

To study Data Manipulation Language commands (DML)

Theory: DML is used to retrieve, insert and modify database information. These commands will be used by all database users during the routine operation of the database.

- INSERT.

used to add records to an existing table.

Syntax: `insert into table tablename values (values);`

Example: `INSERT INTO employee values ('bart', 'simpson', 12345, $45000)`

- SELECT

allows database user to retrieve specific information from an operational database

Syntax: `Select <attribute list> from <list of tables>;`

Example: `SELECT * FROM Employee.`

- **UPDATE**

used to modify information contained within a table, either bulk or individually.

Syntax: UPDATE tablename SET condition;

Example: UPDATE employee SET salary = salary * 1.03;

- **DELETE**

used to remove any obsolete records from a functioning database.

Syntax: DELETE FROM tablename where conditions

Example: DELETE FROM employee WHERE employee_id = 12345;

Conclusion: Thus, we have implemented different DML commands successfully.

DML Queries with Output:

```
SQL> set linesize 200;
SQL> select * from employee;
```

SSN	ENAME	SALARY	SUPERSSN	DNO
100	William	50000	100	10
101	Jonas	60000	101	11
102	SCARLET	80000	102	12
103	BLAIR	45000	103	13
104	CHARLES	40000	100	10

```
SQL> select * from dept;
```

DNO	DNAME	STARTDATE	MGRSSN
10	FINANCE	12-NOV-21	100
11	AUDIT	12-OCT-21	101
12	MARKETING	01-NOV-21	102
13	PRODUCTION	09-OCT-21	103

```
SQL> select * from customer;
```

```
no rows selected
```

```
SQL> insert into customer values(1,'Bart','Starbuck, Minnesota');
```

```
SQL> insert into customer values(1,'Bart','Starbuck, Minnesota');
```

```
1 row created.
```

```
SQL> insert into customer values(2,'Homer','Hammond, Louisiana');
```

```
1 row created.
```

```
SQL> insert into customer values(3,'Marge','Lockport, New York');
```

```
1 row created.
```

```
SQL> insert into customer values(4,'Lisa','Starbuck, Minnesota');
```

```
1 row created.
```

```
SQL> select * from customer;
```

CID	CNAME	ADDRESS
1	Bart	Starbuck, Minnesota
2	Homer	Hammond, Louisiana
3	Marge	Lockport, New York
4	Lisa	Starbuck, Minnesota

```
SQL> insert into dependent values(100,'FINANCE','X');
```

```
1 row created.
```

```
SQL> select * from dependent;
```

SSN	DEPNAME	RELATION
100	FINANCE	X

```
SQL> insert into dependent values(101,'FINANCE','X');
```

```
1 row created.
```

```
SQL> insert into dependent values(101,'FINANCE','X');

1 row created.

SQL> insert into dependent values(102,'AUDIT','Y');

1 row created.

SQL> insert into dependent values(103,'PRODUCTION','Y');

1 row created.

SQL> select * from dependent;

      SSN DEPNAME          RELATION
-----  -----
    100 FINANCE            X
    101 FINANCE            X
    102 AUDIT              Y
    103 PRODUCTION         Y

SQL> insert into deptloc values(10,'SYDNEY');

1 row created.

SQL> insert into deptloc values(11,'MELBOURNE');

1 row created.

SQL> insert into deptloc values(12,'BRISBANE');

1 row created.

SQL> insert into deptloc values(12,'PERTH');

1 row created.

SQL> DELETE FROM deptloc WHERE DLOC='PERTH';
```

```
SQL> insert into workson values(100,20,4);
```

```
1 row created.
```

```
SQL> insert into workson values(101,21,8);
```

```
1 row created.
```

```
SQL> insert into workson values(102,22,6);
```

```
1 row created.
```

```
SQL> insert into workson values(103,23,5);
```

```
1 row created.
```

```
SQL> insert into workson values(104,24,7);
```

```
1 row created.
```

```
SQL> SELECT * FROM project;
```

PNO	PNAME	DNO
20	Omega	10
21	Nitro	10
22	Origin	11
23	Project X	12
24	Quadro	13

```
SQL> SELECT * FROM workson;
```

SSN	PNO	NOOFHRS
100	20	4
101	21	8
102	22	6
103	23	5
104	24	7

```
SQL> insert into project values(20,'Omega',10);
1 row created.

SQL> insert into project values(21,'Nitro',10);
1 row created.

SQL> insert into project values(22,'Origin',11);
1 row created.

SQL> insert into project values(23,'Project X',12);
1 row created.

SQL> insert into workson values(100,20,4);
1 row created.

SQL> insert into workson values(101,21,8);
1 row created.

SQL> insert into workson values(102,22,6);
1 row created.

SQL> insert into workson values(103,23,5);
1 row created.

SQL> insert into workson values(104,24,7);
1 row created.
```

```
SQL> set linesize 200;
SQL> select * from employee;
```

SSN	ENAME	SALARY	SUPERSSN	DNO
100	William	50000	100	10
101	Jonas	60000	101	11
102	SCARLET	80000	102	12
103	BLAIR	45000	103	13
104	CHARLES	40000	100	10

```
SQL> select * from dept;
```

DNO	DNAME	STARTDATE	MGRSSN
10	FINANCE	12-NOV-21	100
11	AUDIT	12-OCT-21	101
12	MARKETING	01-NOV-21	102
13	PRODUCTION	09-OCT-21	103

```
SQL> select * from customer;
```

CID	CNAME	ADDRESS
1	Bart	Starbuck, Minnesota
2	Homer	Hammond, Louisiana
3	Marge	Lockport, New York
4	Lisa	Starbuck, Minnesota

```
SQL> select * from dependent;
```

SSN	DEPNAME	RELATION
100	FINANCE	X
101	FINANCE	X
102	AUDIT	Y
103	PRODUCTION	Y

```
SQL> select * from deptloc;
```

DNO	DLOC
10	SYDNEY
11	MELBOURNE
12	BRISBANE
13	PERTH

```
SQL> select * from project;
```

PNO	PNAME	DNO
20	Omega	10
21	Nitro	10
22	Origin	11
23	Project X	12
24	Quadro	13

```
SQL> select * from workson;
```

SSN	PNO	NOOFRHS
100	20	4
101	21	8
102	22	6
103	23	5
104	24	7

```
SQL> SELECT SSN,ENAME,SALARY FROM EMPLOYEE;
```

SSN	ENAME	SALARY
100	William	50000
101	Jonas	60000
102	SCARLET	80000
103	BLAIR	45000
104	CHARLES	40000

```
SQL> SELECT * FROM EMPLOYEE WHERE SALARY>=50000;
```

SSN	ENAME	SALARY	SUPERSSN	DNO
100	William	50000	100	10
101	Jonas	60000	101	11
102	SCARLET	80000	102	12

```
SQL> SELECT * FROM PROJECT WHERE DNO=10;
```

PNO	PNAME	DNO
20	Omega	10
21	Nitro	10

```
SQL> SELECT * FROM PROJECT WHERE DNO=10 AND PNAME=Nitro;
```

```
SELECT * FROM PROJECT WHERE DNO=10 AND PNAME=Nitro
```

```
*
```

```
ERROR at line 1:
```

```
ORA-00904: "NITRO": invalid identifier
```

```
SQL> SELECT * FROM PROJECT WHERE DNO=10 AND PNAME='Nitro';
```

PNO	PNAME	DNO
21	Nitro	10

```
SQL> SELECT * FROM EMPLOYEE WHERE SALARY BETWEEN 40000 AND 60000;
```

SSN	ENAME	SALARY	SUPERSSN	DNO
100	William	50000	100	10
101	Jonas	60000	101	11
103	BLAIR	45000	103	13
104	CHARLES	40000	100	10

```
SQL>
```

```
SQL> -- UPDATE QUERY
```

```
SQL> UPDATE employee SET SALARY = SALARY * 1.03;
```

```
5 rows updated.
```

```
SQL> SELECT * FROM EMPLOYEE;
```

SSN	ENAME	SALARY	SUPERSSN	DNO
100	William	51500	100	10
101	Jonas	61800	101	11
102	SCARLET	82400	102	12
103	BLAIR	46350	103	13
104	CHARLES	41200	100	10

```
SQL> UPDATE employee SET SALARY = SALARY + 9000  
2 WHERE SSN = CHARLES;
```

```
WHERE SSN = CHARLES
```

```
*
```

```
ERROR at line 2:
```

```
ORA-00904: "CHARLES": invalid identifier
```

```
SQL> UPDATE employee SET SALARY = SALARY + 9000  
2 WHERE SSN = 104;
```

```
1 row updated.
```

```
SQL>
SQL> -- UPDATE QUERY
SQL> UPDATE employee SET SALARY = SALARY * 1.03;
```

5 rows updated.

```
SQL> SELECT * FROM EMPLOYEE;
```

SSN	ENAME	SALARY	SUPERSSN	DNO
100	William	51500	100	10
101	Jonas	61800	101	11
102	SCARLET	82400	102	12
103	BLAIR	46350	103	13
104	CHARLES	41200	100	10

```
SQL> UPDATE employee SET SALARY = SALARY + 9000
```

```
2 WHERE SSN = CHARLES;
```

```
WHERE SSN = CHARLES
```

```
*
```

```
ERROR at line 2:
```

```
ORA-00904: "CHARLES": invalid identifier
```

```
SQL> UPDATE employee SET SALARY = SALARY + 9000
```

```
2 WHERE SSN = 104;
```

1 row updated.

```
SQL> SELECT * FROM EMPLOYEE;
```

SSN	ENAME	SALARY	SUPERSSN	DNO
100	William	51500	100	10
101	Jonas	61800	101	11
102	SCARLET	82400	102	12
103	BLAIR	46350	103	13
104	CHARLES	50200	100	10

```
SQL> UPDATE CUSTOMER SET CNAME = 'CHERYL' WHERE CID = 3;
```

```
1 row updated.
```

```
SQL> SELECT * FROM customer;
```

CID	CNAME	ADDRESS
1	Bart	Starbuck, Minnesota
2	Homer	Hammond, Louisiana
3	CHERYL	Lockport, New York
4	Lisa	Starbuck, Minnesota

```
SQL> DELETE FROM PROJECT WHERE PNO = 20;
```

```
1 row deleted.
```

```
SQL> SELECT * FROM PROJECT;
```

PNO	PNAME	DNO
21	Nitro	10
22	Origin	11
23	Project X	12
24	Quadro	13

```
SQL> INSERT INTO PROJECT VALUES(20,'Omega',10);
```

```
1 row created.
```

```
SQL> Delete from project where dno=(select dno from dept where dname='FINANCE');
```

```
2 rows deleted.
```

```
SQL> select * from project;
```

PNO	PNAME	DNO
22	Origin	11

```
SQL> select * from project;
```

PNO	PNAME	DNO
22	Origin	11
23	Project X	12
24	Quadro	13

```
SQL> INSERT INTO PROJECT VALUES(20,'Omega',10);
```

```
1 row created.
```

```
SQL> INSERT INTO PROJECT VALUES(21,'Nitro',11);
```

```
1 row created.
```

```
SQL> select * from project;
```

PNO	PNAME	DNO
22	Origin	11
23	Project X	12
24	Quadro	13
20	Omega	10
21	Nitro	11

```
SQL> ■
```

Conclusion: Thus we have successfully learned and implemented different DML commands in SQL.
