Course: Database management
Unit: Intermediate SQL 1
Material: Transactions 2

Note: You need to experiment and verify yourself with the services of your DBMS. A concrete DBMS may differ in the way it support basic SQL transaction services.

1. Login into MariaDB as root and create a database ‘TestDB’ (to login as root you must be root in the shell prompt).

2. Create a new user ‘student’ (password ‘alualualu’) and grant all privileges to TestDB in localhost.

```
MariaDB [(none)]> GRANT ALL ON TestDB.* TO 'student'@'localhost'  IDENTIFIED BY 'alualualu';
--we’ll see how to create users later…
```

3. Exit from the "root" user session from the MariaDB session, and exit the root's session from bash.

4. Login to MariaDB as ‘student’ and use ‘TestDB’.

5. Create a new table named "T", having three columns: id (of type integer, the primary key), s (of type character string with a length varying from 1 to 40 characters), and si (of type small integer):

6. Check if the table was created with the command ‘DESCRIBE T’ and show the SQL code of the creation of the table with ‘SHOW CREATE TABLE T’.

NOTE: MariaDB in Linux is case insensitive, with the exception of table and database names. This means that the following work fine: "Describe T", "describe T", "create TaBle T ...", but "use testDB", and "describe t" will fail.

7. Insert the next rows into the table ‘T’. After that, check if the rows were really inserted.

1	‘first’
2	‘second’
3	‘third’

8. Execute a ‘ROLLBACK’. Did the changes disappeared? Why?

9. Delete the data inserted into T with a DELETE command. After that start a transaction and repeat exercises 7 and 8. Now, ROLLBACK the transaction. DML commands were rolled back?

10. Execute:

```
INSERT INTO T (id, s) VALUES (4, 'fourth');
ROLLBACK;
```

SELECT * FROM T;

- What's the result? Why?

11. Now, set autocommit to off.

12. Delete all the rows from T and execute 'COMMIT'.

13. Insert the next columns and execute a query to check if they were inserted.

5	'fifth'
6	'sixth'

14. Now execute 'ROLLBACK' and execute a query to show all the rows in the relation T. Are there the rows that you just inserted in exercise 13.

15. Execute:

```
SET AUTOCOMMIT=0;
INSERT INTO T (id, s) VALUES (9, 'will this be committed?');
CREATE TABLE T2 (id INT);
INSERT INTO T2 (id) VALUES (1);
SELECT * FROM T2;
ROLLBACK;
DROP TABLE T2;
COMMIT;
```

Secondly, execute:

```
SELECT * FROM T;
DESCRIBE T2;
```

Explain what happened.

16. Empty the contents of the table T (and check it!) with the following commands:

```
SET AUTOCOMMIT=0;
DELETE FROM T;
COMMIT;
SELECT * FROM T;
```

We will see this better in following units, but we'll use the following commands:

- SHOW ERRORS
- SHOW WARNINGS

Execute the following commands:

```
SET AUTOCOMMIT=0;
INSERT INTO T (id, s) VALUES (1, 'This row is OK, but errors start here...');
SHOW ERRORS;
SHOW WARNINGS;
-- Is this a mistake/warning?
SELECT (1/0) AS dummy FROM DUAL;
SHOW ERRORS;
SHOW WARNINGS;
```

```
-- Is this a mistake/warning?
UPDATE T SET s = 'foo' WHERE id = 9999 ;
SHOW ERRORS;
SHOW WARNINGS;
-- Is this a mistake/warning?
DELETE FROM T WHERE id = 7777 ;
SHOW ERRORS;
SHOW WARNINGS;
-- Is this a mistake/warning?
INSERT INTO T (id, s) VALUES (1, 'Hi, I am a duplicate');
SHOW ERRORS;
SHOW WARNINGS;
-- Is this a mistake/warning?
INSERT INTO T (id, s)
 VALUES (3, 'How about inserting too long of a string value?');
SHOW ERRORS;
SHOW WARNINGS;
-- Is this a mistake/warning?
INSERT INTO T (id, s, si) VALUES (4, 'Smallint overflow for 32769?', 32769);
SHOW ERRORS;
SHOW WARNINGS;
```

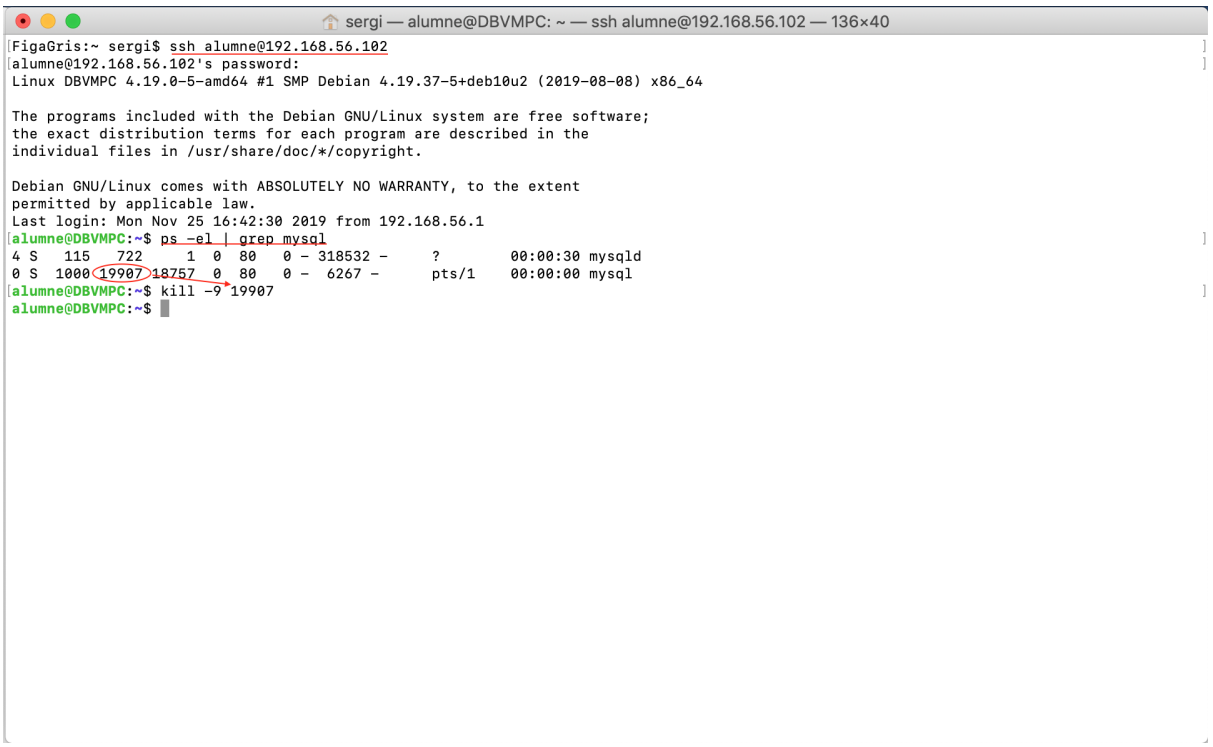
QUESTION: Explain every DML command (INSERT/UPDATE/DELETE) above and the reason why there is an error/warning or not.

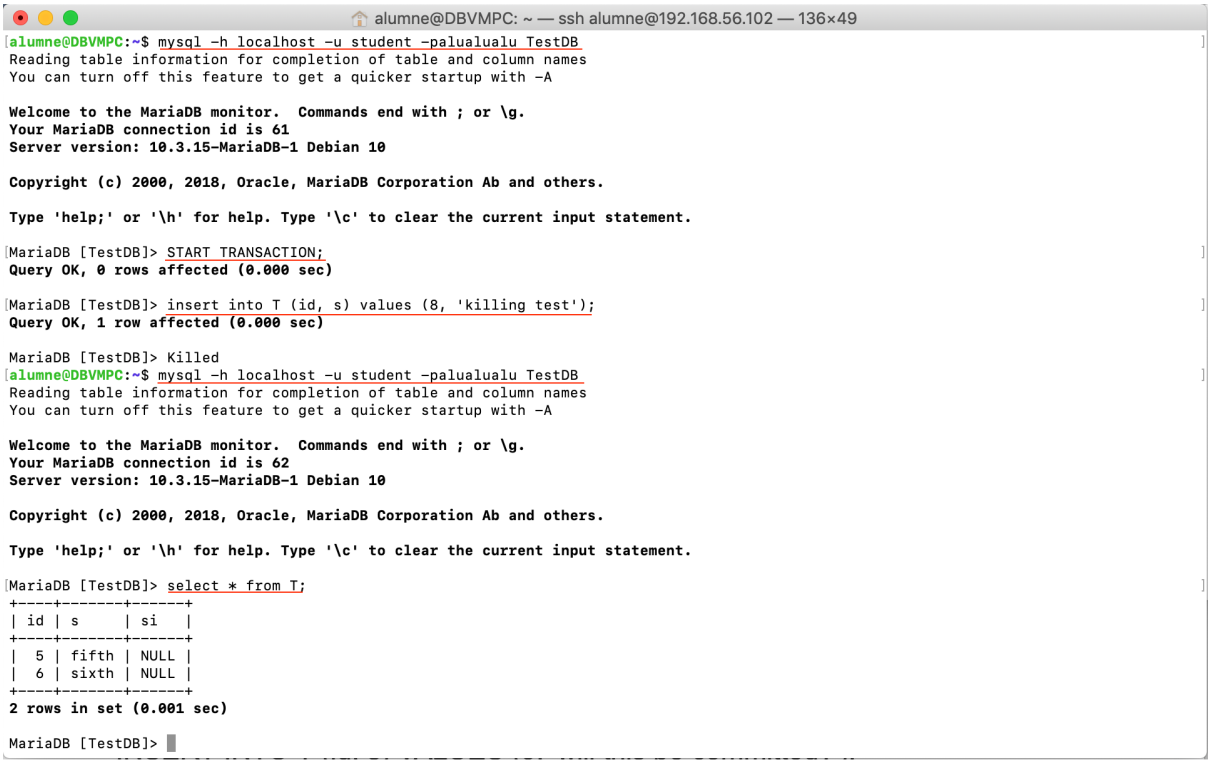
17. Execute:

```
INSERT INTO T (id, s) VALUES (5, 'Is the transaction still active?');
SELECT * FROM T;
```

QUESTION: Is the transaction still active? Explain your answer.

18. Begin a transaction with ‘START TRANSACTION’. After that insert a new row. In another terminal kill the process running mysql. Explain what happened with the file inserted.


sergi — alumne@DBVMPC: ~ — ssh alumne@192.168.56.102 — 136×40
FigaGris:~ sergi$ ssh alumne@192.168.56.102
alumne@192.168.56.102's password:
Linux DBVMPC 4.19.0-5-amd64 #1 SMP Debian 4.19.37-5+deb10u2 (2019-08-08) x86_64
The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Mon Nov 25 16:42:30 2019 from 192.168.56.1
alumne@DBVMPC:~$ ps -el | grep mysql
4 S 115 722 1 0 80 0 - 318532 - ? 00:00:30 mysqld
0 S 1000 19907 18757 0 80 0 - 6267 - pts/1 00:00:00 mysql
alumne@DBVMPC:~$ kill -9 19907
alumne@DBVMPC:~$


alumne@DBVMPC: ~ — ssh alumne@192.168.56.102 — 136×49
alumne@DBVMPC:~$ mysql -h localhost -u student -palualualu TestDB
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MariaDB connection id is 61
Server version: 10.3.15-MariaDB-1 Debian 10
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 [TestDB]> START TRANSACTION;
Query OK, 0 rows affected (0.000 sec)
MariaDB [TestDB]> insert into T (id, s) values (8, 'killing test');
Query OK, 1 row affected (0.000 sec)
MariaDB [TestDB]> Killed
alumne@DBVMPC:~$ mysql -h localhost -u student -palualualu TestDB
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MariaDB connection id is 62
Server version: 10.3.15-MariaDB-1 Debian 10
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 [TestDB]> select * from T;
+----+-------+------+
| id | s | si |
+----+-------+------+
| 5 | fifth | NULL |
| 6 | sixth | NULL |
+----+-------+------+
2 rows in set (0.001 sec)
MariaDB [TestDB]>