EXP:2
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DDL and DML

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21BLC1059

AIM:

To write SQL statements using Data Definition Language to create tables with constraints.

THEORY:

The SQL commands known as DDL, or Data Definition Language, are used to define and control the structure of databases. Database objects including tables, indexes, views, and constraints are created, modified, and deleted using DDL commands.
CREATE, ALTER, and DROP are a few examples of typical DDL commands.

- CREATE: Used to create a new database object, such as a table or view.
- ALTER: Used to modify the structure of an existing database object.
- DROP: Used to delete a database object.

Contrarily, DML stands for Data Manipulation Language. Data within a database can be changed using DML commands. From database tables, you can use them to insert, retrieve, update, and remove records. The most common DML commands are:

- SELECT: Used to retrieve data from one or more database tables.
- INSERT: Used to add new records into a table.
- UPDATE: Used to modify existing records in a table.
- DELETE: Used to remove records from a table.

```
SQL> create table harishstudent(s_name char(15),rno integer,mark1
integer,mark2 integer,mark3 integer);

Table created.

SQL> desc harishstudent;
```

```
SQL> CREATE TABLE STUDENT_21BLC1059(S_NAME CHAR(15),RNO INTEGER,MARK1 INTEGER,MARK2 INTEGER,MARK3 INTEGER);

Table created.

SQL> DESC STUDENT_21BLC1059
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 S_NAME                                             CHAR(15)
 RNO                                                NUMBER(38)
 MARK1                                              NUMBER(38)
 MARK2                                              NUMBER(38)
 MARK3                                              NUMBER(38)
```

```
SQL> alter table harishstudent add(total integer);

Table altered.

SQL> desc harishstudent;
```

```
SQL> ALTER TABLE STUDENT_21BLC1059 ADD(TOTAL INTEGER);

Table altered.

SQL> DESC STUDENT_21BLC1059
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 S_NAME                                             CHAR(15)
 RNO                                                NUMBER(38)
 MARK1                                              NUMBER(38)
 MARK2                                              NUMBER(38)
 MARK3                                              NUMBER(38)
 TOTAL                                              NUMBER(38)
```

```
SQL> alter table harishstudent modify(rno varchar2(4));

Table altered.

SQL> desc harishstudent;
```

```
SQL> ALTER TABLE STUDENT_21BLC1059 DROP(RNO);

Table altered.

SQL> DESC STUDENT_21BLC1059
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 S_NAME                                             CHAR(15)
 MARK1                                              NUMBER(38)
 MARK2                                              NUMBER(38)
 MARK3                                              NUMBER(38)
 TOTAL                                              NUMBER(38)
```

```
SQL> alter table harishstudent drop(rno);

Table altered.

SQL> desc harishstudent;
```

```
SQL> ALTER TABLE STUDENT_21BLC1059 DROP(RNO);

Table altered.

SQL> DESC STUDENT_21BLC1059
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------
 S_NAME                                             CHAR(15)
 MARK1                                              NUMBER(38)
 MARK2                                              NUMBER(38)
 MARK3                                              NUMBER(38)
 TOTAL                                              NUMBER(38)
```

```
SQL> insert into harishstudent values('Hari',78,89,90,257);

1 row created.

SQL> insert into harishstudent values('Jamaai',56,67,78,201);

1 row created.

SQL> insert into harishstudent values('Dober',65,54,43,162);

1 row created.

SQL> select*from harishstudent;
```

```
SQL> INSERT INTO STUDENT_21BLC1059 VALUES('Anurag',78,89,90,257);

1 row created.

SQL> INSERT INTO STUDENT_21BLC1059 VALUES('Hari',56,67,78,201);

1 row created.

SQL> INSERT INTO STUDENT_21BLC1059 VALUES('Dober',65,54,43,162);

1 row created.

SQL> SELECT*FROM STUDENT_21BLC1059;

S_NAME               MARK1      MARK2      MARK3      TOTAL
--------------- ---------- ---------- ---------- ----------
Anurag                   78         89         90        257
Hari                     56         67         78        201
Dober                    65         54         43        162
```

```
SQL> delete from harishstudent;

3 rows deleted.

SQL> drop table harishstudent;

Table dropped.
```

```
SQL> DELETE FROM STUDENT_21BLC1059;

3 rows deleted.

SQL> DROP TABLE STUDENT_21BLC1059;

Table dropped.
```

```
SQL> create table harishbook(isbn number(6),title varchar2(10),author
varchar2(10),qty number(4),price number(5,2));

Table created.

SQL> desc harishbook;
```

```
SQL> CREATE TABLE BOOK_21BLC1059(ISBN NUMBER(6),TITLE VARCHAR2(10),AUTHOR VARCHAR2(10),QTY NUMBER(4),PRICE NUMBER(5,2));

Table created.

SQL> DESC BOOK_21BLC1059;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 ISBN                                               NUMBER(6)
 TITLE                                              VARCHAR2(10)
 AUTHOR                                             VARCHAR2(10)
 QTY                                                NUMBER(4)
 PRICE                                              NUMBER(5,2)
```

```
SQL> insert into harishbook values(1439,'UNIX','Balaguru',5,189);

1 row created.

SQL> insert into harishbook values(1857,'SEQA','Sommer',8,200);

1 row created.

SQL> insert into harishbook values(1264,'JAVA','Ritche',3,200);

1 row created.

SQL> insert into harishbook values(1476,'DBMS','Swamy',7,195);

1 row created.

SQL> insert into harishbook values(1643,'MPMC','Krishna',5,125);

1 row created.

SQL> select*from harishbook;
```

```
SQL> INSERT INTO BOOK_21BLC1059 VALUES(1439,'UNIX','Balaguru',5,189);

1 row created.

SQL> INSERT INTO BOOK_21BLC1059 VALUES(1857,'SEQA','Sommer',8,200);

1 row created.

SQL> INSERT INTO BOOK_21BLC1059 VALUES(1264,'JAVA','Ritche',3,200);

1 row created.

SQL> INSERT INTO BOOK_21BLC1059 VALUES(1476,'DBMS','Swamy',7,195);

1 row created.

SQL> INSERT INTO BOOK_21BLC1059 VALUES(1643,'MPMC','Krishna',5,125);

1 row created.

SQL> SELECT*FROM BOOK_21BLC1059;

      ISBN TITLE      AUTHOR            QTY      PRICE
---------- ---------- ---------- ---------- ----------
      1439 UNIX       Balaguru            5        189
      1857 SEQA       Sommer              8        200
      1264 JAVA       Ritche              3        200
      1476 DBMS       Swamy               7        195
      1643 MPMC       Krishna             5        125
```

SQL> select*from harishbook where price=200;

```
SQL> SELECT*FROM BOOK_21BLC1059 WHERE PRICE=200;

      ISBN TITLE      AUTHOR              QTY      PRICE
---------- ---------- ---------- ---------- ----------
      1857 SEQA       Sommer               8        200
      1264 JAVA       Ritche               3        200
```

SQL> select*from harishbook where price between 175 and 250;

```
SQL> SELECT*FROM BOOK_21BLC1059 WHERE PRICE BETWEEN 175 AND 250;

      ISBN TITLE      AUTHOR              QTY      PRICE
---------- ---------- ---------- ---------- ----------
      1439 UNIX       Balaguru             5        189
      1857 SEQA       Sommer               8        200
      1264 JAVA       Ritche               3        200
      1476 DBMS       Swamy                7        195
```

SQL> select*from harishbook where author like 'K%';

```
SQL> SELECT*FROM BOOK_21BLC1059 WHERE AUTHOR LIKE 'K%';

      ISBN TITLE      AUTHOR              QTY      PRICE
---------- ---------- ---------- ---------- ----------
      1643 MPMC       Krishna              5        125
```

SQL> select*from harishbook where author like '%y';

```
SQL> SELECT*FROM BOOK_21BLC1059 WHERE AUTHOR LIKE '%y';

      ISBN TITLE      AUTHOR              QTY      PRICE
---------- ---------- ---------- ---------- ----------
      1476 DBMS       Swamy                7        195
```

```
SQL> update harishbook set price=price+2;

5 rows updated.

SQL> select*from harishbook;
```

```
SQL> UPDATE BOOK_21BLC1059 SET PRICE=PRICE+2;

5 rows updated.

SQL> SELECT*FROM BOOK_21BLC1059;

      ISBN TITLE      AUTHOR              QTY      PRICE
---------- ---------- ---------- ---------- ----------
      1439 UNIX       Balaguru            5        191
      1857 SEQA       Sommer              8        202
      1264 JAVA       Ritche              3        202
      1476 DBMS       Swamy               7        197
      1643 MPMC       Krishna             5        127
```

```
SQL> update harishbook set qty=qty*2;

5 rows updated.

SQL> select*from harishbook;
```

```
SQL> UPDATE BOOK_21BLC1059 SET QTY=QTY*2;

5 rows updated.

SQL> SELECT*FROM BOOK_21BLC1059;

      ISBN TITLE      AUTHOR              QTY      PRICE
---------- ---------- ---------- ---------- ----------
      1439 UNIX       Balaguru           10        191
      1857 SEQA       Sommer             16        202
      1264 JAVA       Ritche              6        202
      1476 DBMS       Swamy              14        197
      1643 MPMC       Krishna            10        127
```

```
SQL> select sqrt(price) from harishbook;
```

```
SQL> SELECT SQRT(PRICE)FROM BOOK_21BLC1059;

SQRT(PRICE)
-----------
  13.820275
 14.2126704
 14.2126704
 14.0356688
 11.2694277
```

```
SQL> select floor(sqrt(price)) from harishbook;
```

```
SQL> SELECT FLOOR(SQRT(PRICE)) FROM BOOK_21BLC1059;

FLOOR(SQRT(PRICE))
------------------
                13
                14
                14
                14
                11
```

```
SQL> select ceil(qty) from harishbook;
```

```
SQL> SELECT CEIL(QTY) FROM BOOK_21BLC1059;

 CEIL(QTY)
----------
        10
        16
         6
        14
        10
```

```
SQL> select sum(price) from harishbook;
```

```
SQL> SELECT SUM(PRICE) FROM BOOK_21BLC1059;

SUM(PRICE)
----------
       919
```

```
 SQL> select avg(price) from harishbook;
```

```
SQL> SELECT AVG(PRICE) FROM BOOK_21BLC1059;

AVG(PRICE)
----------
     183.8
```

```
SQL> select min(qty) from harishbook;
```

```
SQL> SELECT MIN(QTY) FROM BOOK_21BLC1059;

  MIN(QTY)
----------
         6
```

```
 SQL> select max(price) from harishbook;
```

```
SQL> SELECT MAX(PRICE) FROM BOOK_21BLC1059;

MAX(PRICE)
----------
       202
```

SQL> create table harishclient_21blc1059(c_no varchar2(3),c_name varchar2(10), address varchar2(20),city varchar2(15),state varchar2(5),bal_due number(10,2));

```
Table created.
```

SQL> desc harishclient_21blc1059;

```
1  desc harishclient_21blc1059;
2
```

TABLE HARISHCLIENT_21BLC1059

Column	Null?	Type
C_NO	-	VARCHAR2(3)
C_NAME	-	VARCHAR2(10)
ADDRESS	-	VARCHAR2(20)
CITY	-	VARCHAR2(15)
STATE	-	VARCHAR2(5)
BAL_DUE	-	NUMBER(10,2)

SQL> insert into harishclient_21blc1059 values('101','Hari','5roads','salem','tn',2500);

```
1 row(s) inserted.
```

SQL> insert into harishclient_21blc1059 values('102','Harish','bazaar st','chsm','tn',1000);

```
1 row(s) inserted.
```

SQL> insert into harishclient_21blc1059
values('103','Jamaai','deevattipatty','salem','tn',0);

```
1 row(s) inserted.
```

SQL> insert into harishclient_21blc1059 values('104','Dober','leebazaar','salem','tn',400);

```
1 row(s) inserted.
```

SQL> insert into harishclient_21blc1059
values('105','Mathan','deevattipatty','hosur','tn',4000);

```
1 row(s) inserted.
```

SQL> select*from harishclient_21blc1059;

C_NO	C_NAME	ADDRESS	CITY	STATE	BAL_DUE
101	Hari	5roads	salem	tn	2500
102	Harish	bazaar st	chsm	tn	1000
103	Jamaai	deevattipatty	salem	tn	0
104	Dober	leebazaar	salem	tn	400
105	Mathan	deevattipatty	hosur	tn	4000

SQL> create table harishproduct_21blc1059(pr_no varchar2(3),description varchar2(15),qty_bal number(8),profit number(4,2),pur_Rs number(8,2),sell_Rs number(8,2));

```
1 create table harishproduct_21blc1059(pr_no varchar2(3),description varchar2(15),qty_bal number(8),profit number(4,2),pur_Rs number(8,2),sell_Rs number(8,2));

Table created.
```

SQL> desc harishproduct_21blc1059

```
1 desc harishproduct_21blc1059
```

TABLE HARISHPRODUCT_21BLC1059

Column	Null?	Type
PR_NO	-	VARCHAR2(3)
DESCRIPTION	-	VARCHAR2(15)
QTY_BAL	-	NUMBER(8,0)
PROFIT	-	NUMBER(4,2)
PUR_RS	-	NUMBER(8,2)
SELL_RS	-	NUMBER(8,2)

SQL> insert into harishproduct_21blc1059
values('551','JamaaiIceCream',1000,50.8,5.25,12.5);

```
1 row(s) inserted.
```

SQL> delete from harishproduct_21blc1059 where description='JamaaiIceCream';

```
delete from harishproduct_21blc1059 where description='JamaaiIceCream';
```

```
1 row(s) deleted.
```

SQL> insert into harishproduct_21blc1059 values('551','chocobar',1000,50.8,5.25,12.5);

```
1 row(s) inserted.
```

SQL> insert into harishproduct_21blc1059 values('551','vennila',250,28.9,2.12,5.0);

```
1 row(s) inserted.
```

SQL> insert into harishproduct_21blc1059 values('553','cone',1000,50.8,5.25,12.5);

```
1 row(s) inserted.
```

SQL> insert into harishproduct_21blc1059 values('554','mango',590,45,5.65,10);

```
1 row(s) inserted.
```

SQL> select*from harishproduct_21blc1059;

PR_NO	DESCRIPTION	QTY_BAL	PROFIT	PUR_RS	SELL_RS
551	chocobar	1000	50.8	5.25	12.5
551	vennila	250	28.9	2.12	5
553	cone	1000	50.8	5.25	12.5
554	mango	590	45	5.65	10

SQL> select c_name from harishclient_21blc1059;

C_NAME
Hari
Harish
Jamaai
Dober
Mathan

SQL> select*from harishclient_21blc1059 where city='salem';

```
1  select*from harishclient_21blc1059 where city='salem';
```

C_NO	C_NAME	ADDRESS	CITY	STATE	BAL_DUE
101	Hari	5roads	salem	tn	2500
103	Jamaai	deevattipatty	salem	tn	0
104	Dober	leebazaar	salem	tn	400

SQL> select c_name,city from harishclient_21blc1059 where bal_due>=500;

```
1  select c_name,city from harishclient_21blc1059 where bal_due>=500;
```

C_NAME	CITY
Hari	salem
Harish	chsm
Mathan	hosur

SQL> select description from harishproduct_21blc1059;

```
1  select description from harishproduct_21blc1059;
```

DESCRIPTION
chocobar
vennila
cone
mango

SQL> select description,pr_no from harishproduct_21blc1059 where pur_rs=5.25;

```
1  select description,pr_no from harishproduct_21blc1059 where pur_rs=5.25;
```

DESCRIPTION	PR_NO
chocobar	551
cone	553

SQL> select pr_no,qty_bal,profit,pur_rs,sell_rs from harishproduct_21blc1059;

```
1 select pr_no,qty_bal,profit,pur_rs,sell_rs from harishproduct_21blc1059;
```

PR_NO	QTY_BAL	PROFIT	PUR_RS	SELL_RS
551	1000	50.8	5.25	12.5
551	250	28.9	2.12	5
553	1000	50.8	5.25	12.5
554	590	45	5.65	10

SQL> update harishclient_21blc1059 set bal_due=0 where city='salem';

```
3 row(s) updated.
```

SQL> select*from harishclient_21blc1059;

```
1  select*from harishclient_21blc1059;
2
```

C_NO	C_NAME	ADDRESS	CITY	STATE	BAL_DUE
101	Hari	5roads	salem	tn	0
102	Harish	bazaar st	chsm	tn	1000
103	Jamaai	deevattipatty	salem	tn	0
104	Dober	leebazaar	salem	tn	0
105	Mathan	deevattipatty	hosur	tn	4000

SQL> update harishproduct_21blc1059 set sell_rs=2000,pur_rs=2000;

```
4 row(s) updated.
```

SQL> select*from harishproduct_21blc1059;

```
1  select*from  harishproduct_21blc1059;
```

PR_NO	DESCRIPTION	QTY_BAL	PROFIT	PUR_RS	SELL_RS
551	chocobar	1000	50.8	2000	2000
551	vennila	250	28.9	2000	2000
553	cone	1000	50.8	2000	2000
554	mango	590	45	2000	2000

SQL> update harishclient_21blc1059 set city='bombay' where c_no='101';

```
1 row(s) updated.
```

SQL> select*from harishclient_21blc1059;

```
1  select*from harishclient_21blc1059;
```

C_NO	C_NAME	ADDRESS	CITY	STATE	BAL_DUE
101	Hari	5roads	bombay	tn	0
102	Harish	bazaar st	chsm	tn	1000
103	Jamaai	deevattipatty	salem	tn	0
104	Dober	leebazaar	salem	tn	0
105	Mathan	deevattipatty	hosur	tn	4000

SQL> update harishproduct_21blc1059 set QTY_BAL=25 where PROFIT>50;

```
2 row(s) updated.
```

SQL> select*from harishproduct_21blc1059;

```
select*from  harishproduct_21blc1059;
```

PR_NO	DESCRIPTION	QTY_BAL	PROFIT	PUR_RS	SELL_RS
551	chocobar	25	50.8	2000	2000
551	vennila	250	28.9	2000	2000
553	cone	25	50.8	2000	2000
554	mango	590	45	2000	2000

SQL> update harishproduct_21blc1059 set pur_rs=551 where pr_no='553';

SQL> select*from harishproduct_21blc1059;

```
update harishproduct_21blc1059 set pur_rs=551 where pr_no='553';
select*from  harishproduct_21blc1059;
```

1 row(s) updated.

PR_NO	DESCRIPTION	QTY_BAL	PROFIT	PUR_RS	SELL_RS
551	chocobar	25	50.8	2000	2000
551	vennila	250	28.9	2000	2000
553	cone	25	50.8	551	2000
554	mango	590	45	2000	2000

SQL> delete from harishproduct_21blc1059 where QTY_BAL=25;

SQL> select*from harishproduct_21blc1059;

```
1   delete from harishproduct_21blc1059 where QTY_BAL=25;
2  select*from  harishproduct_21blc1059;
```

2 row(s) deleted.

PR_NO	DESCRIPTION	QTY_BAL	PROFIT	PUR_RS	SELL_RS
551	vennila	250	28.9	2000	2000
554	mango	590	45	2000	2000

SQL> delete from harishclient_21blc1059 where BAL_DUE<=1000;

SQL> select*from harishclient_21blc1059;

```
1  delete from harishclient_21blc1059 where BAL_DUE<=1000;
2  select*from  harishproduct_21blc1059;
```

4 row(s) deleted.

PR_NO	DESCRIPTION	QTY_BAL	PROFIT	PUR_RS	SELL_RS
551	vennila	250	28.9	2000	2000
554	mango	590	45	2000	2000

SQL> delete from harishproduct_21blc1059 where PROFIT<30;

SQL> select*from harishproduct_21blc1059;

```
1  delete from harishproduct_21blc1059 where PROFIT<30;
2  select*from  harishproduct_21blc1059;
```

1 row(s) deleted.

PR_NO	DESCRIPTION	QTY_BAL	PROFIT	PUR_RS	SELL_RS
554	mango	590	45	2000	2000

RESULT

Thus the SQL statements using data definition language(DDL) and data manipulation language (DML) to create table with constraints is successfully implemented