

Assignment 7

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- A. Demonstrate Rollback and Commit on Student table of University Database. (Show at least 2 examples for both Rollback and Commit) [1]

Switching off auto commit

```
MariaDB [university]> set autocommit=0;  
Query OK, 0 rows affected (0.000 sec)
```

Original Student Table

```
MariaDB [university]> select *  
-> from student;  
+-----+-----+-----+-----+  
| ID      | name      | dept_name | tot_cred |  
+-----+-----+-----+-----+  
| 00128   | Zhang     | Comp. Sci. | 102      |  
| 12345   | Shankar   | Comp. Sci. | 32        |  
| 19991   | Brandt    | History    | 80        |  
| 23121   | Chavez    | Finance    | 110       |  
| 44553   | Peltier   | Physics    | 56        |  
| 45678   | Levy      | Physics    | 46        |  
| 54321   | Williams  | Comp. Sci. | 54        |  
| 55739   | Sanchez   | Music      | 38        |  
| 70557   | Snow      | Physics    | 0         |  
| 76543   | Brown     | Comp. Sci. | 58        |  
| 76653   | Aoi       | Elec. Eng. | 60        |  
| 98765   | Bourikas  | Elec. Eng. | 98        |  
| 98988   | Tanaka    | Biology    | 120       |  
+-----+-----+-----+-----+  
13 rows in set (0.000 sec)
```

Example-1: changing name from Levy to Levi (ID=45678)

Updating (without commit)	<pre>MariaDB [university]> update student -> set name='Levi' -> where ID=45678; Query OK, 1 row affected (0.001 sec) Rows matched: 1 Changed: 1 Warnings: 0 MariaDB [university]> select * -> from student -> where ID=45678; +-----+-----+-----+-----+ ID name dept_name tot_cred +-----+-----+-----+-----+ 45678 Levi Physics 46 +-----+-----+-----+-----+ 1 row in set (0.000 sec)</pre>
Rollback	<pre>MariaDB [university]> rollback; Query OK, 0 rows affected (0.001 sec) MariaDB [university]> select * -> from student -> where ID=45678; +-----+-----+-----+-----+ ID name dept_name tot_cred +-----+-----+-----+-----+ 45678 Levy Physics 46 +-----+-----+-----+-----+ 1 row in set (0.000 sec)</pre>

Updating
with
commit

```
MariaDB [university]> update student
-> set name='Levi'
-> where ID=45678;
Query OK, 1 row affected (0.000 sec)
Rows matched: 1  Changed: 1  Warnings: 0

MariaDB [university]> commit ;
Query OK, 0 rows affected (0.001 sec)

MariaDB [university]> select *
-> from student
-> where ID=45678;
+-----+-----+-----+-----+
| ID      | name  | dept_name | tot_cred |
+-----+-----+-----+-----+
| 45678   | Levi  | Physics   | 46       |
+-----+-----+-----+-----+
1 row in set (0.000 sec)
```

Rollback
(failed)

```
MariaDB [university]> rollback ;
Query OK, 0 rows affected (0.000 sec)

MariaDB [university]> select *
-> from student
-> where ID=45678;
+-----+-----+-----+-----+
| ID      | name  | dept_name | tot_cred |
+-----+-----+-----+-----+
| 45678   | Levi  | Physics   | 46       |
+-----+-----+-----+-----+
1 row in set (0.000 sec)
```

Example-2: Adding 5 credits to all students.

Updating (without commit)	<pre> MariaDB [university]> update student -> set tot_cred=tot_cred+5; Query OK, 13 rows affected (0.000 sec) Rows matched: 13 Changed: 13 Warnings: 0 MariaDB [university]> select * -> from student; +-----+-----+-----+-----+ ID name dept_name tot_cred +-----+-----+-----+-----+ 00128 Zhang Comp. Sci. 107 12345 Shankar Comp. Sci. 37 19991 Brandt History 85 23121 Chavez Finance 115 44553 Peltier Physics 61 45678 Levi Physics 51 54321 Williams Comp. Sci. 59 55739 Sanchez Music 43 70557 Snow Physics 5 76543 Brown Comp. Sci. 63 76653 Aoi Elec. Eng. 65 98765 Bourikas Elec. Eng. 103 98988 Tanaka Biology 125 +-----+-----+-----+-----+ 13 rows in set (0.000 sec) </pre>
Rollback	<pre> MariaDB [university]> rollback; Query OK, 0 rows affected (0.001 sec) MariaDB [university]> select * -> from student; +-----+-----+-----+-----+ ID name dept_name tot_cred +-----+-----+-----+-----+ 00128 Zhang Comp. Sci. 102 12345 Shankar Comp. Sci. 32 19991 Brandt History 80 23121 Chavez Finance 110 44553 Peltier Physics 56 45678 Levi Physics 46 54321 Williams Comp. Sci. 54 55739 Sanchez Music 38 70557 Snow Physics 0 76543 Brown Comp. Sci. 58 76653 Aoi Elec. Eng. 60 98765 Bourikas Elec. Eng. 98 98988 Tanaka Biology 120 +-----+-----+-----+-----+ 13 rows in set (0.000 sec) </pre>

Updating
with
commit

```
MariaDB [university]> update student
-> set tot_cred=tot_cred+5;
Query OK, 13 rows affected (0.000 sec)
Rows matched: 13  Changed: 13  Warnings: 0
```

```
MariaDB [university]> commit ;
Query OK, 0 rows affected (0.002 sec)
```

```
MariaDB [university]> select *
-> from student;
```

ID	name	dept_name	tot_cred
00128	Zhang	Comp. Sci.	107
12345	Shankar	Comp. Sci.	37
19991	Brandt	History	85
23121	Chavez	Finance	115
44553	Peltier	Physics	61
45678	Levi	Physics	51
54321	Williams	Comp. Sci.	59
55739	Sanchez	Music	43
70557	Snow	Physics	5
76543	Brown	Comp. Sci.	63
76653	Aoi	Elec. Eng.	65
98765	Bourikas	Elec. Eng.	103
98988	Tanaka	Biology	125

13 rows in set (0.000 sec)

Rollback
(failed)

```
MariaDB [university]> rollback ;
Query OK, 0 rows affected (0.000 sec)
```

```
MariaDB [university]> select *
-> from student;
```

ID	name	dept_name	tot_cred
00128	Zhang	Comp. Sci.	107
12345	Shankar	Comp. Sci.	37
19991	Brandt	History	85
23121	Chavez	Finance	115
44553	Peltier	Physics	61
45678	Levi	Physics	51
54321	Williams	Comp. Sci.	59
55739	Sanchez	Music	43
70557	Snow	Physics	5
76543	Brown	Comp. Sci.	63
76653	Aoi	Elec. Eng.	65
98765	Bourikas	Elec. Eng.	103
98988	Tanaka	Biology	125

13 rows in set (0.000 sec)

B. Create a user and do the following on 'Student' Table: - [1]

```
MariaDB [(none)]> create user Yogesh identified by 'yogesh123';
Query OK, 0 rows affected (0.001 sec)
```

```
MariaDB [(none)]> select user
    -> from mysql.user;
+-----+
| User      |
+-----+
| Yogesh    |
| root      |
| root      |
| root      |
| root      |
| root      |
| mariadb.sys |
| root      |
+-----+
7 rows in set (0.001 sec)
```

a. Login as User and use 'SELECT'.

```
PS C:\Users\raghu\IdeaProjects\DBMS> mysql -u Yogesh -p
Enter password: *****
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 18
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.student;
ERROR 1142 (42000): SELECT command denied to user 'Yogesh'@'localhost' for table 'student'

Permission denied.
```

b. Grant Select permission to the user.

```
PS C:\Users\raghu\IdeaProjects\DBMS> mysql -u root -p
Enter password: *****
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 20
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)]> grant select on university.student to 'Yogesh';
Query OK, 0 rows affected (0.002 sec)
```

c. Now again try using 'SELECT' as a user.

```
PS C:\Users\raghu\IdeaProjects\DBMS> mysql -u Yogesh -p
Enter password: *****
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 21
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.student;
+-----+-----+-----+-----+
| ID    | name  | dept_name | tot_cred |
+-----+-----+-----+-----+
| 00128 | Zhang | Comp. Sci. | 107 |
| 12345 | Shankar | Comp. Sci. | 37 |
| 19991 | Brandt | History | 85 |
| 23121 | Chavez | Finance | 115 |
| 44553 | Peltier | Physics | 61 |
| 45678 | Levi | Physics | 51 |
| 54321 | Williams | Comp. Sci. | 59 |
| 55739 | Sanchez | Music | 43 |
| 70557 | Snow | Physics | 5 |
| 76543 | Brown | Comp. Sci. | 63 |
| 76653 | Aoi | Elec. Eng. | 65 |
| 98765 | Bourikas | Elec. Eng. | 103 |
| 98988 | Tanaka | Biology | 125 |
+-----+-----+-----+-----+
13 rows in set (0.001 sec)
```

d. Give update permission to the user

```
PS C:\Users\raghu\IdeaProjects\DBMS> mysql -u root -p
Enter password: ****
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 22
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)]> grant update on university.student to 'Yogesh';
Query OK, 0 rows affected (0.002 sec)
```

e. Try using 'UPDATE' as a user.

```
PS C:\Users\raghu\IdeaProjects\DBMS> mysql -u Yogesh -p
Enter password: *****
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 25
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.student where ID=12345;
+-----+-----+-----+-----+
| ID    | name  | dept_name | tot_cred |
+-----+-----+-----+-----+
| 12345 | Shankar | Comp. Sci. |      37 |
+-----+-----+-----+-----+
1 row in set (0.000 sec)

MariaDB [(none)]>
MariaDB [(none)]> update university.student set tot_cred = tot_cred+10 where ID=12345;
Query OK, 1 row affected (0.001 sec)
Rows matched: 1  Changed: 1  Warnings: 0

MariaDB [(none)]>
MariaDB [(none)]> select * from university.student where ID=12345;
+-----+-----+-----+-----+
| ID    | name  | dept_name | tot_cred |
+-----+-----+-----+-----+
| 12345 | Shankar | Comp. Sci. |      47 |
+-----+-----+-----+-----+
```

f. Drop the user.

```
MariaDB [(none)]> drop user 'Yogesh';
Query OK, 0 rows affected (0.002 sec)

MariaDB [(none)]> select user from mysql.user;
+-----+
| User          |
+-----+
| root          |
| root          |
| root          |
| root          |
| mariadb.sys   |
| root          |
+-----+
6 rows in set (0.001 sec)
```


C. Use Role to solve the tasks given in Q2. [1]

```
MariaDB [(none)]> create role manager;
Query OK, 0 rows affected (0.005 sec)

MariaDB [(none)]> create user Yogesh identified by 'Yogesh123';
Query OK, 0 rows affected (0.002 sec)

MariaDB [(none)]> grant manager to 'Yogesh';
Query OK, 0 rows affected (0.002 sec)
```

a. Login as manager and use 'SELECT'

```
PS C:\Users\raghu\IdeaProjects\DBMS> mysql -u Yogesh -p
Enter password: *****
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 59
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)]> set role manager;
Query OK, 0 rows affected (0.000 sec)

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

b. Grant 'SELECT' permission to manager role

```
PS C:\Users\raghu\IdeaProjects\DBMS> mysql -u root -p
Enter password: *****
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 31
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)]> grant select on university.student to manager;
Query OK, 0 rows affected (0.002 sec)
```

c. Now again try using 'select' as a manager role

```
PS C:\Users\raghu\IdeaProjects\DBMS> mysql -u Yogesh -p
Enter password: *****
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 38
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)]> set role manager;
Query OK, 0 rows affected (0.000 sec)

MariaDB [(none)]> select * from university.student;
+-----+-----+-----+-----+
| ID    | name  | dept_name | tot_cred |
+-----+-----+-----+-----+
| 00128 | Zhang | Comp. Sci. | 107 |
| 12345 | Shankar | Comp. Sci. | 47 |
| 19991 | Brandt | History | 85 |
| 23121 | Chavez | Finance | 115 |
| 44553 | Peltier | Physics | 61 |
| 45678 | Levi | Physics | 51 |
| 54321 | Williams | Comp. Sci. | 59 |
| 55739 | Sanchez | Music | 43 |
| 70557 | Snow | Physics | 5 |
| 76543 | Brown | Comp. Sci. | 63 |
| 76653 | Aoi | Elec. Eng. | 65 |
| 98765 | Bourikas | Elec. Eng. | 103 |
| 98988 | Tanaka | Biology | 125 |
+-----+-----+-----+-----+
```

d. Give update permissions to manager role.

```
PS C:\Users\raghu\IdeaProjects\DBMS> mysql -u root -p
Enter password: *****
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 39
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)]> grant update on university.student to manager;
Query OK, 0 rows affected (0.001 sec)
```

e. Try to update as a manager

```
PS C:\Users\raghu\IdeaProjects\DBMS> mysql -u Yogesh -p
Enter password: *****
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 41
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)]> set role manager;
Query OK, 0 rows affected (0.000 sec)

MariaDB [(none)]> select * from university.student where ID=12345;
+-----+-----+-----+-----+
| ID    | name  | dept_name | tot_cred |
+-----+-----+-----+-----+
| 12345 | Shankar | Comp. Sci. |      47 |
+-----+-----+-----+-----+
1 row in set (0.001 sec)

MariaDB [(none)]>
MariaDB [(none)]> update university.student set tot_cred=tot_cred+10 where ID=12345;
Query OK, 1 row affected (0.001 sec)
Rows matched: 1  Changed: 1  Warnings: 0

MariaDB [(none)]>
MariaDB [(none)]> select * from university.student where ID=12345;
+-----+-----+-----+-----+
| ID    | name  | dept_name | tot_cred |
+-----+-----+-----+-----+
| 12345 | Shankar | Comp. Sci. |      57 |
+-----+-----+-----+-----+
1 row in set (0.000 sec)
```

f. Drop the user and role

```
MariaDB [(none)]> drop user 'Yogesh';
Query OK, 0 rows affected (0.001 sec)

MariaDB [(none)]> drop role 'manager';
Query OK, 0 rows affected (0.001 sec)
```

D. Do the following tasks: - [2]

a. Create a user 'abc' and grant all permissions to it.

```
MariaDB [(none)]> create user 'abc' identified by 'cba';
Query OK, 0 rows affected (0.001 sec)

MariaDB [(none)]> grant all privileges on *.* to 'abc' with grant option ;
Query OK, 0 rows affected (0.002 sec)
```

b. Login as 'abc' and create another user 'def'.

```
PS C:\Users\raghu\IdeaProjects\DBMS> mysql -u abc -p
Enter password: ***
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 45
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)]> create user 'def' identified by 'fed';
Query OK, 0 rows affected (0.002 sec)
```

c. User 'abc' will assign permissions to 'def' to view and update data of student table.

```
PS C:\Users\raghu\IdeaProjects\DBMS> mysql -u abc -p
Enter password: ***
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 53
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)]> grant select, update on university.student to 'def';
Query OK, 0 rows affected (0.001 sec)
```

d. Login as 'def' and use the permissions given to 'def'

```
PS C:\Users\raghu\IdeaProjects\DBMS> mysql -u def -p
Enter password: ***
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 54
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.student where ID=12345;
+-----+-----+-----+-----+
| ID    | name  | dept_name | tot_cred |
+-----+-----+-----+-----+
| 12345 | Shankar | Comp. Sci. |      57 |
+-----+-----+-----+-----+
1 row in set (0.000 sec)

MariaDB [(none)]> update university.student set tot_cred=tot_cred+10 where ID=12345;
Query OK, 1 row affected (0.001 sec)
Rows matched: 1  Changed: 1  Warnings: 0

MariaDB [(none)]> select * from university.student where ID=12345;
+-----+-----+-----+-----+
| ID    | name  | dept_name | tot_cred |
+-----+-----+-----+-----+
| 12345 | Shankar | Comp. Sci. |      67 |
+-----+-----+-----+-----+
1 row in set (0.000 sec)
```

e. Drop user 'abc'

```
MariaDB [(none)]> drop user 'abc';  
Query OK, 0 rows affected (0.001 sec)
```

f. Login as 'def' and check if it has the permissions specified or not. Justify your answer.

```
PS C:\Users\raghu\IdeaProjects\DBMS> mysql -u def -p  
Enter password: ***  
Welcome to the MariaDB monitor.  Commands end with ; or \g.  
Your MariaDB connection id is 56  
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)]> show grants;  
+-----+  
| Grants for def@% |  
+-----+  
| GRANT USAGE ON *.* TO `def`@`%` IDENTIFIED BY PASSWORD '*8C6AF7ACCB56BE82F7EE97C266E7A60EAE38C208' |  
| GRANT SELECT, UPDATE ON `university`.`student` TO `def`@`%` |  
+-----+  
2 rows in set (0.000 sec)
```

The permissions still exist as the user as only the user 'abc' is removed but the permissions given are not revoked. If revoke with cascade was done before removing 'abc' then 'def' would have also lost the privileges.

g. Drop user 'def'.

```
MariaDB [(none)]> drop user 'def';  
Query OK, 0 rows affected (0.002 sec)
```

h. Create user 'def' and check if it has the permissions specified or not

```
MariaDB [(none)]> create user 'def' identified by 'fed';  
Query OK, 0 rows affected (0.001 sec)  
  
MariaDB [(none)]> show grants for 'def';  
+-----+  
| Grants for def@% |  
+-----+  
| GRANT USAGE ON *.* TO `def`@`%` IDENTIFIED BY PASSWORD '*8C6AF7ACCB56BE82F7EE97C266E7A60EAE38C208' |  
+-----+  
1 row in set (0.000 sec)
```

The user 'def' is a completely new user and not the same 'def' user so this user does not have the permissions given to the old 'def' user.