

# Assignment - 8

Yogesh R, 111801047

- A. Create a variable avg\_cred to store the average of total credits of students. Show names of the students with total credit more than twice the average of total credits using variable avg\_cred.

```
MariaDB [university]> set @avg_cred = (select avg(tot_cred) from student);  
Query OK, 0 rows affected (0.000 sec)
```

```
MariaDB [university]> select *  
→ from student  
→ where tot_cred > (2*@avg_cred);  
Empty set (0.000 sec)
```

The result is a empty set as the max is 128 but twice of the average is 131.38 appox.

round(@avg_cred*2, 4)
131.3846

max(tot_cred)
120

- B. show the details of the departments which have budgets more than the average budget across all departments. First show it without defining any function, then show it by defining a function avg\_budget that return average budget across all departments.

Without Function:

```
MariaDB [university]> select *
→ from department
→ where budget>(
→     select avg(budget)
→     from department
→ );
```

dept_name	building	budget
Biology	Watson	90000.00
Comp. Sci.	Taylor	100000.00
Finance	Painter	120000.00

3 rows in set (0.002 sec)

With Function:

```
MariaDB [university]> DELIMITER //
MariaDB [university]> create function avg_budget()
→ returns float
→ begin
→     return (
→         select avg(budget)
→         from department
→     );
→ end; //
```

Query OK, 0 rows affected (0.004 sec)

```
MariaDB [university]> DELIMITER ;
MariaDB [university]> select *
→ from department
→ where budget>avg_budget();
```

dept_name	building	budget
Biology	Watson	90000.00
Comp. Sci.	Taylor	100000.00
Finance	Painter	120000.00

3 rows in set (0.001 sec)

Note: The delimiter is temporarily set to “//” then restored back to “;”

- C. Create a procedure `top_budg` that when called will accept a number `N` and return budgets of top `N` departments. Use `N=3` and `N=5` to verify your procedure.

```
MariaDB [university]> DELIMITER //
MariaDB [university]> create procedure top_budg(in N int)
→ begin
→     select budget
→     from department
→     order by budget desc
→     limit N;
→ end; //
Query OK, 0 rows affected (0.004 sec)

MariaDB [university]> DELIMITER ;
```

```
MariaDB [university]> call top_budg(3);
+-----+
| budget |
+-----+
| 120000.00 |
| 100000.00 |
| 90000.00  |
+-----+
3 rows in set (0.001 sec)
```

```
MariaDB [university]> call top_budg(5);
+-----+
| budget |
+-----+
| 120000.00 |
| 100000.00 |
| 90000.00  |
| 85000.00  |
| 80000.00  |
+-----+
5 rows in set (0.000 sec)
```

Note: The delimiter is temporarily set to “//” then restored back to “;”

- D. Create a procedure which will be used by a system admin whenever a new student join. The procedure will create a view such that, each student can see details of all students except their total credit, but the student can see all information about him/her. Demonstrate this procedure with examples [at least 2 examples].

```
MariaDB [university]> DELIMITER //
MariaDB [university]> create procedure new_student(in SID int)
→ begin
→     set @SQL = (select concat('create user ', '\'', SID, '\''));
→     prepare user_create from @SQL;
→     execute user_create;
→     set @view_name = (select concat('info', SID));
→     set @SQL = (select concat('create view ', @view_name, ' as ( select ID, name, dept_name,
if(ID=, SID, ', tot_cred, null) as tot_cred from student );'));
→     prepare stmt from @SQL;
→     execute stmt;
→     set @SQL = (select concat('grant select on ', @view_name, ' to ', '\'', SID, '\''));
→     prepare grant_stmt from @SQL;
→     execute grant_stmt;
→ end; //
Query OK, 0 rows affected (0.005 sec)
```

Note: The student ID is used to create the user in the DB as ID is the unique identifier of student table (name does not have unique constraint).

#### Example 1

```
MariaDB [university]> insert into student
→ values (1, 'user1', 'Music', 100);
Query OK, 1 row affected (0.003 sec)
```

```
MariaDB [university]> call new_student(1);
Query OK, 0 rows affected (0.012 sec)
```

```
PS C:\Windows\System32> mysql -u 1 -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 88
Server version: 10.5.8-MariaDB mariadb.org binary distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> select * from university.info1;
+-----+-----+-----+-----+
| ID    | name  | dept_name | tot_cred |
+-----+-----+-----+-----+
| 00128 | Zhang | Comp. Sci. | NULL     |
| 1     | user1 | Music      | 100      |
| 12345 | Shankar | Comp. Sci. | NULL     |
| 19991 | Brandt | History    | NULL     |
| 23121 | Chavez | Finance    | NULL     |
| 44553 | Peltier | Physics    | NULL     |
| 45678 | Levy   | Physics    | NULL     |
| 54321 | Williams | Comp. Sci. | NULL     |
| 55739 | Sanchez | Music      | NULL     |
| 70557 | Snow   | Physics    | NULL     |
| 76543 | Brown  | Comp. Sci. | NULL     |
| 76653 | Aoi    | Elec. Eng. | NULL     |
| 98765 | Bourikas | Elec. Eng. | NULL     |
| 98988 | Tanaka | Biology    | NULL     |
+-----+-----+-----+-----+
14 rows in set (0.001 sec)

MariaDB [(none)]> select * from university.student;
ERROR 1142 (42000): SELECT command denied to user '1'@'localhost' for table 'student'
```

The null is shown as it is blocked for this user. Also, this user has access only to the info1 view and not the student table itself as shown.

## Example 2

```
MariaDB [university]> insert into student  
→ values (2, 'user2', 'History', 70);  
Query OK, 1 row affected (0.004 sec)
```

```
MariaDB [university]> call new_student(2);  
Query OK, 0 rows affected (0.008 sec)
```

```
PS C:\Windows\System32> mysql -u 2 -p  
Enter password:  
Welcome to the MariaDB monitor. Commands end with ; or \g.  
Your MariaDB connection id is 90  
Server version: 10.5.8-MariaDB mariadb.org binary distribution  
  
Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.  
  
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.  
  
MariaDB [(none)]> select * from university.info2;  
+-----+-----+-----+-----+  
| ID | name | dept_name | tot_cred |  
+-----+-----+-----+-----+  
| 00128 | Zhang | Comp. Sci. | NULL |  
| 1 | user1 | Music | NULL |  
| 12345 | Shankar | Comp. Sci. | NULL |  
| 19991 | Brandt | History | NULL |  
| 2 | user2 | History | 70 |  
| 23121 | Chavez | Finance | NULL |  
| 44553 | Peltier | Physics | NULL |  
| 45678 | Levy | Physics | NULL |  
| 54321 | Williams | Comp. Sci. | NULL |  
| 55739 | Sanchez | Music | NULL |  
| 70557 | Snow | Physics | NULL |  
| 76543 | Brown | Comp. Sci. | NULL |  
| 76653 | Aoi | Elec. Eng. | NULL |  
| 98765 | Bourikas | Elec. Eng. | NULL |  
| 98988 | Tanaka | Biology | NULL |  
+-----+-----+-----+-----+  
15 rows in set (0.003 sec)  
  
MariaDB [(none)]> select * from university.student;  
ERROR 1142 (42000): SELECT command denied to user '2'@'localhost' for table 'student'
```

The null is shown as it is blocked for this user. Also, this user has access only to the info2 view and not the student table itself as shown.