       |
| Colour        | char(20) | YES  |     | NULL    |       |
| weight_in_kgs | float    | YES  |     | NULL    |       |
| City          | char(20) | YES  |     | NULL    |       |
+---------------+----------+------+-----+---------+-------+
5 rows in set (0.00 sec)
```

12. Find the number of parts of each color.

```
mysql> select parts.colour,count(Pname) as number_of_parts from parts group by colour;
+--------+-----------------+
| colour | number_of_parts |
+--------+-----------------+
| Red    |               1 |
| Blue   |               1 |
| Green  |               1 |
| Yellow |               1 |
| Purple |               1 |
| Orange |               1 |
| Black  |               1 |
+--------+-----------------+
7 rows in set (0.00 sec)
```

13. Find the names of all the projects which are located in the city Mumbai and in which the part is supplied by supplier S3.

```
mysql> SELECT DISTINCT project.jname
    -> FROM project
    -> JOIN shipment on project.jno=shipment.jno
    -> JOIN parts ON shipment.pno = parts.pno
    -> JOIN suppliers ON shipment.sno = suppliers.sno
    -> WHERE project.jcity = 'Mumbai' AND suppliers.sno = 'S3';
+-------+
| jname |
+-------+
| RAID  |
+-------+
1 row in set (0.00 sec)
```

14. Delete all the projects which are located in Madras.

```
mysql> delete from project
    -> where jcity="chennai";
Query OK, 0 rows affected (0.00 sec)

mysql> select * from project;
+-------+---------+-----------+
| JNo   | Jname   | Jcity     |
+-------+---------+-----------+
| J1    | Console | Ajmer     |
| J2    | Tape    | Mandi     |
| J4    | RAID    | Mumbai    |
| J5    | OCR     | Bnagalore |
| J6    | Sorter  | Mandi     |
| J7    | EDS     | Kolkata   |
+-------+---------+-----------+
6 rows in set (0.00 sec)
```

15. Find all part-details of parts that are shipped to any project carried out in Mumbai.

```
mysql> select distinct parts.* from parts
    -> join shipment on parts.pno=shipment.pno
    -> join project on shipment.jno=project.jno
    -> where jcity="mumbai";
+-------+--------+--------+---------------+----------+
| PNo   | Pname  | Colour | weight_in_kgs | City     |
+-------+--------+--------+---------------+----------+
| P3    | Nut    | Green  |             8 | Kolkata  |
| P4    | Screw  | Yellow |            12 | Mandi    |
| P5    | Cog    | Purple |            20 | Jaipur   |
| P7    | Cam    | Black  |            18 | Kolkata  |
+-------+--------+--------+---------------+----------+
4 rows in set (0.00 sec)
```

16. Find number of unique projects supplied by supplier S1.

```
mysql> select count(distinct(project.jno)) as number_of_projects from project,shipment where shipment.sno="S1";
+--------------------+
| number_of_projects |
+--------------------+
|                  6 |
+--------------------+
1 row in set (0.02 sec)
```

17. Add column SDate in shipment table.

```
mysql> ALTER TABLE shipment
    -> ADD COLUMN SDate DATE;
Query OK, 0 rows affected (0.79 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> desc shipment;
+-------------------+-------------+------+-----+---------+-------+
| Field             | Type        | Null | Key | Default | Extra |
+-------------------+-------------+------+-----+---------+-------+
| Sno               | varchar(20) | YES  |     | NULL    |       |
| Pno               | varchar(20) | YES  |     | NULL    |       |
| Jno               | varchar(20) | YES  |     | NULL    |       |
| Quantity_in_units | int         | YES  |     | NULL    |       |
| SDate             | date        | YES  |     | NULL    |       |
+-------------------+-------------+------+-----+---------+-------+
5 rows in set (0.00 sec)
```

18. For each supplier which supplies parts to a project, find the total no. of parts supplied by the supplier.

```
mysql> SELECT shipment.SNo , SUM(shipment.quantity_in_units) AS "total_parts_supplied"
    -> FROM Shipment
    -> JOIN suppliers ON shipment.SNo = suppliers.Sno
    -> GROUP BY suppliers.sno, suppliers.sname;
+------+----------------------+
| SNo  | total_parts_supplied |
+------+----------------------+
| S1   |                   48 |
| S2   |                  130 |
| S3   |                   25 |
| S4   |                  134 |
| S5   |                  120 |
| S6   |                  166 |
| S7   |                  131 |
+------+----------------------+
7 rows in set (0.00 sec)
```

19. Find all supplier name, part name and project name triples such that the indicated supplier, part, and project are all located in the same city. List the name of the city along with the names of suppliers, project and parts.

```
mysql> select suppliers.sname,parts.pname,project.jname,suppliers.scity from suppliers join shipment on suppliers.sno=shipment.sno join project
on shipment.jno=project.jno join parts on shipment.pno=parts.pno where suppliers.scity=parts.city and suppliers.scity=project.jcity;
+--------+-------+--------+-------+
| sname  | pname | jname  | scity |
+--------+-------+--------+-------+
| Aayush | Bolt  | Sorter | Mandi |
+--------+-------+--------+-------+
1 row in set (0.01 sec)
```

20. Get the names of cities from where more than three yellow parts are supplied

```
mysql> select distinct parts.city from parts
    -> join shipment on parts.pno=shipment.pno
    -> join project on shipment.jno=project.jno
    -> join suppliers on shipment.sno=suppliers.sno
    -> where colour="yellow" and quantity_in_units>=3;
+-------+
| city  |
+-------+
| Mandi |
+-------+
1 row in set (0.00 sec)
```

21. Find all distinct cities where either supplier is living or parts are shipped from or projects are carried out. Change the column name in the output to "All-Cities".

```
mysql> SELECT DISTINCT Scity AS 'All-Cities' FROM suppliers
    -> UNION
    -> SELECT DISTINCT City AS 'All-Cities' FROM parts
    -> UNION
    -> SELECT DISTINCT Jcity AS 'All-Cities' FROM project;
+------------+
| All-Cities |
+------------+
| Delhi      |
| Gurgaon    |
| Kolkata    |
| Mandi      |
| Jaipur     |
| Ajmer      |
| Mumbai     |
| bangalore  |
| Chennai    |
+------------+
9 rows in set (0.35 sec)
```

22. Find names of cities such that atleast one supplier is living there and atleast one part is shipped and one project is carried out. Change the column name in the output to "Common-Cities".

```
mysql> select distinct parts.city from parts
    -> join shipment on parts.pno=shipment.pno
    -> join project on shipment.jno=project.jno
    -> join suppliers on shipment.sno=suppliers.sno
    -> where city=jcity and city=scity;
+-------+
| city  |
+-------+
| Mandi |
+-------+
1 row in set (0.00 sec)
```

23. Modify data type of any attribute of table shipment

```
mysql> Alter Table Shipment
    -> Modify Column quantity_in_units float(35);
Query OK, 28 rows affected (0.92 sec)
Records: 28  Duplicates: 0  Warnings: 0

mysql> desc shipment;
+-------------------+-------------+------+-----+---------+-------+
| Field             | Type        | Null | Key | Default | Extra |
+-------------------+-------------+------+-----+---------+-------+
| Sno               | varchar(20) | YES  |     | NULL    |       |
| Pno               | varchar(20) | YES  |     | NULL    |       |
| Jno               | varchar(20) | YES  |     | NULL    |       |
| quantity_in_units | double      | YES  |     | NULL    |       |
| SDate             | date        | YES  |     | NULL    |       |
+-------------------+-------------+------+-----+---------+-------+
5 rows in set (0.01 sec)
```