Ex.No:1 09.01.25	**Data Definition Language commands and Integrity Constraints**

AIM:

To execute Data Definition Language commands and Integrity Constraints.

CREATING TABLE:

```
SQL> create table std(sid number(2),sname varchar2(20) not null,sdept
varchar2(20) not null,smail varchar2(20) unique,age number(2) default 18
check(age>=18),primary key(sid));

Table created.
```

DATA DICTIONARY:

```
select * from tab;

TNAME                        TABTYPE  CLUSTERID

------------------------------ ------- ----------

SQLPLUS_PRODUCT_PROFILE      TABLE

PRODUCT_PRIVS                VIEW

PRODUCT_USER_PROFILE         SYNONYM

HELP                         TABLE

EMP                          TABLE

STD                          TABLE

160 rows selected.
```

SCHEMA OF THE TABLE:

```
SQL> desc std;
 Name                                      Null?    Type

 ----------------------------------------- -------- --------

 SID                                       NOT NULL NUMBER(2)

 SNAME                                     NOT NULL VARCHAR2(20)

 SDEPT                                     NOT NULL VARCHAR2(20)

 SMAIL                                              VARCHAR2(20)

 AGE                                                NUMBER(2)
```

INSERTING VALUES INTO THE TABLE:

1)MANUAL INPUT:

SQL> insert into std values(01,'Yazhini','IT','yazh@gmail.com',19);

1 row created.

2)THROUGH SYSTEM INPUT:

SQL> insert into std values(01,'Yazhini','IT','yazh@gmail.com',19);

1 row created.

SQL> insert into std values(&sid,'&sname','&sdept','&smail',&age);

Enter value for sid: 02

Enter value for sname: Asha

Enter value for sdept: cse

Enter value for smail: asha@gmail.com

Enter value for age: 20

old   1: insert into std values(&sid,'&sname','&sdept','&smail',&age)

new   1: insert into std values(02,'Asha','cse','asha@gmail.com',20)

1 row created.

SQL> /

Enter value for sid: 03

Enter value for sname: Rani

Enter value for sdept: EIE

Enter value for smail: rani@gamil.com

Enter value for age: 20

old   1: insert into std values(&sid,'&sname','&sdept','&smail',&age)

new   1: insert into std values(03,'Rani','EIE','rani@gamil.com',20)

1 row created.

```
SQL> /

Enter value for sid: 04

Enter value for sname: Thiaygu

Enter value for sdept: MECh

Enter value for smail: t@gmail.com

Enter value for age: 19

old   1: insert into std values(&sid,'&sname','&sdept','&smail',&age)

new   1: insert into std values(04 ,'Thiaygu','MECh','t@gmail.com',19)

1 row created.
```

TO VIEW THE TABLE:

```
select * from std;
```

SID	SNAME	SDEPT	SMAIL	AGE
1	Yazhini	IT	yazh@gmail.com	19
2	Asha	cse	asha@gmail.com	20
3	Rani	EIE	rani@gamil.com	20
4	Thiaygu	MECh	t@gmail.com	19
5	abi	civil	abi@gmial.com	20
6	ram	ece	r@gmail.com	18
7	sis	it	s@gmail.com	19

```
7 rows selected.
```

CONSTRAINTS:

PRIMARY KEY CONSTRAINT:

```
SQL> insert into std values(07,'xx','it','aa',80);

insert into std values(07,'xx','it','aa',80)

*

ERROR at line 1:

ORA-00001: unique constraint (SYSTEM.SYS_C004055) violated
```

CHECK CONSTRAINT:

```
SQL> insert into std values(07,'xx','it','aa',09);
insert into std values(07,'xx','it','aa',09)
*
ERROR at line 1:
ORA-02290: check constraint (SYSTEM.SYS_C004054) violated
```

NOT NULL CONSTRAINT:

```
SQL> insert into std values(08,'xx','','',19);
insert into std values(08,'xx','','',19)
                                 *
ERROR at line 1:
ORA-01400: cannot insert NULL into ("SYSTEM"."STD"."SDEPT")
```

UNIQUE CONSTRAINT:

```
SQL> insert into std values(08,'xx','it','abi@gmail.com',19);
insert into std values(08,'xx','it','abi@gmail.com',19)
*
ERROR at line 1:
ORA-00001: unique constraint (SYSTEM.SYS_C004055) violated
```

ATTRIBUTE WITH MULTIPLE CONSTRAINTS:

```
SQL> create table stu1(sid number(2) primary key,dept varchar(20) not
null,email varchar(25) unique not null check (email like '%@%'));
Table created.
SQL> desc stu1;
 Name                                   Null?           Type
 ---------------------------------- --------         -------------
 SID                                    NOT NULL   NUMBER(2)
 DEPT                                   NOT NULL   VARCHAR2(20)
 EMAIL                                  NOT NULL   VARCHAR2(25)
```

VIOLATING THE CONSTRAINTS IN EMAIL ATTRIBUTE:

```
SQL>  insert into stu1 values(01,'IT','it@gmail.com');

1 row created.

SQL>  insert into stu1 values(01,'IT','it');

 insert into stu1 values(01,'IT','it')

*

ERROR at line 1:

ORA-02290: check constraint (SYSTEM.SYS_C004059) violated.

     SQL> select * from stu1;


        SID DEPT                 EMAIL

---------- -------------------- -------------------------

          1 IT                   it@gmail.com
```

ALTER:

```
SID SNAME               SDEPT               SMAIL           AGE

---------- -------------------- -------------------- ---------- ----------

    1 Yazhini             IT                   yazh@gmail.com    19

    2 Asha                cse                  asha@gmail.com    20

    3 Rani                EIE                  rani@gamil.com    20

    4 Thiaygu             MECh                 t@gmail.com       19

    5 abi                 civil                abi@gmail.com     20

    6 ram                 ece                  r@gmail.com       18

    7 sis                 it                   s@gmail.com       19
```

ADD NEW COLUMNS:

BEFORE ADDING ATTRIBUTE:

```
 Name                                       Null?   Type

 ------------------------------------------ ------- ----------------------
------

 SID                                        NOT NULL NUMBER(2)
```

```
 SNAME                                    NOT NULL VARCHAR2(20)

 SDEPT                                    NOT NULL VARCHAR2(20)

 SMAIL                                             VARCHAR2(20)

 AGE                                               NUMBER(2)


SQL> alter table std add(year number(2) default 2);

Table altered.
```

AFTER ADDING ATTRIBUTE:

```
SQL> desc std;

 Name                                      Null?    Type

 ----------------------------------------- -------- ----------

 SID                                       NOT NULL NUMBER(2)

 SNAME                                     NOT NULL VARCHAR2(20)

 SDEPT                                     NOT NULL VARCHAR2(20)

 SMAIL                                              VARCHAR2(20)

 AGE                                                NUMBER(2)

 YEAR                                               NUMBER(2)


SQL> select * from std;
```

SID	SNAME	SDEPT	SMAIL	AGE	YEAR
1	Yazhini	IT	yazh@gmail.com	19	2
2	Asha	cse	asha@gmail.com	20	2
3	Rani	EIE	rani@gamil.com	20	2
4	Thiaygu	MECh	t@gmail.com	19	2
5	abi	civil	abi@gmail.com	20	2
6	ram	ece	r@gmail.com	18	2
7	sis	it	s@gmail.com	19	2
8	xx	it		19	2

```
8 rows selected.
```

DROPPING AN ATTRIBUTE:

SQL> alter table std drop column year;

Table altered.

SQL> select * from std;

SID	SNAME	SDEPT	SMAIL	AGE
1	Yazhini	IT	yazh@gmail.com	19
2	Asha	cse	asha@gmail.com	20
3	Rani	EIE	rani@gamil.com	20
4	Thiaygu	MECh	t@gmail.com	19
5	abi	civil	abi@gmail.com	20
6	ram	ece	r@gmail.com	18
7	sis	it	s@gmail.com	19
8	xx	it		19

MODIFY:

MODIFY DATATYPE:

SQL> alter table std add(year varchar2(20));

Table altered.

SQL> desc std;

Name	Null?	Type
SID	NOT NULL	NUMBER(2)
SNAME	NOT NULL	VARCHAR2(20)
SDEPT	NOT NULL	VARCHAR2(20)
SMAIL		VARCHAR2(20)
AGE		NUMBER(2)
YEAR		VARCHAR2(20)

AFTER MODIFYING DATATYPE:

```
SQL> alter table std modify(year number(2));

Table altered.


SQL> desc std;
 Name                                      Null?    Type
 --------------------------------- ------- --------
 SID                                       NOT NULL NUMBER(2)
 SNAME                                     NOT NULL VARCHAR2(20)
 SDEPT                                     NOT NULL VARCHAR2(20)
 SMAIL                                              VARCHAR2(20)
 AGE                                                NUMBER(2)
 YEAR                                               NUMBER(2)
```

AFTER MODIFYING DATA SIZE:

```
SQL> alter table std modify(year number(20));

Table altered.


SQL> desc std;
 Name                                      Null?     Type
 --------------------------------- -------- --------
 SID                                       NOT NULL NUMBER(2)
 SNAME                                     NOT NULL VARCHAR2(20)
 SDEPT                                     NOT NULL VARCHAR2(20)
 SMAIL                                              VARCHAR2(20)
 AGE                                                NUMBER(2)
 YEAR                                               NUMBER(20)
```

ADDING AND DROP CONSTRAINT TO SCHEMA:

```
SQL> create table hi(sid number(2),class varchar2(2),cgpa number(3,1));
Table created.


SQL> alter table hi add constraint pk primary key(sid);
Table altered.


SQL> desc student1;
 Name                                      Null?       Type
 ----------------------------- ----------- --------
 SID                                       NOT NULL NUMBER(2)
 CLASS                                                 VARCHAR2(2)
 CGPA                                                  NUMBER(3,1)
```

DROPING:

```
SQL> alter table hi drop constraint pk;
Table altered.


SQL> desc hi;
 Name                                      Null?     Type
 -------------------------------- -------- --------
 SID                                                 NUMBER(2)
 CLASS                                               VARCHAR2(2)
 CGPA                                                NUMBER(3,1)
```

ADDING CONSTRAINT TO INSTANCE:

```
SQL> select * from hi;

    SID CL    CGPA
---------- -- ----------
    1 C      9.6
    1 C      9.6
```

```
SQL> alter from table hi add constraint uq unique(sid);

alter from table hi add constraint uq unique(sid)
      *
ERROR at line 1:

ORA-00940: invalid ALTER command


SQL> alter table hi add constraint uq unique(sid);

alter table hi add constraint uq unique(sid)
*
ERROR at line 1:

ORA-02299: cannot validate (SYSTEM.UQ) - duplicate keys found


SQL> ALTER TABLE student1 ADD CONSTRAINT unique_name  unique(sala);

Table altered.
```

PRIMARY KEY AND FOREIGN KEY:

PARENT TABLE:

```
SQL> select * from std;


       SID SNAME                SDEPT                   SMAIL     AGE   YEAR
---------- -------------------- -------------------- ------- -------------
         1 Yazhini              IT                   yazh@gmail.com    19
         2 Asha                 cse                  asha@gmail.com    20
         3 Rani                 EIE                  rani@gamil.com    20
         4 Thiaygu              MECh                 t@gmail.com       19
         5 abi                  civil                abi@gmail.com     20
         6 ram                  ece                  r@gmail.com       18
         7 sis                  it                   s@gmail.com       19
         8 xx                   it                                     19

8 rows selected.
```

CHILD TABLE:

```
SQL> create table stu2(id number(2) not null primary key,sadd
varchar2(20),foreign key(id) references std(sid));

Table created.

SQL> insert into stu2 values(01,'Erode');

1 row created.

SQL> insert into stu2 values(02,'Salem');

1 row created.

SQL> insert into stu2 values(03,'Velur');

1 row created.

SQL> insert into stu2 values(04,'CBE');

1 row created.

SQL> select * from stu2;

      ID SADD

---------- --------------------

         1 Erode

         2 Salem

         3 Velur

         4 CBE
```

INSERT THE RECORD INTO CHILD TABLE THAT IS NOT IN PARENT TABLE:

```
SQL> insert into stu2 values('10','kk');

insert into stu2 values('10','kk')

*

ERROR at line 1:

ORA-02291: integrity constraint (SYSTEM.SYS_C004064) violated - parent key
not

found.
```

DELETING A PARENT RECORD:

SQL> delete from std where sid=04;

delete from std where sid=04

*

ERROR at line 1:

ORA-02292: integrity constraint (SYSTEM.SYS_C004064) violated - child record

found

DELETION USING ON DELETE CASCADE:

CREATING TABLE:

SQL> create table stu3(ids number(2) not null,class varchar2(10),foreign key(ids) references std on delete cascade);

Table created.

SQL> desc stu3;

```
 Name                                      Null?    Type
 --------------------------------- -------- --------
 IDS                                       NOT NULL NUMBER(2)
 CLASS                                              VARCHAR2(10)
```

INSERTING VALUES INTO CHILD TABLE :

SQL> insert into stu3 values(&ids,'&class');

Enter value for ids: 01

Enter value for class: c

old   1: insert into stu3 values(&ids,'&class')

new   1: insert into stu3 values(01,'c')

1 row created.

AFTER INSERTING VALUES INTO THE CHILD TABLE:

```
SQL> select * from stu3;
      IDS CLASS

---------- ----------
        1 c
        2 d
        3 a
        4 b
```

DELETING THE RECORD IN PARENT TABLE:

(details in the child table deleted automatically)

```
SQL> delete from std where id=4;

1 row deleted.


SQL> select * from stu3;
     IDS CLASS

---------- ----------
        1 c
        2 d
        3 a

 3 rows selected.
```

ON DELETE SET NULL:

PARENT TABLE:

```
SQL> select * from std;
      SID SNAME              SDEPT                SMAIL      AGE
YEAR

---------- ------------------- -------------------- ---------- ----------
   1 Yazhini            IT                   yazh@gmail.com    19
   2 Asha               cse                  asha@gmail.com    20
   3 Rani               EIE                  rani@gamil.com    20
   5 abi                civil                abi@gmail.com     20
   6 ram                ece                  r@gmail.com       18
```

```
    7 sis                  it                      s@gmail.com            19

    8 xx                   it                                             19
```

7 rows selected.

CREATING TABLE CHILD TABLE :

SQL> create table stu4(sids number(2),clg varchar2(20),foreign key(sids) references std on delete set null);

Table created.

AFTER CREATING TABLE:

```
    SQL> select * from stu4;

     SIDS CLG

---------- --------------------

        1 kec

        2 psg

        6 cit
```


BEFORE DELETING - PARENT TABLE:

SQL> select * from std;

SID	SNAME	SDEPT	SMAIL	AGE	YEAR
1	Yazhini	IT	yazh@gmail.com	19	
2	Asha	cse	asha@gmail.com	20	
3	Rani	EIE	rani@gamil.com	20	
5	abi	civil	abi@gmail.com	20	
6	ram	ece	r@gmail.com	18	
7	sis	it	s@gmail.com	19	
8	xx	it		19	

7 rows selected.

DELETING VALUE IN THE PARENT TABLE:

SQL> delete from std where sid=6;

1 row deleted.

AFTER DELETING IN THE PARENT TABLE:

(in child table the value is set to null)

SQL> select * from std;

```
 SID SNAME               SDEPT                SMAIL           AGE    YEAR
---------- -------------------- -------------------- ----------- ---------
   1 Yazhini             IT                   yazh@gmail.com    19
   2 Asha                cse                  asha@gmail.com    20
   3 Rani                EIE                  rani@gamil.com    20
   5 abi                 civil                abi@gmail.com     20
   6 ram                 ece                  r@gmail.com       18
   7 sis                 it                   s@gmail.com       19
   8 xx                  it                                     19
```
7 rows selected.

RENAME:

desc std;

```
 Name                             Null?     Type
 ------------------------------- --------- --------
 SID                              NOT NULL NUMBER(2)
 SNAME                            NOT NULL VARCHAR2(20)
 SDEPT                            NOT NULL VARCHAR2(20)
 SMAIL                                     VARCHAR2(20)
 AGE                                       NUMBER(2)
 YEAR                                      NUMBER(20)
```


SQL> rename std to student;

Table renamed.

```
SQL> desc student;
 Name                                     Null?    Type
 ---------------------------------  --------  --------
 SID                                      NOT NULL NUMBER(2)
 SNAME                                    NOT NULL VARCHAR2(20)
 SDEPT                                    NOT NULL VARCHAR2(20)
 SMAIL                                             VARCHAR2(20)
 AGE                                               NUMBER(2)
 YEAR                                              NUMBER(20)
```

TRUNCATE TABLE:

```
truncate table stu1;
Table truncated.
SQL> select * from stu1;
no rows selected.


SQL> desc stu1;
 Name                                     Null?    Type
 ---------------------------------  -------  --------
 SID                                      NOT NULL NUMBER(2)
 DEPT                                     NOT NULL VARCHAR2(20)
 EMAIL                                    NOT NULL VARCHAR2(25)
```

DROP:

CREATE TABLE:

```
SQL> create table example(sid number(2),sname varchar2(20));
Table created.
```

BEFORE DROPPING TABLE:

SQL> select * from example;

```
       SID SNAME

---------- --------------------

         1 yazh

         3 ok

         8 hii
```

SQL> drop table example;

Table dropped.

AFTER DROPPING TABLE:

SQL> select * from example;

select * from example

             *

ERROR at line 1:

ORA-00942: table or view does not exist

MARK SPLIT UP:

CONTENTS	MARKS ALLOTED	MARKS OBTAINED
Aim,algorithm,SQL,PL/SQL	30	
Execution and Result	20	
Viva	10	
Total	60	

RESULT:

The Data Definition Language Commands and Integrity Constraints were executed.