**EX.NO:01 Data Definition Language commands and Integrity Constraints**

**29.02.2024**

**AIM**

To execute Data Definition Language commands and Integrity Constraints.

**INTEGRITY CONSTRAINT:**

**CREATING TABLE:**

SQL> create table student(roll number(10) primary key,name varchar(20) not null,mail varchar(20) unique,age number(3),gender char(1) check(gender='m' or gender='f'));

Table created.

SQL> insert into student values(&roll,'&name','&mail',&age,'&gender');

Enter value for roll: 1

Enter value for name: Dinesh

Enter value for mail: dinesh@gmail.com

Enter value for age: 18

Enter value for gender: m

old 1: insert into student values(&roll,'&name','&mail',&age,'&gender')

new 1: insert into student values(1,'Dinesh','dinesh@gmail.com',18,'m')

1 row created.

**PRIMARY KEY CONSTRAINT**

SQL> /

Enter value for roll: 1

Enter value for name: Gunal

Enter value for mail: gunal@gmail.com

Enter value for age: 18

Enter value for gender: m

old 1: insert into student values(&roll,'&name','&mail',&age,'&gender')

new 1: insert into student values(1,'Gunal','gunal@gmail.com',18,'m')

insert into student values(1,'Gunal','gunal@gmail.com',18,'m')

\*

**ERROR at line 1:**

**ORA-00001: unique constraint (DINESHBABU.SYS\_C004061) violated**

SQL> /

Enter value for roll: 2

Enter value for name: Gunal

Enter value for mail: gunal@gmail.com

Enter value for age: 18

Enter value for gender: m

old 1: insert into student values(&roll,'&name','&mail',&age,'&gender')

new 1: insert into student values(2,'Gunal','gunal@gmail.com',18,'m')

1 row created.

**NOT NULL CONSTRAINT**

SQL> /

Enter value for roll: 3

Enter value for name:

Enter value for mail: babu@gmail.com

Enter value for age: 18

Enter value for gender: m

old 1: insert into student values(&roll,'&name','&mail',&age,'&gender')

new 1: insert into student values(3,'','babu@gmail.com',18,'m')

insert into student values(3,'','babu@gmail.com',18,'m')

**ERROR at line 1:**

**ORA-01400: cannot insert NULL into ("DINESHBABU"."STUDENT"."NAME")**

SQL> /

Enter value for roll: 3

Enter value for name: babu

Enter value for mail: babu@gmail.com

Enter value for age: 18

Enter value for gender: m

old 1: insert into student values(&roll,'&name','&mail',&age,'&gender')

new 1: insert into student values(3,'babu','babu@gmail.com',18,'m')

1 row created.

**UNIQUE CONSTRAINT**

SQL> /

Enter value for roll: 4

Enter value for name: anand

Enter value for mail: babu@gmail.com

Enter value for age: 18

Enter value for gender: m

old 1: insert into student values(&roll,'&name','&mail',&age,'&gender')

new 1: insert into student values(4,'anand','babu@gmail.com',18,'m')

insert into student values(4,'anand','babu@gmail.com',18,'m')

\*

**ERROR at line 1:**

**ORA-00001: unique constraint (DINESHBABU.SYS\_C004062) violated**

Enter value for roll: 4

Enter value for name: anand

Enter value for mail: anand@gmail.com

Enter value for age: 18

Enter value for gender: m

old 1: insert into student values(&roll,'&name','&mail',&age,'&gender')

new 1: insert into student values(4,'anand','anand@gmail.com',18,'m')

1 row created.

**CHECK CONSTRAINT**

SQL> insert into student values(&roll,'&name','&mail',&age,'&gender');

Enter value for roll: 5

Enter value for name: suji

Enter value for mail: suji@gmail.com

Enter value for age: 18

Enter value for gender: F

old 1: insert into student values(&roll,'&name','&mail',&age,'&gender')

new 1: insert into student values(5,'suji','suji@gmail.com',18,'F')

insert into student values(5,'suji','suji@gmail.com',18,'F')

\*

**ERROR at line 1:**

**ORA-02290: check constraint (DINESHBABU.SYS\_C004060) violated**

SQL> /

Enter value for roll: 5

Enter value for name: suji

Enter value for mail: suji@gmail.com

Enter value for age: 18

Enter value for gender: f

old 1: insert into student values(&roll,'&name','&mail',&age,'&gender')

new 1: insert into student values(5,'suji','suji@gmail.com',18,'f')

1 row created.

**DEFAULT CONSTRAINT**

SQL>  create table stud(id number(2),name varchar(20),age number(2) default 18);

Table created.

SQL> insert into stud(id,name) values(1,'babu');

1 row created.

SQL> select \* from stud;

        ID NAME                        AGE

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

        1 babu                       18

SQL> insert into stud(id,name,age) values(2,'kisho',19);

1 row created.

SQL> select \* from stud;

     ID NAME               AGE

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

     1 babu                   18

     2 kisho                    19

**Foreign key:**

**Create the parent table(Department)**

SQL> create table department(deptname varchar(20) primary key,building varchar(15),budget number(10,2) );

Table created.

**Create the child table(Instructor)**

SQL> create table instructor(id varchar(20) primary key,name varchar(20),deptname varchar(20) references department(deptname));

Table created.

**Insert records into parent table(Department)**

SQL> insert into department values('&deptname','&building',&budget);

Enter value for deptname: IT

Enter value for building: seminar hall

Enter value for budget: 10000.00

old 1: insert into department values('&deptname','&building',&budget)

new 1: insert into department values('IT','seminar hall',10000.00)

1 row created.

SQL> /

Enter value for deptname: CSE

Enter value for building: seminar hall

Enter value for budget: 20000.00

old 1: insert into department values('&deptname','&building',&budget)

new 1: insert into department values('CSE','seminar hall',20000.00)

1 row created.

SQL> /

Enter value for deptname: ECE

Enter value for building: seminar hall

Enter value for budget: 30000.00

old 1: insert into department values('&deptname','&building',&budget)

new 1: insert into department values('ECE','seminar hall',30000.00)

1 row created.

SQL> /

Enter value for deptname: AIDS

Enter value for building: seminar hall

Enter value for budget: 40000.00

old 1: insert into department values('&deptname','&building',&budget)

new 1: insert into department values('AIDS','seminar hall',40000.00)

1 row created.

**Insert records into child table(Instructor)**

SQL> insert into instructor values(&id,'&name','&deptname');

Enter value for id: 1

Enter value for name: ram

Enter value for deptname: IT

old 1: insert into instructor values(&id,'&name','&deptname')

new 1: insert into instructor values(1,'ram','IT')

1 row created.

SQL> /

Enter value for id: 2

Enter value for name: saai

Enter value for deptname: CSE

old 1: insert into instructor values(&id,'&name','&deptname')

new 1: insert into instructor values(2,'saai','CSE')

1 row created.

SQL> /

Enter value for id: 3

Enter value for name: gunal

Enter value for deptname: ECE

old 1: insert into instructor values(&id,'&name','&deptname')

new 1: insert into instructor values(3,'gunal','ECE')

1 row created.

**To see the instance of parent table:**

SQL> select \* from department;

DEPTNAME BUILDING BUDGET

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IT seminar hall 10000

CSE seminar hall 20000

ECE seminar hall 30000

AIDS seminar hall 40000

**To see the instance of child table:**

SQL> select \* from instructor;

ID NAME DEPTNAME

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1 ram IT

2 saai CSE

3 gunal ECE

**Insert the instance into child table that is not in parent table:**

SQL> insert into instructor values(&id,'&name','&deptname');

Enter value for id: 4

Enter value for name: babu

Enter value for deptname: CSD

old 1: insert into instructor values(&id,'&name','&deptname')

new 1: insert into instructor values(4,'babu','CSD')

insert into instructor values(4,'babu','CSD')

\*

**ERROR at line 1:**

**ORA-02291: integrity constraint (STUDENT.SYS\_C004060) violated - parent key not**

**Found**

**Delete the instance in the parent table :**

SQL> delete from department where deptname='CSE';

delete from department where deptname='CSE'

\*

**ERROR at line 1:**

**ORA-02292: integrity constraint (STUDENT.SYS\_C004060) violated - child record**

**Found**

**Delete the instance in the child table:**

**Delete the records in table1:**

SQL> delete from instructor where deptname='CSE';

1 row deleted.

**To see the instance of child table**

SQL> select \* from instructor;

ID NAME DEPTNAME

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1 ram IT

3 gunal ECE

SQL> delete from department where deptname='CSE';

1 row deleted.

**To see the instance of parent table**

SQL> select \* from department;

DEPTNAME BUILDING BUDGET

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

IT seminar hall 10000

ECE seminar hall 30000

AIDS seminar hall 40000

**DROP COMMAND:**

**Drop the parent table:**

SQL> drop table department;

drop table department

\*

**ERROR at line 1:**

**ORA-02449: unique/primary keys in table referenced by foreign keys**

**Drop the child table:**

SQL> drop table instructor;

Table dropped.

SQL> drop table department;

Table dropped.

**ON DELETE CASCADE COMMAND:**

SQL> create table instructor(id varchar(20) primary key,name varchar(20),deptname varchar(20) references department(deptname) on delete cascade);

Table created.

**Insert records into table2:**

SQL> insert into instructor values(&id,'&name','&deptname');

Enter value for id: 1

Enter value for name: ram

Enter value for deptname: IT

old 1: insert into instructor values(&id,'&name','&deptname')

new 1: insert into instructor values(1,'ram','IT')

1 row created.

SQL> /

Enter value for id: 2

Enter value for name: Saai

Enter value for deptname: CSE

old 1: insert into instructor values(&id,'&name','&deptname')

new 1: insert into instructor values(2,'Saai','CSE')

1 row created.

SQL> /

Enter value for id: 3

Enter value for name: gunal

Enter value for deptname: ECE

old 1: insert into instructor values(&id,'&name','&deptname')

new 1: insert into instructor values(3,'gunal','ECE')

1 row created.

**To see the instance of parent table before deleting**

SQL> select \* from department;

DEPTNAME BUILDING BUDGET

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IT seminar hall 10000

ECE seminar hall 30000

AIDS seminar hall 40000

**To delete the record of parent table:**

SQL> delete from department where deptname='CSE';

1 row deleted.

**To see the instance of parent table:**

SQL> select \* from department;

DEPTNAME BUILDING BUDGET

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IT seminar hall 10000

ECE seminar hall 30000

**ON DELETE SET NULL COMMAND:**

SQL> create table instructor(id varchar(20) primary key,name varchar(20),deptname varchar(20) references department(deptname) on delete set null);

Table created.

SQL> insert into instructor values(&id,'&name','&deptname');

Enter value for id: 1

Enter value for name: ram

Enter value for deptname: IT

old 1: insert into instructor values(&id,'&name','&deptname')

new 1: insert into instructor values(1,'ram','IT')

1 row created.

SQL> /

Enter value for id: 6

Enter value for name: suba

Enter value for deptname: IT

old 1: insert into instructor values(&id,'&name','&deptname')

new 1: insert into instructor values(6,'suba','IT')

1 row created.

SQL> /

Enter value for id: 7

Enter value for name: sanjay

Enter value for deptname: ECE

old 1: insert into instructor values(&id,'&name','&deptname')

new 1: insert into instructor values(7,'sanjay','ECE')

1 row created.

**To delete the instance of parent table:**

SQL> delete from department where deptname='ECE';

1 row deleted.

SQL> select \* from department;

DEPTNAME BUILDING BUDGET

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

IT seminar hall 10000

SQL> select \* from instructor;

ID NAME DEPTNAME

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

1 ram IT

6 suba IT

7 sanjay

**Truncate command:**

SQL> truncate table instructor;

Table truncated.

**To see the instance of child table**

SQL> select \* from instructor;

no rows selected

**To see the schema of the table:**

SQL> desc instructor;

Name Null? Type

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

ID NOT NULL VARCHAR2(20)

NAME VARCHAR2(20)

DEPTNAME VARCHAR2(20)

**To see the data dictionary**

SQL> select \* from tab;

TNAME TABTYPE CLUSTERID

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CUSTOMERS TABLE

DETAIL TABLE

EMP1 TABLE

STUD TABLE

EMP TABLE

STUDENT TABLE

CUST TABLE

EMPLOYEE TABLE

EMPP TABLE

CUS TABLE

CUSTOM TABLE

CUSTOMER\_DETAILS TABLE

DEPARTMENT TABLE

INSTRUCTOR TABLE

**ALTER COMMAND**

**ALTER WITH ADD COMMAND:**

SQL> alter table department add(mailid varchar(20));

Table altered.

SQL> desc department;

Name Null? Type

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

DEPTNAME NOT NULL VARCHAR2(20)

BUILDING VARCHAR2(15)

BUDGET NUMBER(10,2)

MAILID VARCHAR2(20)

**ALTER WITH MODIFY COMMAND:**

SQL> alter table department modify(mailid varchar(25));

Table altered.

SQL> desc department;

Name Null? Type

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

DEPTNAME NOT NULL VARCHAR2(20)

BUILDING VARCHAR2(15)

BUDGET NUMBER(10,2)

MAILID VARCHAR2(25)

**To delete the column using alter command:**

SQL> alter table department drop column mailid;

Table altered.

SQL> desc department;

Name Null? Type

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

DEPTNAME NOT NULL VARCHAR2(20)

BUILDING VARCHAR2(15)

BUDGET NUMBER(10,2)

**RENAME COMMAND:**

**Rename the parent table:**

SQL> rename department to dept;

Table renamed.

SQL> desc dept;

Name Null? Type

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DEPTNAME NOT NULL VARCHAR2(20)

BUILDING VARCHAR2(15)

BUDGET NUMBER(10,2)

**To check the department table:**

SQL> desc department;

**ERROR:**

**ORA-04043: object department does not exist**

**DELETION:**

SQL> delete from dept;

4 rows deleted.

**RECORDS AFTER DELETION:**

SQL> select \* from dept;

no rows selected

**Rollback**

SQL> rollback;

Rollback complete.

SQL> select \* from dept;

DEPTNAME BUILDING BUDGET

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

IT seminar hall 10000

CSE seminar hall 20000

ECE seminar hall 30000

AIDS seminar hall 40000

SQL>delete from dept where budget=20000;

1 row deleted.

SQL> select \* from dept;

DEPTNAME BUILDING BUDGET

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

IT seminar hall 10000

ECE seminar hall 30000

AIDS seminar hall 40000

SQL>delete from dept where deptname=’AIDS’;

1 row deleted.

SQL> select \* from dept;

DEPTNAME BUILDING BUDGET

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

IT seminar hall 10000

ECE seminar hall 30000

|  |  |  |
| --- | --- | --- |
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**RESULT:**

Thus Data Definition Language commands and Integrity Constraints were executed.