College Of Engineering Trivandrum

Application Software Development Lab

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July 30, 2019

Cycle 1

Exp No 5

DATA CONSTRAINTS AND VIEWS

1 Aim

study about various data constraints and views in SQL.

2 Questions

1. Create the following tables with given constraints
a. Create a table named Subjects with the given attributes

- **Subid(Should not be NULL)**
- **Subname (Should not be NULL)**

Populate the database. Make sure that all constraints are working properly.

```
create table Subjects(sub_id int not null,sub_name varchar(10) not null);
```

```
insert into subjects values( '1', "Maths");
insert into subjects values( '2', 'Physics');
insert into subjects values( '3','Chemistry');
insert into subjects values( '4','English');
```

0. Display the Table

```
select * from subjects;
```

```
asdlab=# select * from subjects;
 sub_id | sub_name
--------+-----------
      2 | Physics
      3 | Chemistry
      4 | English
      1 | Maths
(4 rows)

asdlab=#
```

Figure 1: Subjects Table

i Alter the table to set subid as the primary key.

```
alter table subjects add primary key(sub_id);
```

```
asdlab=# alter table subjects add primary key(sub_id);
ALTER TABLE
asdlab=#  insert into subjects values( '1', 'Zoology');
ERROR:  duplicate key value violates unique constraint "subjects_pkey"
DETAIL:  Key (sub_id)=(1) already exists.
asdlab=#
```

Figure 2: subid as primary key

b. Create a table named Staff with the given attributes

- **-staffid (Should be UNIQUE)**
- **-staffname**
- **-dept**
- **-Age (Greater than 22)**
- **-Salary (Less than 35000)**

```
create table Staff(staff_id int not null unique,staff_name varchar(10),
dept varchar(10),age int ,salary int,check(age>22),check(salary<35000));

insert into staff values('1','John','Purchasing','24','30000');
insert into staff values('2','Sera','Sales','25','20000');
insert into staff values('3','Jane','Sales','28','25000');
```

```
asdlab=# select * from staff;
 staff_id | staff_name |    dept    | age | salary
----------+------------+------------+-----+--------
        1 | John       | Purchasing |  24 |  30000
        2 | Sera       | Sales      |  25 |  20000
        3 | Jane       | Sales      |  28 |  25000
(3 rows)

asdlab=#
```

Figure 3: Staff Table

i)Delete the check constraint imposed on the attribute salary)

```
alter table staff drop constraint staff_salary_check;
```

ii)Delete the unique constraint on the attribute staffid.

```
alter table staff drop constraint staff_staff_id_key;
```

```
asdlab=# alter table staff drop constraint staff_salary_check;
ALTER TABLE
asdlab=# alter table staff  drop constraint staff_staff_id_key;
ALTER TABLE
asdlab=#
```

Figure 4: Dropping both constraints

c. Create a table named Bank with the following attributes

- -bankcode (To be set as Primary Key, type= varchar(3))
- -bankname (Should not be NULL)
- -headoffice
- -branches (Integer value greater than Zero)

```
create table Bank(bankcode varchar(3),bank_name varchar(10),
headoffice varchar(10),branchoffice int );

alter table bank add constraint primarykey primary key (bankcode);
alter table bank add constraint branchoffice_check check(branchoffice>0);
insert into bank values('AAA','SIB','Ernakulam','6');
insert into bank values('BBB','Federal','Kottayam','5');
insert into bank values('CCC','Canara','Trivandrum','3');
```

```
asdlab=# select * from bank;
 bankcode | bank_name | headoffice | branchoffice
----------+-----------+------------+--------------
 AAA      | SIB       | Ernakulam  |            6
 BBB      | Federal   | Kottayam   |            5
 CCC      | Canara    | Trivandrum |            3
(3 rows)

asdlab=# \d+ bank
                                                  Table
    Column    |         Type          | Collation |
--------------+-----------------------+-----------+
 bankcode     | character varying(3)  |           |
 bank_name    | character varying(10) |           |
 headoffice   | character varying(10) |           |
 branchoffice | integer               |           |
Indexes:
    "primarykey" PRIMARY KEY, btree (bankcode)
Check constraints:
    "branchoffice_check" CHECK (branchoffice > 0)

asdlab=#
```

Figure 5: Bank table

d. Create a table named Branch with the following attributes.

- -branchid (To be set as Primary Key)
- -branchname (Set Default value as 'New Delhi')
- -bankid (Foreign Key:- Refers to bank code of Bank table)

```
create table Branch(branchid int ,branchname varchar(10) default 'New Delhi',
bankid varchar(3),primary key(branchid) );

alter table Branch add constraint branch_bankid_fkey foreign key(bankid) references
bank(bankcode) on update cascade on delete cascade;

insert into Branch values('1','Kottayam','CCC');
insert into Branch(branchid,bankid) values('2','AAA');
insert into bank values('SBT','Indian','Delhi','7');
insert into Branch values('5','Calicut','SBT');
```

```
                                        Table "public.branch"
   Column   |         Type          | Collation | Nullable |            Default             | Storage  | Stat
tion
------------+-----------------------+-----------+----------+--------------------------------+----------+-----
-----
 branchid   | integer               |           | not null |                                | plain    |
 branchname | character varying(10) |           |          | 'New Delhi'::character varying | extended |
 bankid     | character varying(3)  |           |          |                                | extended |
Indexes:
    "branch_pkey" PRIMARY KEY, btree (branchid)
Foreign-key constraints:
    "branch_bankid_fkey" FOREIGN KEY (bankid) REFERENCES bank(bankcode) ON UPDATE CASCADE ON DELETE CASCADE
```

Figure 6: Shema of branch

```
asdlab=# select * from branch;
 branchid | branchname | bankid
----------+------------+--------
        1 | Kottayam   | CCC
        2 | New Delhi  | AAA
        5 | Calicut    | SBT
(3 rows)
```

Figure 7: Branch Table

iii) Delete the bank with bank code 'SBT' and make sure that the corresponding entries are getting deleted from the related tables.

```
delete from bank where bankcode='SBT';
```

```
asdlab=# delete from bank where bankcode='SBT';
DELETE 1
asdlab=# select * from bank;
 bankcode | bank_name | headoffice | branchoffice
----------+-----------+------------+--------------
 AAA      | SIB       | Ernakulam  |            6
 BBB      | Federal   | Kottayam   |            5
 CCC      | Canara    | Trivandrum |            3
(3 rows)

asdlab=# select * from branch;
 branchid | branchname | bankid
----------+------------+--------
        1 | Kottayam   | CCC
        2 | New Delhi  | AAA
(2 rows)
```

Figure 8: Deleting SBT

iv) Drop the Primary Key using ALTER command

```
alter table branch drop constraint branch_pkey;
insert into branch values('1','PPP','CCC');
```

```
asdlab=# alter table branch drop constraint  branch_pkey;
ALTER TABLE
asdlab=# insert into branch values('1','PPP','CCC');
INSERT 0 1
asdlab=# select * from branch;
 branchid | branchname | bankid
----------+------------+--------
        1 | Kottayam   | CCC
        2 | New Delhi  | AAA
        1 | PPP        | CCC
(3 rows)

asdlab=#
```

Figure 9: Dropping Primary key

2. Create a View named sales_staff to hold the details of all staff working in sales Department

```
create view sales_staff as select * from staff where dept='Sales';
select * from sales_staff;
```

```
asdlab=# create view sales_staff as select * from staff where dept='Sales';
CREATE VIEW
asdlab=# select * from sales_staff;
 staff_id | staff_name | dept  | age | salary
----------+------------+-------+-----+--------
        2 | Sera       | Sales |  25 |  20000
        3 | Jane       | Sales |  28 |  25000
(2 rows)

asdlab=#
```

Figure 10: view of sales staff

3. Drop table branch. Create another table named branch and name all the constraints as given below:

- Constraint name Column Constraint
- -Pk branch_id Primary key
- Df branch_name Default :'New Delhi'
- Fk bankid Foreign key/References

```
 drop table Branch;
create table Branch(branchid int ,branchname varchar(10)
constraint Df default 'New Delhi' ,bankid varchar(3),
constraint pk primary key(branchid),
constraint Fk foreign key(bankid) references bank(bankcode) on update cascade on
delete cascade);
```

i) Delete the default constraint in the table

```
alter table branch alter branchname drop default;
```

ii) Delete the primary key constraint

```
alter table branch drop constraint Pk;
```

```
asdlab=# drop table Branch;
DROP TABLE
asdlab=# create table Branch(branchid int ,branchname varchar(10) constraint Df default 'New D
int pk primary key(branchid),constraint Fk foreign key(bankid) references bank(bankcode) on up
CREATE TABLE
asdlab=# alter table branch alter branchname drop default;
ALTER TABLE
asdlab=# alter table branch drop constraint Pk ;
ALTER TABLE
asdlab=# \d+ branch
                                        Table "public.branch"
   Column   |         Type          | Collation | Nullable | Default | Storage  | Stats target
------------+-----------------------+-----------+----------+---------+----------+--------------
 branchid   | integer               |           | not null |         | plain    |
 branchname | character varying(10) |           |          |         | extended |
 bankid     | character varying(3)  |           |          |         | extended |
Foreign-key constraints:
    "fk" FOREIGN KEY (bankid) REFERENCES bank(bankcode) ON UPDATE CASCADE ON DELETE CASCADE

asdlab=#
```

Figure 11: New Branch Table schema

4. Update the view sales_staff to include the details of staff belonging to sales department whose salary is greater than 20000.

```
create or replace view sales_staff as(select * from staff
where salary>'20000' and dept='Sales');
```

```
asdlab=# create or replace view sales_staff as(select * from staff where salary>'20000' and dept='Sales');
CREATE VIEW
asdlab=# select * from sales_staff;
 staff_id | staff_name | dept  | age | salary
----------+------------+-------+-----+--------
        3 | Jane       | Sales |  28 |  25000
(1 row)

asdlab=#
```

Figure 12: new view of sales staff

5. **Delete the view sales_staff.**

```
drop view sales_staff;
```

```
asdlab=# drop view sales_staff;
DROP VIEW
asdlab=# select * from sales_staff;
ERROR:  relation "sales_staff" does not exist
LINE 1: select * from sales_staff;
                      ^
asdlab=#
```

Figure 13: Deleting The view

3 Result

The query was executed and the output was obtained.