

College Of Engineering Trivandrum

Application Software Development Lab



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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=#
```

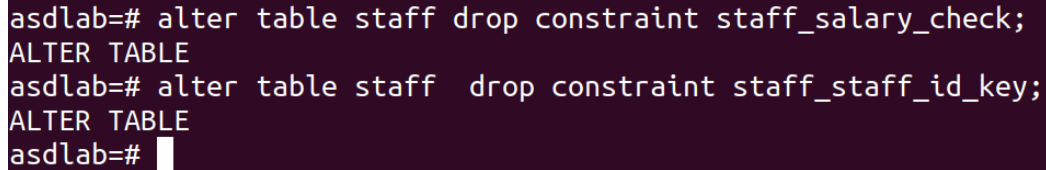
Figure 3: Staff Table

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');

```

Column	Type	Collation	Nullable	Default	Storage	Statistics
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
```

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.

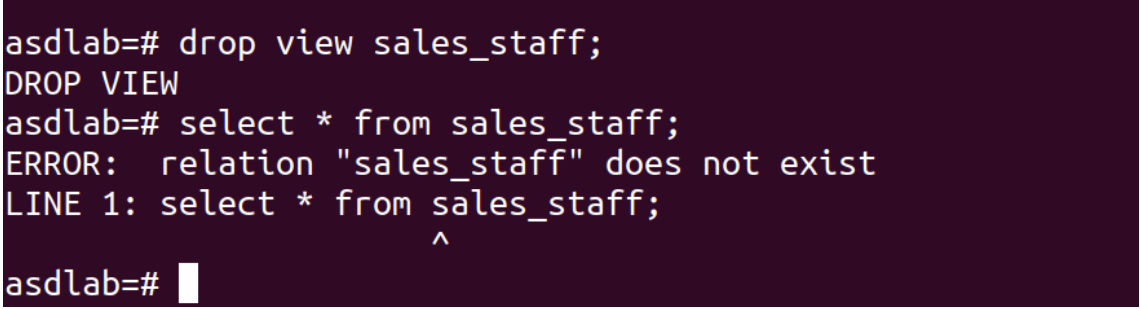
```
create or replace view sales_staff as(select * from staff
where salary>'20000' and dept='Sales');
```

```
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;
```

A screenshot of a terminal window with a dark purple background and light green text. The text shows a sequence of commands and an error message. The first command is 'drop view sales_staff;', followed by 'DROP VIEW'. Then, the prompt 'asdlab=#' is shown, followed by the command 'select * from sales_staff;'. An error message follows: 'ERROR: relation "sales_staff" does not exist'. Below this, 'LINE 1: select * from sales_staff;' is shown with a caret '^' pointing to the end of the line. Finally, the prompt 'asdlab=#' is shown again with a cursor.

```
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.