Practical 06: JOINs & Aggregate Functions

Run the SQL – DDL and DML statements provided in Practical6_SQL4_DDL_DML.sql file (on Moodle). This will create 3tables and populate them with data. As the file is in .sql format, to save time you can copy and paste when executing these statements. Read the statements when you execute them so you understand the tables, columns, and their relationships. Once you have run all the statements successfully, now create and execute the following queries:

1. How many relationships exist between these tables? Specify their type & cardinality?

There is two relationships that exists in the supplier, parts and supplies tables.

Relationship

Supplies contains many parts.

[Supplies] ---------- [Contain] ---------- [Parts] (M: 1)

Supplies are involved with many suppliers.

[Supplies] ---------- [Involves] ---------- [Supplier] (M: 1)

1. Supplier (Normal table)
    - SupplierNum **(Primary Key)**
    - Name
    - Status
    - City
2. Parts (Normal table)
    - PartNum **(Primary Key)**
    - Name
    - Colour
    - Weight
    - City
3. Supplies (Junction table)
    - supplierNum **(Composite Primary Key)(Foreign Key)**
    - partNum **(Composite Primary Key)(Foreign Key)**
    - quantity

2. List all the records in supplier, parts, & supplies tables. One table at a time?

```
mysql> SELECT * FROM supplier;
+-------------+-------+--------+--------+
| supplierNum | name  | status | city   |
+-------------+-------+--------+--------+
| S1          | Smith |     20 | London |
| S2          | Jones |     10 | Paris  |
| S3          | Blake |     20 | Paris  |
| S4          | Clark |     20 | London |
| S5          | Adams |     30 | Athens |
+-------------+-------+--------+--------+
5 rows in set (0.00 sec)

mysql> SELECT * FROM parts;
+---------+-------+--------+--------+--------+
| partNum | name  | colour | weight | city   |
+---------+-------+--------+--------+--------+
| P1      | Nut   | Red    |   12.0 | London |
| P2      | Bolt  | Green  |   17.0 | Paris  |
| P3      | Screw | Blue   |   17.0 | Oslo   |
| P4      | Screw | Red    |   14.0 | London |
| P5      | Cam   | Blue   |   12.0 | Paris  |
| P6      | Cog   | Red    |   19.0 | London |
+---------+-------+--------+--------+--------+
6 rows in set (0.00 sec)

mysql> SELECT * FROM supplies;
+-------------+---------+----------+
| supplierNum | partNum | quantity |
+-------------+---------+----------+
| S1          | P1      |      300 |
| S1          | P2      |      200 |
| S1          | P3      |      400 |
| S1          | P4      |      200 |
| S1          | P5      |      100 |
| S1          | P6      |      100 |
| S2          | P1      |      300 |
| S2          | P2      |      400 |
| S3          | P2      |      200 |
| S4          | P2      |      200 |
| S4          | P4      |      300 |
| S4          | P5      |      400 |
+-------------+---------+----------+
12 rows in set (0.00 sec)
```

3. Update the supplier table to reflect a change in supplier's status to the value 20 for all suppliers from Paris?

```
mysql> UPDATE supplier SET  status = 20 WHERE city = 'Paris';
Query OK, 1 row affected (0.01 sec)
Rows matched: 2  Changed: 1  Warnings: 0
```

4. Show the number of suppliers in each city ordered from highest to lowest

```
mysql> SELECT  status, city FROM supplier ORDER BY status DESC;
+--------+--------+
| status | city   |
+--------+--------+
|     30 | Athens |
|     20 | London |
|     20 | Paris  |
|     20 | Paris  |
|     20 | London |
+--------+--------+
5 rows in set (0.00 sec)
```

5. List only the name of all the parts except the Red parts?

```
mysql> SELECT name, colour FROM parts WHERE colour != 'Red';
+-------+--------+
| name  | colour |
+-------+--------+
| Bolt  | Green  |
| Screw | Blue   |
| Cam   | Blue   |
+-------+--------+
3 rows in set (0.00 sec)
```

6. Show all entries from the supplies table with their corresponding part names and supplier names. Rename the columns to appropriate ones?

```
mysql> SELECT parts.name partName, supplier.name supplierName, sup.quantity
    -> FROM supplies sup
    -> INNER JOIN parts
    -> ON sup.partNum = parts.partNum
    -> INNER JOIN supplier
    -> ON sup.supplierNum = supplier.supplierNum;
+----------+--------------+----------+
| partName | supplierName | quantity |
+----------+--------------+----------+
| Nut      | Smith        |      300 |
| Bolt     | Smith        |      200 |
| Screw    | Smith        |      400 |
| Screw    | Smith        |      200 |
| Cam      | Smith        |      100 |
| Cog      | Smith        |      100 |
| Nut      | Jones        |      300 |
| Bolt     | Jones        |      400 |
| Bolt     | Blake        |      200 |
| Bolt     | Clark        |      200 |
| Screw    | Clark        |      300 |
| Cam      | Clark        |      400 |
+----------+--------------+----------+
12 rows in set (0.00 sec)
```

7. Show the names of all suppliers that appear more than once in the supplies table?

```
mysql> SELECT count(supplier.name) count, supplier.name supplierName, sup.quantity
    -> FROM supplies sup
    -> LEFT JOIN supplier
    -> ON sup.supplierNum = supplier.supplierNum
    -> GROUP BY supplier.name
    -> HAVING count(supplier.name) > 1;
+-------+--------------+----------+
| count | supplierName | quantity |
+-------+--------------+----------+
|     3 | Clark        |      200 |
|     2 | Jones        |      300 |
|     6 | Smith        |      300 |
+-------+--------------+----------+
3 rows in set (0.00 sec)
```

8. Supplier with supplierNum = S4 has closed down his business. Delete all the records related to this supplier from all relevant tables?

```
mysql> SELECT * FROM supplies WHERE supplierNum = 'S4';
+-------------+---------+----------+
| supplierNum | partNum | quantity |
+-------------+---------+----------+
| S4          | P2      |      200 |
| S4          | P4      |      300 |
| S4          | P5      |      400 |
+-------------+---------+----------+
3 rows in set (0.00 sec)

mysql> DELETE FROM supplies WHERE supplierNum = 'S4';
Query OK, 3 rows affected (0.01 sec)

mysql> SELECT * FROM supplier WHERE supplierNum = 'S4';
+-------------+-------+--------+--------+
| supplierNum | name  | status | city   |
+-------------+-------+--------+--------+
| S4          | Clark |     20 | London |
+-------------+-------+--------+--------+
1 row in set (0.00 sec)

mysql> DELETE FROM supplier WHERE supplierNum = 'S4';
Query OK, 1 row affected (0.01 sec)
```

9. List all the parts except those with a quantity of 200?

```
mysql> SELECT parts.name partName, sup.quantity
    -> FROM supplies sup
    -> INNER JOIN parts
    -> ON sup.partNum = parts.partNum
    -> HAVING sup.quantity != 200;
+----------+----------+
| partName | quantity |
+----------+----------+
| Nut      |      300 |
| Nut      |      300 |
| Bolt     |      400 |
| Screw    |      400 |
| Cam      |      100 |
| Cog      |      100 |
+----------+----------+
6 rows in set (0.00 sec)
```

10. List part names, their colour, and the supplier(s) who supply them?

```
mysql> SELECT DISTINCT parts.name partName, parts.colour colour, supplier.name supplierName
    -> FROM supplies sup
    -> INNER JOIN parts
    -> ON sup.partNum = parts.partNum
    -> INNER JOIN supplier
    -> ON sup. supplierNum = supplier.supplierNum;
+----------+--------+--------------+
| partName | colour | supplierName |
+----------+--------+--------------+
| Nut      | Red    | Smith        |
| Bolt     | Green  | Smith        |
| Screw    | Blue   | Smith        |
| Screw    | Red    | Smith        |
| Cam      | Blue   | Smith        |
| Cog      | Red    | Smith        |
| Nut      | Red    | Jones        |
| Bolt     | Green  | Jones        |
| Bolt     | Green  | Blake        |
+----------+--------+--------------+
9 rows in set (0.00 sec)
```