18CSC303J/ DBMS

Submitted By:- ANANNYA P. NEOG (RA1911003010367)

Exp-3: SQL DCL & TCL COMMANDS

Aim:- To write SQL queries to execute different DCL and TCL commands.

Commands:

DCL
- GRANT
- REVOKE

TCL
- COMMIT
- ROLLBACK
- SAVEPOINT

Procedure:-

Data Control Language (DCL) Commands:

DCL includes commands such as GRANT and REVOKE which mainly deal with the rights, permissions, and other controls of the database system.

List of DCL commands:

- **GRANT:** This command gives users access privileges to the database.

Syntax,

```
GRANT privileges_names ON object TO user;
```

Example:

Create user first identified by passwd;

Grant select on customers to first;

- **REVOKE:** This command withdraws the user's access privileges given by using the GRANT command.

Syntax,

```
REVOKE privileges ON object FROM user;
```

Example:

Revoke select on customers from first;

Transaction Control Language (TCL) Commands:

- **COMMIT**: Commits a Transaction.

  Syntax:

  ```
  COMMIT;
  ```

  Example:

  INSERT INTO customers

VALUES ('1006','2020-03-04',3200,'DL', '1008');

  Commit;

  Select * from customers;

- **ROLLBACK**: Rollbacks a transaction in case of any error occurs.

  Syntax:

  ```
  Rollback;
  ```

  Example:

  DELETE FROM customers

  WHERE store_state = 'MH'

  AND customer_id = '1002';

  Select * from customers;

  Rollback;

  Select * from customers;

- **SAVEPOINT**:Sets a savepoint within a transaction.

  Syntax:

  ```
  SAVEPOINT SAVEPOINT_NAME;
  ```
This command is used only in the creation of SAVEPOINT among all the transactions.
In general ROLLBACK is used to undo a group of transactions.

Syntax for rolling back to Savepoint command:

```
ROLLBACK TO SAVEPOINT_NAME;
```

  Example:

   SAVEPOINT SP1;

   DELETE FROM customers

   WHERE store_state = 'MH'

   AND customer_id = '1002';

   SAVEPOINT SP2;

   ROLLBACK TO SP1;

   Select * from customers;

Execution:-

SQL*Plus: Release 11.2.0.4.0 Production on Wed Feb 16 16:41:35 2022

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Enter user-name: **RA1911003010367/RA1911003010367@f1-drjebakumar.co86hfjmfjkx.us-west-2.rds.amazonaws.com:1521/F1**

Connected to:
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production

SQL> **spool exp4.lst;**
SQL> create table customer (customer_id number,sale_date date, sale_amt number, salesperson varchar(50), store_state varchar(20),
 2   2 order_id number);
 2 order_id number)
 *
ERROR at line 2:
ORA-00904: : invalid identifier

SQL> create table customer (customer_id number,sale_date date, sale_amt number, salesperson varchar(50), store_state varchar(20),
 2   2 order_id number);
 2 order_id number)
 *
ERROR at line 2:
ORA-00904: : invalid identifier

SQL> **create table customer (customer_id number,sale_date date, sale_amt number, salesperson varchar(50), store_state varchar(20),**
 2 order_id number);

Table created.

SQL> **insert into customer values(1001, '01-Jun-2021', 1200, 'Mukesh', 'UP', 1001);**

1 row created.

SQL> **insert into customer values(1003, '05-Aug-2021', 1500, 'Ravi', 'MP', 1002);**

1 row created.

SQL> **insert into customer values(1005, '10-Sep-2021', 2000, 'Rakesh', 'Haryana', 1003);**

1 row created.

SQL> **insert into customer values(1007, '11-Dec-2021', 500, 'Patil', 'Gujarat', 1004);**

1 row created.

SQL> **select * from customer;**

```
CUSTOMER_ID SALE_DATE   SALE_AMT
---------- --------- ----------
SALESPERSON                      STORE_STATE
------------------------------------------------ -------------------
  ORDER_ID
----------
     1001 01-JUN-21     1200
Mukesh                        UP
   1001

     1003 05-AUG-21     1500
Ravi                          MP
   1002

CUSTOMER_ID SALE_DATE   SALE_AMT
---------- --------- ----------
SALESPERSON                      STORE_STATE
------------------------------------------------ -------------------
  ORDER_ID
----------
     1005 10-SEP-21     2000
Rakesh                        Haryana
   1003

     1007 11-DEC-21     500
Patil                         Gujarat

CUSTOMER_ID SALE_DATE   SALE_AMT
---------- --------- ----------
SALESPERSON                      STORE_STATE
------------------------------------------------ -------------------
  ORDER_ID
----------
     1004
```

SQL> **grant select on customer to public;**

Grant succeeded.

SQL> **revoke select on customer from public;**

Revoke succeeded.

SQL> **insert into customer values(1007, '04-Jan-2020', 5000, 'ChampakLal', 'Gujarat', 1010);**

1 row created.

SQL> **commit;**

Commit complete.

```
SQL> select * from customer;

CUSTOMER_ID SALE_DATE   SALE_AMT
----------- --------- ----------
SALESPERSON                          STORE_STATE
-------------------------------------------------- --------------------
 ORDER_ID
----------

       1001 01-JUN-21     1200
Mukesh                                UP
    1001


       1003 05-AUG-21     1500
Ravi                                  MP
    1002

CUSTOMER_ID SALE_DATE   SALE_AMT
----------- --------- ----------
SALESPERSON                          STORE_STATE
-------------------------------------------------- --------------------
 ORDER_ID
----------

       1005 10-SEP-21     2000
Rakesh                               Haryana
    1003

       1007 11-DEC-21      500
Patil                                Gujarat

CUSTOMER_ID SALE_DATE   SALE_AMT
----------- --------- ----------
SALESPERSON                          STORE_STATE
-------------------------------------------------- --------------------
 ORDER_ID
----------
    1004

       1007 04-JAN-20     5000
ChampakLal                           Gujarat
    1010


SQL> delete from customer where store_state='UP' and customer_id='1001';

1 row deleted.

SQL>
SQL> 1 row deleted.
SQL>
```

SQL> **select * from customer;**

CUSTOMER_ID SALE_DATE SALE_AMT
---------- --------- ----------
SALESPERSON   STORE_STATE
-- --------------------
  ORDER_ID

    1003 05-AUG-21   1500
Ravi   MP
    1002

    1005 10-SEP-21   2000
Rakesh   Haryana
    1003

CUSTOMER_ID SALE_DATE SALE_AMT
---------- --------- ----------
SALESPERSON   STORE_STATE
-- --------------------
  ORDER_ID

    1007 11-DEC-21   500
Patil   Gujarat
    1004

    1007 04-JAN-20   5000
ChampakLal   Gujarat

CUSTOMER_ID SALE_DATE SALE_AMT
---------- --------- ----------
SALESPERSON   STORE_STATE
-- --------------------
  ORDER_ID

    1010

SQL> **rollback;**

Rollback complete.

SQL> **select * from customer;**

CUSTOMER_ID SALE_DATE SALE_AMT
---------- --------- ----------
SALESPERSON   STORE_STATE
-- --------------------
  ORDER_ID

    1001 01-JUN-21   1200

```
Mukesh                          UP
    1001


     1003 05-AUG-21     1500
Ravi                            MP
    1002

CUSTOMER_ID SALE_DATE   SALE_AMT
----------- --------- ----------
SALESPERSON                     STORE_STATE
-------------------------------------------------- --------------------
  ORDER_ID
----------

     1005 10-SEP-21     2000
Rakesh                          Haryana
    1003

     1007 11-DEC-21     500
Patil                           Gujarat

CUSTOMER_ID SALE_DATE   SALE_AMT
----------- --------- ----------
SALESPERSON                     STORE_STATE
-------------------------------------------------- --------------------
  ORDER_ID
----------
    1004

     1007 04-JAN-20     5000
ChampakLal                      Gujarat
    1010


SQL> savepoint sp;

Savepoint created.

SQL> delete from customer where store_state='MP' and customer_id='1003';

1 row deleted.

SQL> savepoint sp1;

Savepoint created.

SQL> rollback to sp;

Rollback complete.

SQL> select * from customer;

CUSTOMER_ID SALE_DATE   SALE_AMT
```

```
---------- -------- ----------
SALESPERSON                     STORE_STATE
-------------------------------------------------- -------------------
 ORDER_ID
----------
    1001 01-JUN-21     1200
Mukesh                          UP
   1001

    1003 05-AUG-21     1500
Ravi                            MP
   1002

CUSTOMER_ID SALE_DATE   SALE_AMT
---------- -------- ----------
SALESPERSON                     STORE_STATE
-------------------------------------------------- -------------------
 ORDER_ID
----------

    1005 10-SEP-21     2000
Rakesh                          Haryana
   1003

    1007 11-DEC-21      500
Patil                           Gujarat

CUSTOMER_ID SALE_DATE   SALE_AMT
---------- -------- ----------
SALESPERSON                     STORE_STATE
-------------------------------------------------- -------------------
 ORDER_ID
----------
    1004

    1007 04-JAN-20     5000
ChampakLal                      Gujarat
   1010


SQL> spool off;
SQL> spool edit exp3.lst
SP2-0768: Illegal SPOOL command
Usage: SPOOL { <file> | OFF | OUT }
where <file> is file_name[.ext] [CRE[ATE]|REP[LACE]|APP[END]]
SQL> edit exp3.lst

SQL> edit exp3.lst

SQL> spool edit exp4.lst
SP2-0768: Illegal SPOOL command
```

Usage: SPOOL { <file> | OFF | OUT }
where <file> is file_name[.ext] [CRE[ATE]|REP[LACE]|APP[END]]
SQL> **edit exp4.lst**

SQL>

```
SQL*Plus: Release 11.2.0.4.0 Production on Wed Feb 16 16:41:35 2022

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Enter user-name: RA1911003010367/RA1911003010367@f1-drjebakumar.co86hfjmfjkx.us-west-2.rds.amazonaws.com:1521/F1

Connected to:
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production

SQL> spool exp4.lst;
SQL> create table customer (customer_id number,sale_date date, sale_amt number, salesperson varchar(50), store_state varchar(20),
  2    2  order_id number);
  2  order_id number)
  *
ERROR at line 2:
ORA-00904: : invalid identifier


SQL> create table customer (customer_id number,sale_date date, sale_amt number, salesperson varchar(50), store_state varchar(20),
  2    2  order_id number);
  2  order_id number)
  *
ERROR at line 2:
ORA-00904: : invalid identifier


SQL> create table customer (customer_id number,sale_date date, sale_amt number, salesperson varchar(50), store_state varchar(20),
  2  order_id number);

Table created.

SQL> insert into customer values(1001, '01-Jun-2021', 1200, 'Mukesh', 'UP', 1001);

1 row created.

SQL> insert into customer values(1003, '05-Aug-2021', 1500, 'Ravi', 'MP', 1002);

1 row created.

SQL> insert into customer values(1005, '10-Sep-2021', 2000, 'Rakesh', 'Haryana', 1003);

1 row created.

SQL> insert into customer values(1007, '11-Dec-2021', 500, 'Patil', 'Gujarat', 1004);

1 row created.
```

```
SQL> select * from customer;

CUSTOMER_ID SALE_DATE   SALE_AMT
----------- --------- ----------
SALESPERSON                                 STORE_STATE
------------------------------------------- --------------------
  ORDER_ID
----------
       1001 01-JUN-21       1200
Mukesh                                      UP
       1001

       1003 05-AUG-21       1500
Ravi                                        MP
       1002

CUSTOMER_ID SALE_DATE   SALE_AMT
----------- --------- ----------
SALESPERSON                                 STORE_STATE
------------------------------------------- --------------------
  ORDER_ID
----------

       1005 10-SEP-21       2000
Rakesh                                      Haryana
       1003

       1007 11-DEC-21        500
Patil                                       Gujarat

CUSTOMER_ID SALE_DATE   SALE_AMT
----------- --------- ----------
SALESPERSON                                 STORE_STATE
------------------------------------------- --------------------
  ORDER_ID
----------
       1004


SQL> grant select on customer to public;

Grant succeeded.

SQL> revoke select on customer from public;

Revoke succeeded.
```

```
SQL> insert into customer values(1007, '04-Jan-2020', 5000, 'ChampakLal', 'Gujarat', 1010);

1 row created.

SQL> commit;

Commit complete.

SQL> select * from customer;

CUSTOMER_ID SALE_DATE   SALE_AMT
----------- --------- ----------
SALESPERSON                                 STORE_STATE
------------------------------------------- --------------------
  ORDER_ID
----------
       1001 01-JUN-21       1200
Mukesh                                      UP
       1001

       1003 05-AUG-21       1500
Ravi                                        MP
       1002

CUSTOMER_ID SALE_DATE   SALE_AMT
----------- --------- ----------
SALESPERSON                                 STORE_STATE
------------------------------------------- --------------------
  ORDER_ID
----------

       1005 10-SEP-21       2000
Rakesh                                      Haryana
       1003

       1007 11-DEC-21        500
Patil                                       Gujarat

CUSTOMER_ID SALE_DATE   SALE_AMT
----------- --------- ----------
SALESPERSON                                 STORE_STATE
------------------------------------------- --------------------
  ORDER_ID
----------
       1004

       1007 04-JAN-20       5000
ChampakLal                                  Gujarat
       1010
```

```
SQL> delete from customer where store_state='UP' and customer_id='1001';

1 row deleted.

SQL>
SQL> 1 row deleted.
SQL>
SQL> select * from customer;

CUSTOMER_ID SALE_DATE   SALE_AMT
----------- --------- ----------
SALESPERSON                                    STORE_STATE
---------------------------------------------- --------------------
   ORDER_ID
----------
      1003 05-AUG-21       1500
Ravi                                           MP
      1002

      1005 10-SEP-21       2000
Rakesh                                         Haryana
      1003

CUSTOMER_ID SALE_DATE   SALE_AMT
----------- --------- ----------
SALESPERSON                                    STORE_STATE
---------------------------------------------- --------------------
   ORDER_ID
----------

      1007 11-DEC-21        500
Patil                                          Gujarat
      1004

      1007 04-JAN-20       5000
ChampakLal                                     Gujarat

CUSTOMER_ID SALE_DATE   SALE_AMT
----------- --------- ----------
SALESPERSON                                    STORE_STATE
---------------------------------------------- --------------------
   ORDER_ID
----------
      1010
```

```
SQL> rollback;

Rollback complete.

SQL> select * from customer;

CUSTOMER_ID SALE_DATE   SALE_AMT
----------- --------- ----------
SALESPERSON                                    STORE_STATE
---------------------------------------------- --------------------
   ORDER_ID
----------
      1001 01-JUN-21       1200
Mukesh                                         UP
      1001

      1003 05-AUG-21       1500
Ravi                                           MP
      1002

CUSTOMER_ID SALE_DATE   SALE_AMT
----------- --------- ----------
SALESPERSON                                    STORE_STATE
---------------------------------------------- --------------------
   ORDER_ID
----------

      1005 10-SEP-21       2000
Rakesh                                         Haryana
      1003

      1007 11-DEC-21        500
Patil                                          Gujarat

CUSTOMER_ID SALE_DATE   SALE_AMT
----------- --------- ----------
SALESPERSON                                    STORE_STATE
---------------------------------------------- --------------------
   ORDER_ID
----------
      1004

      1007 04-JAN-20       5000
ChampakLal                                     Gujarat
      1010
```

```
SQL> savepoint sp;

Savepoint created.

SQL> delete from customer where store_state='MP' and customer_id='1003';

1 row deleted.

SQL> savepoint sp1;

Savepoint created.

SQL> rollback to sp;

Rollback complete.

SQL> select * from customer;

CUSTOMER_ID SALE_DATE    SALE_AMT
----------- ---------- ----------
SALESPERSON                                    STORE_STATE
---------------------------------------------- --------------------
  ORDER_ID
----------
      1001 01-JUN-21       1200
Mukesh                                         UP
      1001

      1003 05-AUG-21       1500
Ravi                                           MP
      1002

CUSTOMER_ID SALE_DATE    SALE_AMT
----------- ---------- ----------
SALESPERSON                                    STORE_STATE
---------------------------------------------- --------------------
  ORDER_ID
----------

      1005 10-SEP-21       2000
Rakesh                                         Haryana
      1003

      1007 11-DEC-21        500
Patil                                          Gujarat
```

```
CUSTOMER_ID SALE_DATE    SALE_AMT
----------- ---------- ----------
SALESPERSON                                    STORE_STATE
---------------------------------------------- --------------------
  ORDER_ID
----------
      1004

      1007 04-JAN-20       5000
ChampakLal                                     Gujarat
      1010


SQL> spool off;
SQL> spool edit exp3.lst
SP2-0768: Illegal SPOOL command
Usage: SPOOL { <file> | OFF | OUT }
where <file> is file_name[.ext] [CRE[ATE]|REP[LACE]|APP[END]]
SQL> edit exp3.lst

SQL> edit exp3.lst

SQL> spool edit exp4.lst
SP2-0768: Illegal SPOOL command
Usage: SPOOL { <file> | OFF | OUT }
where <file> is file_name[.ext] [CRE[ATE]|REP[LACE]|APP[END]]
SQL> edit exp4.lst

SQL>
```

```
SQL> create table customer (customer_id number,sale_date date, sale_amt number, salesperson varchar(50), store_state
varchar(20),
  2    2  order_id number);
  2  order_id number)
  *
ERROR at line 2:
ORA-00904: : invalid identifier


SQL> create table customer (customer_id number,sale_date date, sale_amt number, salesperson varchar(50), store_state
varchar(20),
  2    2  order_id number);
  2  order_id number)
  *
ERROR at line 2:
ORA-00904: : invalid identifier


SQL> create table customer (customer_id number,sale_date date, sale_amt number, salesperson varchar(50), store_state
varchar(20),
  2  order_id number);

Table created.

SQL> insert into customer values(1001, '01-Jun-2021', 1200, 'Mukesh', 'UP', 1001);

1 row created.

SQL> insert into customer values(1003, '05-Aug-2021', 1500, 'Ravi', 'MP', 1002);

1 row created.

SQL> insert into customer values(1005, '10-Sep-2021', 2000, 'Rakesh', 'Haryana', 1003);

1 row created.
```

```
SQL> insert into customer values(1007, '11-Dec-2021', 500, 'Patil', 'Gujarat', 1004);

1 row created.

SQL> select * from customer;

CUSTOMER_ID SALE_DATE   SALE_AMT
----------- --------- ----------
SALESPERSON                                        STORE_STATE
-------------------------------------------------- --------------------
  ORDER_ID
----------
       1001 01-JUN-21       1200
Mukesh                                             UP
      1001


       1003 05-AUG-21       1500
Ravi                                               MP
      1002

CUSTOMER_ID SALE_DATE   SALE_AMT
----------- --------- ----------
SALESPERSON                                        STORE_STATE
-------------------------------------------------- --------------------
  ORDER_ID
----------

       1005 10-SEP-21       2000
Rakesh                                             Haryana
      1003


       1007 11-DEC-21        500
Patil                                              Gujarat

CUSTOMER_ID SALE_DATE   SALE_AMT
----------- --------- ----------
SALESPERSON                                        STORE_STATE
-------------------------------------------------- --------------------
```

File   Edit   View

```
   -------------------------------------------- --------------------
    ORDER_ID
   ----------
         1004


SQL> grant select on customer to public;

Grant succeeded.

SQL> revoke select on customer from public;

Revoke succeeded.

SQL> insert into customer values(1007, '04-Jan-2020', 5000, 'ChampakLal', 'Gujarat', 1010);

1 row created.

SQL> commit;

Commit complete.

SQL> select * from customer;

CUSTOMER_ID SALE_DATE    SALE_AMT
----------- --------- ----------
SALESPERSON                                     STORE_STATE
-------------------------------------------- --------------------
   ORDER_ID
----------
        1001 01-JUN-21      1200
Mukesh                                          UP
       1001

        1003 05-AUG-21      1500
Ravi                                            MP
       1002
```

File   Edit   View

```
CUSTOMER_ID SALE_DATE    SALE_AMT
----------- --------- ----------
SALESPERSON                                     STORE_STATE
-------------------------------------------- --------------------
   ORDER_ID
----------

        1005 10-SEP-21      2000
Rakesh                                          Haryana
       1003

        1007 11-DEC-21       500
Patil                                           Gujarat

CUSTOMER_ID SALE_DATE    SALE_AMT
----------- --------- ----------
SALESPERSON                                     STORE_STATE
-------------------------------------------- --------------------
   ORDER_ID
----------
        1004

        1007 04-JAN-20      5000
ChampakLal                                      Gujarat
       1010


SQL> delete from customer where store_state='UP' and customer_id='1001';

1 row deleted.

SQL>
SQL> 1 row deleted.
SQL>
```

```
SQL> select * from customer;

CUSTOMER_ID SALE_DATE   SALE_AMT
----------- --------- ----------
SALESPERSON                                   STORE_STATE
--------------------------------------------- --------------------
  ORDER_ID
----------
      1003 05-AUG-21       1500
Ravi                                          MP
      1002

      1005 10-SEP-21       2000
Rakesh                                        Haryana
      1003

CUSTOMER_ID SALE_DATE   SALE_AMT
----------- --------- ----------
SALESPERSON                                   STORE_STATE
--------------------------------------------- --------------------
  ORDER_ID
----------

      1007 11-DEC-21        500
Patil                                         Gujarat
      1004

      1007 04-JAN-20       5000
ChampakLal                                    Gujarat

CUSTOMER_ID SALE_DATE   SALE_AMT
----------- --------- ----------
SALESPERSON                                   STORE_STATE
--------------------------------------------- --------------------
  ORDER_ID
----------
      1010
```

```
SQL> rollback;

Rollback complete.

SQL> select * from customer;

CUSTOMER_ID SALE_DATE   SALE_AMT
----------- --------- ----------
SALESPERSON                                   STORE_STATE
--------------------------------------------- --------------------
  ORDER_ID
----------
      1001 01-JUN-21       1200
Mukesh                                        UP
      1001

      1003 05-AUG-21       1500
Ravi                                          MP
      1002

CUSTOMER_ID SALE_DATE   SALE_AMT
----------- --------- ----------
SALESPERSON                                   STORE_STATE
--------------------------------------------- --------------------
  ORDER_ID
----------

      1005 10-SEP-21       2000
Rakesh                                        Haryana
      1003

      1007 11-DEC-21        500
Patil                                         Gujarat

CUSTOMER_ID SALE_DATE   SALE_AMT
----------- --------- ----------
SALESPERSON                                   STORE_STATE
--------------------------------------------- --------------------
```

```
------------------------------------------  --------------------
     ORDER_ID
   ----------
      1004

      1007 04-JAN-20       5000
ChampakLal                                        Gujarat
      1010


SQL> savepoint sp;

Savepoint created.

SQL> delete from customer where store_state='MP' and customer_id='1003';

1 row deleted.

SQL> savepoint sp1;

Savepoint created.

SQL> rollback to sp;

Rollback complete.

SQL> select * from customer;

CUSTOMER_ID SALE_DATE    SALE_AMT
----------- --------- ----------
SALESPERSON                                       STORE_STATE
------------------------------------------------  --------------------
     ORDER_ID
   ----------
      1001 01-JUN-21       1200
Mukesh                                            UP
      1001
```

```
   ----
      1003 05-AUG-21       1500
Ravi                                              MP
      1002

CUSTOMER_ID SALE_DATE    SALE_AMT
----------- --------- ----------
SALESPERSON                                       STORE_STATE
------------------------------------------------  --------------------
     ORDER_ID
   ----------
      1005 10-SEP-21       2000
Rakesh                                            Haryana
      1003

      1007 11-DEC-21        500
Patil                                             Gujarat

CUSTOMER_ID SALE_DATE    SALE_AMT
----------- --------- ----------
SALESPERSON                                       STORE_STATE
------------------------------------------------  --------------------
     ORDER_ID
   ----------
      1004

      1007 04-JAN-20       5000
ChampakLal                                        Gujarat
      1010


SQL> spool off;
```

Result:

Thus the DCL and TCL commands are used to modify or manipulate data records present in the customer database tables.