

DCL (Data Control Language) :

A Data Control Language is a syntax similar to a computer programming language used to control access to data stored in a database (Authorization). In particular, it is a component of Structured Query Language (SQL).

Examples of DCL commands :

GRANT: allow specified users to perform specified tasks.

REVOKE: cancel previously granted or denied permissions.

The operations for which privileges may be granted to or revoked from a user or role apply to both the Data definition language (DDL) and the Data manipulation language (DML), and may include CONNECT, SELECT, INSERT, UPDATE, DELETE, EXECUTE and USAGE.

In the Oracle database, executing a DCL command issues an implicit commit. Hence, you cannot roll back the command.

TCL (Transaction Control Language) :

Transaction Control Language commands are used to manage transactions in the database. These are used to manage the changes made by DML-statements. It also allows statements to be grouped together into logical transactions.

Examples of TCL commands –

COMMIT: Commit command is used to permanently save any transaction into the database.

ROLLBACK: This command restores the database to last committed state.

It is also used with savepoint command to jump to a savepoint in a transaction.

SAVEPOINT: Savepoint command is used to temporarily save a transaction so that you can rollback to that point whenever necessary.

PROBLEMS

a. Develop a query to grant some privileges of emp table.

QUERIES

```
user$ mysql -u root -p
create user roshanx@localhost identified by "*****";
grant select on lab.emp to roshanx@localhost;
exit
user$ mysql -u roshanx -p
show grants for roshanx@localhost;
```

```
[mysql> show grants for roshanx@localhost;
+-----+
| Grants for roshanx@localhost |
+-----+
| GRANT USAGE ON *.* TO `roshanx`@`localhost` |
| GRANT SELECT ON `lab`.`emp` TO `roshanx`@`localhost` |
+-----+
2 rows in set (0.00 sec)
```

select * from lab.emp;

```
mysql> select * from lab.emp;
```

EMPNO	ENAME	JOB	DEPTNO	SAL
1	ROSHAN SHRESTHA	MANAGER	1	200000
2	UKESH SHRESTHA	ASST.MANAGER	1	100000
3	SUMIT ADHIKARI	SALES HEAD	2	100000
4	SHREEJAN BALAMI	SALES OFFICER	3	80000
5	KUSHAL PIYA	ASP	4	15000
6	RAMESH SHRESTHA	ASP	5	15000
7	RUBEEN SHRESTHA	IT	7	55000

```
7 rows in set (0.01 sec)
```

b. Develop a query to revoke privileges of emp table.

QUERIES

mysql -u root -p

revoke select on lab.emp from roshanx@localhost;

show grants for roshanx@localhost;

```
mysql> revoke select on lab.emp from roshanx@localhost;
Query OK, 0 rows affected (0.01 sec)

mysql> show grants for roshanx@localhost;
```

Grants for roshanx@localhost
GRANT USAGE ON *.* TO `roshanx`@`localhost`

```
1 row in set (0.00 sec)
```

c. Write a query to implement save point.

QUERIES

set autocommit =0;

select * from emp;

insert into emp values(8, "Sagar Thapa", "IT", 8, 55000);

savepoint s1;

```
mysql> set autocommit =0;
Query OK, 0 rows affected (0.00 sec)

mysql> select * from emp;
+-----+-----+-----+-----+-----+
| EMPNO | ENAME          | JOB          | DEPTNO | SAL    |
+-----+-----+-----+-----+-----+
| 1     | ROSHAN SHRESTHA | MANAGER      | 1       | 200000 |
| 2     | UKESH SHRESTHA  | ASST.MANAGER | 1       | 100000 |
| 3     | SUMIT ADHIKARI  | SALES HEAD   | 2       | 100000 |
| 4     | SHREEJAN BALAMI | SALES OFFICER | 3       | 80000  |
| 5     | KUSHAL PIYA     | ASP          | 4       | 15000  |
| 6     | RAMESH SHRESTHA | ASP          | 5       | 15000  |
| 7     | RUBEEN SHRESTHA | IT           | 7       | 55000  |
+-----+-----+-----+-----+-----+
7 rows in set (0.00 sec)

mysql> insert into emp values(8, "Sagar Thapa", "IT", 8, 55000);
Query OK, 1 row affected (0.01 sec)

mysql> savepoint s1;
Query OK, 0 rows affected (0.00 sec)
```

d. Write a query to implement the rollback.

QUERIES

```
insert into emp values(9, "Sabin Thapa", "IT", 8, 50000);
select * from emp;
rollback to savepoint s1;
select * from emp;
```

```
mysql> insert into emp values(9, "Sabin Thapa", "IT", 8, 50000);
Query OK, 1 row affected (0.00 sec)

mysql> select * from emp;
+-----+-----+-----+-----+-----+
| EMPNO | ENAME          | JOB          | DEPTNO | SAL    |
+-----+-----+-----+-----+-----+
| 1     | ROSHAN SHRESTHA | MANAGER      | 1       | 200000 |
| 2     | UKESH SHRESTHA  | ASST.MANAGER | 1       | 100000 |
| 3     | SUMIT ADHIKARI  | SALES HEAD   | 2       | 100000 |
| 4     | SHREEJAN BALAMI | SALES OFFICER | 3       | 80000  |
| 5     | KUSHAL PIYA     | ASP          | 4       | 15000  |
| 6     | RAMESH SHRESTHA | ASP          | 5       | 15000  |
| 7     | RUBEEN SHRESTHA | IT           | 7       | 55000  |
| 8     | Sagar Thapa     | IT           | 8       | 55000  |
| 9     | Sabin Thapa     | IT           | 8       | 50000  |
+-----+-----+-----+-----+-----+
9 rows in set (0.00 sec)

mysql> rollback to savepoint s1;
Query OK, 0 rows affected (0.00 sec)

mysql> select * from emp;
+-----+-----+-----+-----+-----+
| EMPNO | ENAME          | JOB          | DEPTNO | SAL    |
+-----+-----+-----+-----+-----+
| 1     | ROSHAN SHRESTHA | MANAGER      | 1       | 200000 |
| 2     | UKESH SHRESTHA  | ASST.MANAGER | 1       | 100000 |
| 3     | SUMIT ADHIKARI  | SALES HEAD   | 2       | 100000 |
| 4     | SHREEJAN BALAMI | SALES OFFICER | 3       | 80000  |
| 5     | KUSHAL PIYA     | ASP          | 4       | 15000  |
| 6     | RAMESH SHRESTHA | ASP          | 5       | 15000  |
| 7     | RUBEEN SHRESTHA | IT           | 7       | 55000  |
| 8     | Sagar Thapa     | IT           | 8       | 55000  |
+-----+-----+-----+-----+-----+
8 rows in set (0.00 sec)
```

e. Write a query to implement the commit.

QUERIES

```
insert into emp values(9, "Sabin Thapa", "IT", 8, 50000);
```

```
commit;
```

```
rollback;
```

```
select * from emp;
```

```
[mysql> insert into emp values(9, "Sabin Thapa", "IT", 8, 50000);  
Query OK, 1 row affected (0.01 sec)
```

```
[mysql> commit;  
Query OK, 0 rows affected (0.00 sec)
```

```
[mysql> rollback;  
Query OK, 0 rows affected (0.00 sec)
```

```
[mysql> select * from emp;
```

EMPNO	ENAME	JOB	DEPTNO	SAL
1	ROSHAN SHRESTHA	MANAGER	1	200000
2	UKESH SHRESTHA	ASST.MANAGER	1	100000
3	SUMIT ADHIKARI	SALES HEAD	2	100000
4	SHREEJAN BALAMI	SALES OFFICER	3	80000
5	KUSHAL PIYA	ASP	4	15000
6	RAMESH SHRESTHA	ASP	5	15000
7	RUBEEN SHRESTHA	IT	7	55000
8	Sagar Thapa	IT	8	55000
9	Sabin Thapa	IT	8	50000

```
9 rows in set (0.00 sec)
```