CS 207: Applied Database Practicum
In-Class Activity 7: Introduction to Triggers, 24th September, 2018

In this activity, you will be working in Mysql.

For this Activity, load the database from the dump file (trigger.sql) given in moodle. The database name is **activity6.** The database contains 3 tables:

```
mysql> show tables$$
+---------------------+
| Tables_in_activity6 |
+---------------------+
| task3               |
| tasks               |
| tasks2              |
+---------------------+
3 rows in set (0.00 sec)
```

Q1. The trigger will be created for the table **tasks.** (The table schema is displayed below)

Field	Type	Null	Key	Default	Extra
EMPLOYEE_ID	int(11)	NO	PRI	NULL	
FIRSTNAME	varchar(255)	NO		NULL	
LASTNAME	varchar(255)	NO		NULL	
JOBID	varchar(255)	NO		NULL	
EMAIL	varchar(255)	NO		NULL	
SALARY	double	NO		NULL	
COMMISSION_PCT	double	NO		NULL	

Create a trigger that removes the whitespaces from the column **FIRSTNAME**, **LASTNAME** and changes the **JOBID** value to uppercase when a new record is inserted. [HINT: use Mysql Functions like TRIM].

e.g. **if the following values are inserted into tasks**:

```
mysql> INSERT INTO tasks VALUES (9, 'Andre ', ' Iguodala  ', 'sf','AI@gmail.com', 900000.00,0.02);
    -> $$
Query OK, 1 row affected (0.00 sec)
```

The output should be something similar to the image below

```
mysql> select * from tasks$$
+-------------+-----------+----------+-------+-------------+---------+----------------+
| EMPLOYEE_ID | FIRSTNAME | LASTNAME | JOBID | EMAIL       | SALARY  | COMMISSION_PCT |
+-------------+-----------+----------+-------+-------------+---------+----------------+
|           0 | Demarcus  | Cousins  | C     | DC@gmail.com | 1000000 |           0.04 |
|           9 | Andre     | Iguodala | SF    | AI@gmail.com |  900000 |           0.02 |
|          11 | Klay      | Thompson | SG    | KT@gmail.com | 1400000 |           0.05 |
|          23 | Draymond  | Green    | PF    | DG@gmail.com | 1300000 |           0.06 |
|          30 | Stephen   | Curry    | PG    | SC@gmail.com | 2400000 |            0.1 |
|          35 | Kevin     | Durant   | SF    | KD@gmail.com | 2100000 |           0.09 |
+-------------+-----------+----------+-------+-------------+---------+----------------+
6 rows in set (0.00 sec)
```

The spaces have been removed from the **FIRSTNAME**, **LASTNAME** and the **JOBID** is converted form '**sf**' to "**SF**".

Q2. For this question the trigger will be created for the table **task3.** (The table schema is displayed below)

```
mysql> describe task3$$
+------------+--------------+------+-----+---------+-------+
| Field      | Type         | Null | Key | Default | Extra |
+------------+--------------+------+-----+---------+-------+
| STUDENT_ID | int(11)      | NO   | PRI | NULL    |       |
| NAME       | varchar(255) | NO   |     | NULL    |       |
| SUB1       | double       | NO   |     | NULL    |       |
| SUB2       | double       | NO   |     | NULL    |       |
| SUB3       | double       | NO   |     | NULL    |       |
| SUB4       | double       | NO   |     | NULL    |       |
| SUB5       | double       | NO   |     | NULL    |       |
| TOTAL      | double       | NO   |     | NULL    |       |
| PER_MARKS  | double       | NO   |     | NULL    |       |
| GRADE      | varchar(50)  | YES  |     | NULL    |       |
+------------+--------------+------+-----+---------+-------+
10 rows in set (0.00 sec)
```

The table contains only zero values in the beginning as shown in the image below:

```
mysql> select * from task3$$
+------------+--------------------+------+------+------+------+------+-------+-----------+-------+
| STUDENT_ID | NAME               | SUB1 | SUB2 | SUB3 | SUB4 | SUB5 | TOTAL | PER_MARKS | GRADE |
+------------+--------------------+------+------+------+------+------+-------+-----------+-------+
|          1 | LARRY BIRD         |    0 |    0 |    0 |    0 |    0 |     0 |         0 | NULL  |
|          2 | KAREEM ABDUL JABBAR |    0 |    0 |    0 |    0 |    0 |     0 |         0 | NULL  |
|          3 | WILT CHAMBERLIN    |    0 |    0 |    0 |    0 |    0 |     0 |         0 | NULL  |
|          4 | JULIUS ERVING      |    0 |    0 |    0 |    0 |    0 |     0 |         0 | NULL  |
+------------+--------------------+------+------+------+------+------+-------+-----------+-------+
4 rows in set (0.00 sec)
```

Create a trigger such that when we update the marks of a student for each subject (SUB1, SUB2, SUB3, SUB4, SUB5) in the table **task3**, the trigger should automatically calculate the **Total Marks, Percentage of Marks,** and Grade of the student and update it in the table **task3**. **The calculations are given below:**

Total Marks (will be stored in TOTAL column): TOTAL = SUB1 + SUB2 + SUB3 + SUB4 + SUB5
Percentage of Marks (will be stored in PER_MARKS column) : PER_MARKS = (TOTAL)/5
Grade (will be stored GRADE column) :
If PER_MARKS>=90 -> 'EXCELLENT'
If PER_MARKS>=75 AND PER_MARKS<90 -> 'VERY GOOD'
If PER_MARKS>=60 AND PER_MARKS<75 -> 'GOOD'
If PER_MARKS>=40 AND PER_MARKS<60 -> 'AVERAGE'
If PER_MARKS<40-> 'NOT PROMOTED'

When we update the marks of a student the output should be similar to the image below:

```
mysql> UPDATE task3 SET SUB1 = 54, SUB2 = 69, SUB3 = 89, SUB4 = 87, SUB5 = 59 WHERE STUDENT_ID=1$$
Query OK, 1 row affected (0.00 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> select * from task3$$
+------------+--------------------+------+------+------+------+------+-------+-----------+-------+
| STUDENT_ID | NAME               | SUB1 | SUB2 | SUB3 | SUB4 | SUB5 | TOTAL | PER_MARKS | GRADE |
+------------+--------------------+------+------+------+------+------+-------+-----------+-------+
|          1 | LARRY BIRD         |   54 |   69 |   89 |   87 |   59 |   358 |      71.6 | GOOD  |
|          2 | KAREEM ABDUL JABBAR |    0 |    0 |    0 |    0 |    0 |     0 |         0 | NULL  |
|          3 | WILT CHAMBERLIN    |    0 |    0 |    0 |    0 |    0 |     0 |         0 | NULL  |
|          4 | JULIUS ERVING      |    0 |    0 |    0 |    0 |    0 |     0 |         0 | NULL  |
+------------+--------------------+------+------+------+------+------+-------+-----------+-------+
4 rows in set (0.00 sec)
```