

Exercise : 1

AIM : Execute DDL,DML,DCL and TCL commands on below given relational schema.

EMP(Empno,Ename,Job,Salary,Mgr,Comm,Hiredate,Deptno).

Description :

SQL(Structured Query Language) is a standard language for storing, manipulating and retrieving data in databases.

The SQL uses four different languages for the commands

They are:

1. DDL – Data Definition Language.
2. DML –Data Manipulation Language.
3. DCL- Data Control Language.
4. TCL - Transaction Control Language.

Data Definition Language (DDL)

Data definition language actually consists of the SQL commands that can be used to define the database schema. It simply deals with descriptions of the database schema and is used to create and modify the structure of database objects in database

List of DDL commands :

1. CREATE
2. DROP
3. ALTER
4. TRUNCATE
5. RENAME



1. CREATE :

This command is used to create the database or its objects like table,index,function,views,store procedure and triggers.

Syntax :

```
CREATE table table_name( column 1 domain type 1 , column 2 domain type 2 , ...);
```

Example :

```
CREATE table EMP(Empno number(15),Ename varchar2(10),Job varchar2(10),Salary  
real,Mgr int,Comm real,Hiredate date,Deptno int);
```

```
desc emp;
```

```
SQL> CREATE table EMP(Empno number(15),Ename varchar2(10),Job varchar2(10),Salary real,Mgr int,Comm real,Hiredate date,Deptno int);  
Table created.  
  
SQL> desc emp;  
Name                               Null?    Type  
-----  
EMPNO                               NUMBER(15)  
ENAME                               VARCHAR2(10)  
JOB                                 VARCHAR2(10)  
SALARY                              FLOAT(63)  
MGR                                 NUMBER(38)  
COMM                                FLOAT(63)  
HIREDATE                            DATE  
DEPTNO                              NUMBER(38)
```

2. DROP :



This command is used to delete objects from database.

Syntax :

DROP table table_name;

Example :

DROP table EMP;

Select * from emp;

```
SQL> drop table emp;

Table dropped.

SQL> select * from emp;
select * from emp
          *
ERROR at line 1:
ORA-00942: table or view does not exist
```

3. ALTER :

This is used to alter the structure of the database.

Syntax :

ALTER TABLE - ADD COLUMN :

ALTER table table_name add column_name domain type ;

ALTER TABLE – DROP COLUMN :

ALTER table table_name DROP column column_name;

ALTER TABLE – MODIFY COLUMN :

ALTER table table_name MODIFY column_name datatype ;

Example :

ALTER table EMP add(fathername varchar2(20)) ;

```
SQL> ALTER table EMP add(fathername varchar2(20));  
Table altered.
```

Desc emp;

```
SQL> desc emp;  
Name                               Null?      Type  
-----  
EMPNO                               NUMBER(15)  
ENAME                               VARCHAR2(10)  
JOB                                 VARCHAR2(10)  
SALARY                              FLOAT(63)  
MGR                                 NUMBER(38)  
COMM                                FLOAT(63)  
HIREDATE                            DATE  
DEPTNO                              NUMBER(38)  
FATHERNAME                          VARCHAR2(20)
```

Alter table emp drop column fathername;

Desc emp;

```
SQL> Alter table emp drop column fathername;  
Table altered.  
SQL> desc emp;  
Name                               Null?      Type  
-----  
EMPNO                               NUMBER(15)  
ENAME                               VARCHAR2(10)  
JOB                                 VARCHAR2(10)  
SALARY                              FLOAT(63)  
MGR                                 NUMBER(38)  
COMM                                FLOAT(63)  
HIREDATE                            DATE  
DEPTNO                              NUMBER(38)
```



Alter table emp modify name varchar2(20);

Alter table emp modify empno int;

```
SQL> Alter table emp modify ename varchar2(50);
```

Table altered.

```
SQL> desc emp;
```

Name	Null?	Type
EMPNO		NUMBER(15)
ENAME		VARCHAR2(50)
JOB		VARCHAR2(10)
SALARY		FLOAT(63)
MGR		NUMBER(38)
COMM		FLOAT(63)
HIREDATE		DATE
DEPTNO		NUMBER(38)

```
SQL> Alter table emp modify empno int;
```

Table altered.

```
SQL> desc emp;
```

Name	Null?	Type
EMPNO		NUMBER(38)
ENAME		VARCHAR2(50)
JOB		VARCHAR2(10)
SALARY		FLOAT(63)
MGR		NUMBER(38)
COMM		FLOAT(63)
HIREDATE		DATE
DEPTNO		NUMBER(38)



4. TRUNCATE :

This is used to remove all records from a table , including all spaces allocated for the records are removed.

Syntax :

TRUNCATE table table_name

Example:

TRUNCATE table EMP;

Select * from emp;

```
SQL> truncate table emp;
Table truncated.
SQL> select * from emp;
no rows selected
```

5. RENAME

Rename will be in two situations.

1. To change the name of the table.
2. To change the name of the column.

Syntax

- i) alter table tablename rename to players.



Example

```
alter table player rename to players;  
Table altered.  
desc players;
```

Output

```
SQL> alter table  player rename to players;  
  
Table altered.  
  
SQL> desc players;  
Name                               Null?      Type  
-----  
ID                                  NUMBER(10)  
NAME                               VARCHAR2(20)  
EVENT                              VARCHAR2(10)  
  
SQL> _
```

ii) alter table tablename column<old-column> to <new-coloumn>



Example

```
alter table players rename column Event to Events;  
table altered.  
desc players;
```

Output

```
SQL> alter table  players rename column event to events;
```

```
Table altered.
```

```
SQL> desc players;
```

Name	Null?	Type
ID		NUMBER(10)
NAME		VARCHAR2(20)
EVENTS		VARCHAR2(10)

Data Manipulating Language (DML) :

The SQL commands that deals with the manipulation of data present in the data .
DML is the component of SQL statement that controls access to data and to the database.

List of DML commands :

1. SELECT – it is used to retrieve data from the database.
2. INSERT – it is used to insert data into a table.
3. UPDATE – it is used to update existing data within a table.
4. DELETE – it is used to delete records from a database table.

1. SELECT : It is used to select data from a database. The data returned is stored in a result table, called the result set.

Syntax :




```
SELECT * FROM table_name ;
```

Example :

```
Select * from EMP;
```



```
SQL> select * from emp;
```

EMPNO	ENAME	JOB	SALARY	MGR	COMM	HIREDATE
7369	smith	clerk	8000	7902	800	17-DEC-80
7499	allen	sales	15000	7698	800	20-FEB-81
7521	ward	sales	15000	7698	600	22-FEB-81

EMPNO	ENAME	JOB	SALARY	MGR	COMM	HIREDATE
7566	jones	manager	20000	7839	1000	02-APR-81
7782	clark	manager	20000	7839	1500	09-JAN-81
7788	scott	analyst	18000	7566	1200	19-APR-82

```
6 rows selected.
```

2. **INSERT** :It is an SQL command used to insert new rows in a table.



Syntax :

INSERT INTO table_name values(value1 , value 2 , ...);

Example :

```
insert into emp values(7369,'smith','clerk',8000,7902,800,'17-dec-80',20);
insert into emp values(7499,'allen','sales',15000,7698,800,'20-feb-81',30);
insert into emp values(7521,'ward','sales',15000,7698,600,'22-feb-81',30)
insert into emp values(7566,'jones','manager',20000,7839,1000,'2-apr-81',30);
insert into emp values(7782,'clark','manager',20000,7839,1500,'9-jan-81',40);
insert into emp values(7788,'scott','analyst',18000,7566,1200,'19-apr-82',40);
```

```
SQL> insert into emp values(7369,'smith','clerk',8000,7902,800,'17-dec-80',20);
1 row created.

SQL> insert into emp values(7499,'allen','sales',15000,7698,800,'20-feb-81',30);
1 row created.

SQL> insert into emp values(7521,'ward','sales',15000,7698,600,'22-feb-81',30);
1 row created.

SQL> insert into emp values(7566,'jones','manager',20000,7839,1000,'2-apr-81',30);
1 row created.

SQL> insert into emp values(7782,'clark','manager',20000,7839,1500,'9-jan-81',40);
1 row created.

SQL> insert into emp values(7788,'scott','analyst',18000,7566,1200,'19-apr-82',40);
1 row created.
```

3. UPDATE : It is an SQL command used to update existing rows in a table.

Syntax

UPDATE table_name

SET attribute = value

WHERE condition;

Example :

Update emp set salary = 200000 where empno = 7566;

```
SQL> Update emp set salary = 200000 where empno = 7566;  
1 row updated.
```

select * from emp;



```
SQL> select * from emp;
```

EMPNO	ENAME					JOB
SALARY	MGR	COMM	HIREDATE	DEPTNO		
7369	smith					clerk
8000	7902	800	17-DEC-80	20		
7499	allen					sales
15000	7698	800	20-FEB-81	30		
7521	ward					sales
15000	7698	600	22-FEB-81	30		
EMPNO	ENAME					JOB
SALARY	MGR	COMM	HIREDATE	DEPTNO		
7566	jones					manager
200000	7839	1000	02-APR-81	30		
7782	clark					manager
20000	7839	1500	09-JAN-81	40		
7788	scott					analyst
18000	7566	1200	19-APR-82	40		

```
6 rows selected.
```



4. DELETE :The delete command is an SQL command used to delete existing records in a table.

Syntax :

```
DELETE FROM table_name WHERE condition ;
```

Example :

```
DELETE FROM EMP WHERE empno = 7566;
```

```
Select * from emp;
```



```
SQL> DELETE FROM EMP WHERE empno = 7566;
```

```
1 row deleted.
```

```
SQL> select * from emp;
```

EMPNO	ENAME					JOB
SALARY		MGR	COMM	HIREDATE	DEPTNO	
7369	smith					clerk
8000		7902	800	17-DEC-80	20	
7499	allen					sales
15000		7698	800	20-FEB-81	30	
7521	ward					sales
15000		7698	600	22-FEB-81	30	
EMPNO	ENAME					JOB
SALARY		MGR	COMM	HIREDATE	DEPTNO	
7782	clark					manager
20000		7839	1500	09-JAN-81	40	
7788	scott					analyst
18000		7566	1200	19-APR-82	40	



Data Control Language (DCL) :

DCL commands mainly deals with the rights , permissions , and other controls of the database system.

List of DCL commands :

1. GRANT – this command gives users access privileges to the database.
2. REVOKE – this command withdraws the users access privileges given by the GRANT command.

1. GRANT : SQL grant command is specifically used to provide privileges to database objects for a user. This command also allows users to grant permissions to other users too.

Syntax

Grant privilege_name on object_name to {user_name};

Example :

Create user ram identified by sri;

User created.

Grant all privileges to ram;

Grant succeeded.

```
SQL> create user ram identified by sri;
User created.

SQL> grant all privileges to ram;
Grant succeeded.
```



2. REVOKE : Revoke command withdraw user privileges on database objects if any granted.

Syntax :

Revoke privilege_name on object_name from {user_name};

Example:

Revoke all privileges from ram;

```
SQL> revoke all privileges from ram;  
Revoke succeeded.
```

Transaction Control Language(TCL) :

List of TCL commands :

1. COMMIT – commits a transaction.
2. ROLLBACK – rollbacks a transaction in case of any error occurs.
3. SAVEPOINT – sets a savepoint within a transaction.

1. COMMIT : Commit command is used to save all transactions to the database.

Syntax :

COMMIT;

Example :

insert into emp values(7782,'clark','manager',20000,7839,1500,'9-jan-81',40);

insert into emp values(7934,'miller','clerk',1300,7782,0,'23-jan-82',10);

Commit;



```
SQL> insert into emp values(7782,'clark','manager',20000,7839,1500,'9-jan-81',40);  
1 row created.  
SQL> insert into emp values(7934,'miller','clerk',1300,7782,0,'23-jan-82',10);  
1 row created.  
SQL> commit;  
Commit complete.
```

Select * from emp;



```
SQL> select * from emp;
```

EMPNO	ENAME				JOB
SALARY	MGR	COMM	HIREDATE	DEPTNO	
7369	smith				clerk
8000	7902	800	17-DEC-80	20	
7499	allen				sales
15000	7698	800	20-FEB-81	30	
7521	ward				sales
15000	7698	600	22-FEB-81	30	
EMPNO	ENAME				JOB
SALARY	MGR	COMM	HIREDATE	DEPTNO	
7782	clark				manager
20000	7839	1500	09-JAN-81	40	
7788	scott				analyst
18000	7566	1200	19-APR-82	40	
7782	clark				manager
20000	7839	1500	09-JAN-81	40	
EMPNO	ENAME				JOB
SALARY	MGR	COMM	HIREDATE	DEPTNO	
7934	milller				clerk
1300	7782	0	23-JAN-82	10	

```
7 rows selected.
```



2. ROLLBACK :

It is used to undo transactions that have not already been saved to the database.

Syntax :

```
ROLLBACK;
```

Example :

```
insert into emp values(7902,'ford','analyst',30000,7566,0,'3-dec-91',10);
```

1 row created.

```
insert into emp values(7900,'james','clerk',3000,7698,100,'4-nov-81',30);
```

1 row created.

```
savepoint A;
```

Savepoint created.

```
insert into emp values(7876,'adams','accounting',20000,7546,1000,'5-nov-81',10);
```

1 row created.

```
savepoint B;
```

Savepoint created.

```
insert into emp values(7844,'tunner','salesman',2000,7698,0,'5-jan-82',10);
```

1 row created.

```
rollback to savepoint B;
```

Rollback complete.



```

SQL> insert into emp values(7902,'ford','analyst',30000,7566,0,'3-dec-91',10);
1 row created.

SQL> insert into emp values(7900,'james','clerk',3000,7698,100,'4-nov-81',30);
1 row created.

SQL> savepoint A;
Savepoint created.

SQL> insert into emp values(7876,'adams','accounting',20000,7546,1000,'5-nov-81',10);
1 row created.

SQL> savepoint B;
Savepoint created.

SQL> insert into emp values(7844,'tunner','salesman',2000,7698,0,'5-jan-82',10);
1 row created.

SQL> rollback to savepoint B;
Rollback complete.

```

3. SAVEPOINT : It is used to roll the transaction back to a certain point without rolling back the entire transaction.

Syntax :

SAVEPOINT savepoint_name;

Example :

```
insert into emp values(7902,'ford','analyst',30000,7566,0,'3-dec-91',10);
```

1 row created.

```
insert into emp values(7900,'james','clerk',3000,7698,100,'4-nov-81',30);
```



1 row created.

savepoint A;

```
SQL> insert into emp values(7902,'ford','analyst',30000,7566,0,'3-dec-91',10);
```

1 row created.

```
SQL> insert into emp values(7900,'james','clerk',3000,7698,100,'4-nov-81',30);
```

1 row created.

```
SQL> savepoint A;
```

Savepoint created.

VIVA-VOCE QUESTIONS

1. List out DDL, DML, TCL and DCL commands.
2. Difference between Truncate and Drop.
3. Difference between Commit and Savepoint.
4. Creation of a table.

