#### DBMS LAB Week 4

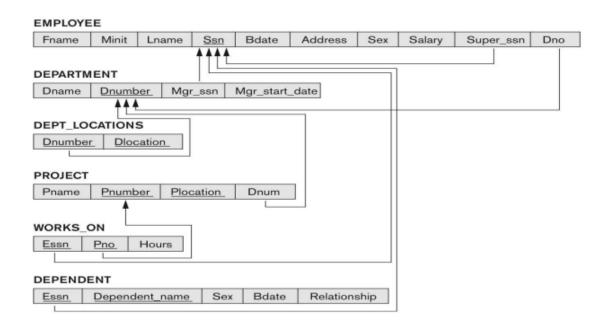
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**SRN** : PES1U19CS019

**Section** : A

**Q1.** Create tables for the below mentioned Relational design and add check, default, not null and unique constraints.

- PK and FK constraints for all applicable Relations
- For Fname, Lname in employee add not null constraints and relationship in dependent should be not null and by default add parent as the relationship value.
- Add default constraint for project name
- Dname and dnumber should be unique
- Add check constraints to BDATE in employee and dependent table (born before 1985)



### ---> Creating Database

```
postgres=# create database pes1ug19cs019_lab_4;
CREATE DATABASE
postgres=# \c pes1ug19cs019_lab_4
You are now connected to database "pes1ug19cs019_lab_4" as user "postgres".
pes1ug19cs019_lab_4=#
```

## ---> Creating the table employee with primary key, not null, default, unique, check constraints

```
pes1ug19cs019_lab_4=# create table employee_019(fname varchar(30) not null,minit varchar(30),
lname varchar(30) not null,ssn varchar(30) primary key,bdate date check(bdate < '1985-01-01')
,address varchar(30),sex char(20),salary int,super_ssn varchar(30),dno int);
CREATE TABLE
pes1ug19cs019_lab_4=#
pes1ug19cs019_lab_4=# create table department_019(dname varchar(30) unique,dnumber int unique
primary key,mgr_ssn varchar(30),mgr_start_date date);
CREATE TABLE
pes1ug19cs019_lab_4=#
pes1ug19cs019_lab_4=# create table dept_locations_019(dnumber int,dlocation varchar(30),prima
ry key(dnumber,dlocation));
CREATE TABLE
pes1ug19cs019_lab_4=# |
pes1ug19cs019_lab_4=# create table project_019(pname varchar(30) default 'PES1UG19CS019',pnum
ber int,plocation varchar(30),dnum int,primary key(pnumber,plocation));
CREATE TABLE
pes1ug19cs019_lab_4=#
pes1ug19cs019_lab_4=# create table works_on_019(essn varchar(30),pno int,hours int,primary ke
y(essn,pno));
CREATE TABLE
pes1ug19cs019_lab_4=#
pes1ug19cs019_lab_4=# create table dependent_019(essn varchar(30),dependent_name char(30),sex
char(20), bdate date check(bdate < '1985-01-01'), relationship varchar(30), primary key(essn, de
pendent_name));
CREATE TABLE
pes1ug19cs019_lab_4=#
```

# ---> Adding foreign key constraint for the table employee

```
pes1ug19cs019_lab_4=# alter table employee_019 add constraint fk_employee_1 foreign key (supe r_ssn) references employee_019(ssn);
ALTER TABLE
```

```
pes1ug19cs019_lab_4=# alter table employee_019 add constraint fk_employee_2 foreign key (dno) references department_019(dnumber);
ALTER TABLE
pes1ug19cs019_lab_4=#
```

```
pes1ug19cs019_lab_4=# \d employee_019
                      Table "public.employee_019"
                                      | Collation | Nullable | Default
  Column
                       Type
            | character varying(30) |
                                                      not null
 fname
              character varying(30)
 minit
             character varying(30)
 lname
                                                      not null
             character varying(30)
 ssn
                                                      not null
bdate
             date
 address
            | character varying(30)
 sex
              character(20)
salary
              integer
super_ssn | character varying(30)
dno
            linteger
Indexes:
    "employee_019_pkey" PRIMARY KEY, btree (ssn)
Check constraints:
    "employee_019_bdate_check" CHECK (bdate < '1985-01-01'::date)</pre>
Foreign-key constraints:
    "fk_employee_1" FOREIGN KEY (super_ssn) REFERENCES employee_019(ssn) "fk_employee_2" FOREIGN KEY (dno) REFERENCES department_019(dnumber)
Referenced by:
    TABLE "employee_019" CONSTRAINT "fk_employee_1" FOREIGN KEY (super_ssn) REFERENCES employ
ee_019(ssn)
pes1ug19cs019_lab_4=#
```

# ---> Adding foreign key constraint for the table department

pes1ug19cs019\_lab\_4=# alter table department\_019 add constraint fk\_department\_1 foreign key ( mgr\_ssn) references employee\_019(ssn); ALTER TABLE

```
pes1ug19cs019_lab_4=# \d department_019
                      Table "public.department_019"
    Column
                                       | Collation | Nullable | Default
dname
                | character varying(30)
dnumber
                | integer
                                                      not null
mgr_ssn
                | character varying(30)
mgr_start_date | date
Indexes:
   "department_019_pkey" PRIMARY KEY, btree (dnumber)
   "department_019_dname_key" UNIQUE CONSTRAINT, btree (dname)
Foreign-key constraints:
    "fk_department_1" FOREIGN KEY (mgr_ssn) REFERENCES employee_019(ssn)
Referenced by:
   TABLE "employee_019" CONSTRAINT "fk_employee_2" FOREIGN KEY (dno) REFERENCES department_0
19(dnumber)
pes1ug19cs019_lab_4=#
```

# ---> Adding foreign key constraint for the table dept\_locations

```
pes1ug19cs019_lab_4=# alter table dept_locations_019 add constraint fk_dept_locations_1 forei
gn key (dnumber) references department_019(dnumber);
ALTER TABLE
pes1ug19cs019_lab_4=#
```

## ---> Adding foreign key constraint for the table project

```
pes1ug19cs019_lab_4=# alter table project_019 add constraint fk_project_1 foreign key (dnum) references department_019(dnumber);
ALTER TABLE
pes1ug19cs019_lab_4=#
```

```
Table "public.project_019
                                   | Collation | Nullable |
 Column
                    Type
                                                                         Default
          | character varying(30) |
                                                          | 'PES1UG19CS019'::character varying
pnumber | integer
                                               | not null |
plocation | character varying(30) |
                                               | not null
          | integer
dnum
Indexes:
    "project_019_pkey" PRIMARY KEY, btree (pnumber, plocation)
Foreign-key constraints:
    "fk_project_1" FOREIGN KEY (dnum) REFERENCES department_019(dnumber)
```

### ---> Adding foreign key constraint for the table works\_on

```
pes1ug19cs019_lab_4=# alter table works_on_019 add constraint fk_works_on_1 foreign key (essn
) references employee_019(ssn);
ALTER TABLE
```

```
pes1ug19cs019_lab_4=# alter table works_on_019 add constraint fk_works_on_2 foreign key (pno)
references project_019(pnumber);
ALTER TABLE
pes1ug19cs019_lab_4=#
```

```
pes1ug19cs019_lab_4=# \d works_on_019
                  Table "public.works_on_019"
                 Type
                         | Collation | Nullable | Default
Column |
       | character varying(30) |
                                          not null
essn
                                          not null
       integer
pno
hours | integer
Indexes:
   "works_on_019_pkey" PRIMARY KEY, btree (essn, pno)
Foreign-key constraints:
    "fk_works_on_1" FOREIGN KEY (essn) REFERENCES employee_019(ssn)
    "fk_works_on_2" FOREIGN KEY (pno) REFERENCES project_019(pnumber)
pes1ug19cs019_lab_4=#
```

## ---> Adding foreign key constraint for the table dependent

```
pes1ug19cs019_lab_4=# alter table dependent_019 add constraint fk_dependent_1 foreign key (es
sn) references employee_019(ssn);
ALTER TABLE
pes1ug19cs019_lab_4=#
```

```
pes1ug19cs019_lab_4=# \d dependent_019
                     Table "public.dependent 019"
    Column
                                        | Collation | Nullable | Default
               | character varying(30) |
                                                    not null
dependent_name | character(30)
                                                     not null
               | character(20)
bdate
                date
relationship | character varying(30) |
Indexes:
    "dependent_019_pkey" PRIMARY KEY, btree (essn, dependent_name)
Check constraints:
    "dependent_019_bdate_check" CHECK (bdate < '1985-01-01'::date)
Foreign-key constraints:
    "fk_dependent_1" FOREIGN KEY (essn) REFERENCES employee_019(ssn)
```

### ---> Inserting values into the table employee

```
pes1ug19cs019_lab_4=# insert into employee_019 values('abhishek','aditya','bs','cs019','1972-
09-25','hanumanthanagar','male',250000,'cs019',null);
INSERT 0 1
```

```
pes1ug19cs019_lab_4=# insert into employee_019 values('supreeth','G','kurpad','cs520','1954-0
5-07','ashoknagar','female',50000,'cs520',null);
INSERT 0 1
pes1ug19cs019_lab_4=# insert into employee_019 values('vishal',null,'ramesh','cs571','1982-07
-17','jaynagar','male',500000,'cs571',null);
INSERT 0 1
```

fname   minit	lname   ssn	bdate	address	sex	salary   super_ssn   dno
abhishek   aditya supreeth   G vishal   (3 rows)	bs	1954-05-07	ashoknagar	male   female   male	250000   cs019     50000   cs520     500000   cs571

#### ---> Inserting values into the table department

```
pes1ug19cs019_lab_4=# insert into department_019 values('mechanical',10,'cs019','1975-05-23')
;
INSERT 0 1
pes1ug19cs019_lab_4=# insert into department_019 values('electrical',20,'cs571','1980-04-20')
;
INSERT 0 1
pes1ug19cs019_lab_4=# insert into department_019 values('civil',30,'cs520','1989-12-02');
INSERT 0 1
pes1ug19cs019_lab_4=#
```

#### ---> Inserting values into the table dept\_locations

### ---> Inserting values into the table project

```
pes1ug19cs019_lab_4=# insert into project_019 values('java_scheduling',100,'bangalore',10),('
python_automation',200,'kerala',20),('Cdnn',300,'Pes university',30);
INSERT 0 3
pes1ug19cs019_lab_4=# SELECT * FROM project_019;
              | pnumber | plocation | dnum
      pname
java_scheduling |
                        100 | bangalore
                                                10
python_automation |
                        200 | kerala
                                                 20
                        300 | Pes university |
Cdnn
(3 rows)
pes1ug19cs019_lab_4=#
```

#### ---> Inserting values into the table works\_on

#### ---> Inserting values into the table dependent

```
pes1ug19cs019_lab_4=# insert into dependent_019 values('cs019','ben','male','1965-08-05','fri
end'),('cs571','karen','female','1975-03-23','wife'),('cs520','sarita','female','1984-09-18',
'mother');
INSERT 0 3
pes1ug19cs019_lab_4=# SELECT * FROM dependent_019;
essn | dependent_name | sex | bdate | relationship

cs019 | ben | male | 1965-08-05 | friend
cs571 | karen | female | 1975-03-23 | wife
cs520 | sarita | female | 1984-09-18 | mother
(3 rows)

pes1ug19cs019_lab_4=# ■
```

#### ---> updating null values in table employee

```
pes1ug19cs019_lab_4=# update employee_019 set dno = 10 where ssn='cs019';
UPDATE 1
pes1ug19cs019_lab_4=# update employee_019 set dno = 20 where ssn='cs520';
UPDATE 1
pes1ug19cs019_lab_4=# update employee_019 set dno = 30 where ssn='cs571';
UPDATE 1
```

	lname   ssn	bdate	address	sex		super_ssn   dno
abhishek   aditya supreeth   G vishal   (3 rows)		1972-09-25   1954-05-07	   hanumanthanagar   ashoknagar	male   female   male	250000	cs019   10 cs520   20

- **Q2.** Perform the following operations on the table
- a. Drop and truncate
- b. Create views and Drop views
- c. Create user and grant and revoke privileges on the table
  - i. Grant select for emp table for user 1
  - ii. Grant alter privileges on the department table for user 2.
  - iii. Grant all privileges on all the table for user 3
  - iv. Grant alter ,delete, update on dependent and project table for user4
- d. Using alter table commands add column, delete column

#### ---> Creating Views

pes1ug19cs019\_lab\_4=# create view high\_salary as select \* from employee\_019 where salary > 10000; CREATE VIEW

CREATE VIEW

```
pes1ug19cs019_lab_4=# select * from high_salary;
fname | minit | lname | ssn | bdate
                                                              address
                                                                                        sex
                                                                                                       | salary | super ssn | dno
abhishek | aditya | bs | cs019 | 1972-09-25 | hanumanthanagar | male supreeth | G | kurpad | cs520 | 1954-05-07 | ashoknagar | female
                                                                                                         250000 | cs019
                                                                                                                                   10
                                                                                                          50000 | cs520
                                                                             | female
                                                                                                                                   20
                     | ramesh | cs571 | 1982-07-17 | jaynagar
                                                                                                         500000 | cs571
                                                                                                                                   30
vishal |
                                                                             | male
3 rows)
```

#### ---> Dropping Views

### ---> Creating users and granting privileges

----- USER 1 -----

pes1ug19cs019\_lab\_4=# create user u1 with password 'user1' createdb;
CREATE ROLE

```
pes1ug19cs019_lab_4=# grant select on employee_019 to u1;
GRANT
pes1ug19cs019_lab_4=#
```

```
(base) <mark>abhishek_aditya_bs@pop-os:~$</mark> psql -h localhost -d pes1ug19cs019_lab_4 -U u1 -p 5432
Password for user u1:
psql (13.4 (Ubuntu 13.4-0ubuntu0.21.04.1))
.
SSL connection (protocol: TLSv1.3, cipher: TLS_AES_256_GCM_SHA384, bits: 256, compression: off)
Type "help" for help.
pes1ug19cs019_lab_4=> select * from employee_019;
 fname | minit | lname | ssn | bdate
                                                                               | salary | super_ssn | dno
                                                address
| 250000 | cs019
                                                                                                    10
                                                          female
                                                                                 50000 | cs520
                                                                               | 500000 | cs571
                                                                                                    30
3 rows)
pes1ug19cs019_lab_4=>
```

#### ----- USER 2 -----

pes1ug19cs019\_lab\_4=# create user u2 with password 'user2' createdb; CREATE ROLE

```
(base) abhishek_aditya_bs@pop-os:~$ psql -h localhost -d pes1ug19cs019_lab_4 -U u2 -p 5432

Password for user u2:
psql (13.4 (Ubuntu 13.4-0ubuntu0.21.04.1))

SSL connection (protocol: TLSv1.3, cipher: TLS_AES_256_GCM_SHA384, bits: 256, compression: off)

Type "help" for help.

pes1ug19cs019_lab_4=> insert into department_019 values('computer science',40,'cs019','1999-05-04');

INSERT 0 1
```

pes1ug19cs019_lab_ dname		mgr_start_date
mechanical electrical civil computer science (4 rows)		

#### 

pes1ug19cs019\_lab\_4=# create user u3 with password 'user3' createdb; CREATE ROLE

pes1ug19cs019\_lab\_4=# GRANT ALL PRIVILEGES ON ALL TABLES IN SCHEMA public TO u3; GRANT

```
(base) <mark>abhishek_aditya_bs@pop-os:~$</mark> psql -h localhost -d pes1ug19cs019_lab_4 -U u3 -p 5432
Password for user u3:
psql (13.4 (Ubuntu 13.4-Oubuntu0.21.04.1))
SSL connection (protocol: TLSv1.3, cipher: TLS_AES_256_GCM_SHA384, bits: 256, compression: off)
Type "help" for help.
pes1ug19cs019_lab_4=> select * from works_on_019;
essn | pno | hours
cs019 | 300 |
                   12
cs520 | 200 |
cs571 | 100 |
                   10
(3 rows)
pes1ug19cs019_lab_4=> select * from department_019;
           | dnumber | mgr_ssn | mgr_start_date
                   10 | cs019
20 | cs571
30 | cs520
                                  1975-05-23
electrical
                                   1980-04-20
                                  1989-12-02
civil
(3 rows)
pes1ug19cs019_lab_4=>
```

#### ----- USER 4 ---

pes1ug19cs019\_lab\_4=# create user u4 with password 'user4' createdb; CREATE ROLE
pes1ug19cs019\_lab\_4=#

pes1ug19cs019\_lab\_4=# grant select,insert,update,delete on dependent\_019 to u4; GRANT pes1ug19cs019\_lab\_4=# grant select,insert,update,delete on project\_019 to u4; GRANT pes1ug19cs019\_lab\_4=#

```
(base) abhishek_aditya_bs@pop-os:~$ psql -h localhost -d pes1ug19cs019_lab_4 -U u4 -p 5432
Password for user u4:
psql (13.4 (Ubuntu 13.4-0ubuntu0.21.04.1))
SSL connection (protocol: TLSv1.3, cipher: TLS_AES_256_GCM_SHA384, bits: 256, compression: off)
Type "help" for help.

pes1ug19cs019_lab_4=> insert into dependent_019 values('cs019','Raj','Male','1972-07-03','gaurdian');
pes1ug19cs019_lab_4=> insert into project_019 values('GEMM matrix calculation','400','tamil nadu',40);
INSERT 0 1
```

```
pes1ug19cs019_lab_4=# select * from dependent_019;
essn |
                 dependent_name
                                                                   bdate
                                                                            | relationship
                                                  sex
cs019 | ben
                                        | male
                                                               | 1965-08-05 | friend
cs571 | karen
                                          female
                                                               | 1975-03-23 | wife
cs520 | sarita
                                                               | 1984-09-18 | mother
                                          female
cs019 | Raj
                                        Male
                                                               | 1972-07-03 | gaurdian
(4 rows)
pes1ug19cs019_lab_4=# select * from project_019;
                        | pnumber |
                                       plocation
                                                    dnum
 java_scheduling
                               100
                                     bangalore
                                                        10
python_automation
                               200
                                     kerala
                                                        20
                               300
                                     Pes university
                                                        30
Cdnn
GEMM matrix calculation |
                               400 | tamil nadu
                                                        40
(4 rows)
```

```
pes1ug19cs019_lab_4=> update project_019 set pname='java threads scheduling' where pnumber='100';
UPDATE 1
pes1ug19cs019_lab_4=> update dependent_019    set relationship='father' where dependent_name='Raj';
UPDATE 1
pes1ug19cs019_lab_4=>
pes1ug19cs019_lab_4=> delete from project_019 where pnumber='400';
DELETE 1
pes1ug19cs019_lab_4=> delete from dependent_019 where dependent_name='Raj';
DELETE 1
pes1ug19cs019 lab 4=>
pes1ug19cs019_lab_4=# select * from dependent_019
                 dependent_name
                                                                   bdate
                                                                            | relationship
essn
cs019 | ben
cs571 | karen
                                                                 1965-08-05
                                          male
                                                                            friend
                                          female
                                                                 1975-03-23
                                                                              wife
cs520 | sarita
                                          female
                                                               | 1984-09-18 | mother
(3 rows)
pes1ug19cs019_lab_4=# select * from project_019;
                        | pnumber |
                                      plocation
          pname
                                                    l dnum
python_automation
                               200 |
                                    kerala
                                                        20
                               300
                                    Pes university
                                                        30
java threads scheduling |
                               100
                                    bangalore
                                                        10
(3 rows)
```

#### ---> Revoking privileges to users

```
pes1ug19cs019_lab_4=# revoke select,insert,update,delete on dependent_019 from u4;
REVOKE
pes1ug19cs019_lab_4=# revoke insert on department_019 from u2;
REVOKE
<u>pes1ug19cs019 lab 4</u>=# revoke select,insert,update,delete on project_019 from u4;
REVOKE
pes1ug19cs019_lab_4=#
```

```
(base) abhishek_aditya_bs@pop-os:~$ psql -h localhost -d pes1ug19cs019_lab_4 -U u2 -p 5432
Password for user u2:
psql (13.4 (Ubuntu 13.4-Oubuntu0.21.04.1))
SSL connection (protocol: TLSv1.3, cipher: TLS_AES_256_GCM_SHA384, bits: 256, compression: off)
Type "help" for help.
pes1ug19cs019_lab_4=> insert into project_019 values('GEMM matrix calculation','400','tamil nadu',40);
ERROR: permission denied for table project 019
pes1ug19cs019_lab_4=>
```

```
(base) abhishek_aditya_bs@pop-os:~$ psql -h localhost -d pes1ug19cs019_lab_4 -U u4 -p 5432
Password for user u4:
psql (13.4 (Ubuntu 13.4-0ubuntu0.21.04.1))
SSL connection (protocol: TLSv1.3, cipher: TLS_AES_256_GCM_SHA384, bits: 256, compression: off)
Type "help" for help.
pes1ug19cs019_lab_4=> select * from dependent_019;
ERROR: permission denied for table dependent 019
pes1ug19cs019_lab_4=>
```

### ---> Adding columns to the table

pes1ug19cs019\_lab\_4=# alter table project\_019 add column language varchar(10); ALTER TABLE

```
pes1ug19cs019_lab_4=# update project_019 set language='python' where pname='python_automat
ion';
UPDATE 1

pes1ug19cs019_lab_4=# update project_019 set language='C' where pname='Cdnn';
UPDATE 1
pes1ug19cs019_lab_4=# update project_019 set language='java' where pname='java threads sch
eduling';
UPDATE 1
```

#### ---> Deleting columns from the table

pes1ug19cs019\_lab\_4=# alter table project\_019 drop column language;
ALTER TABLE

### ---> Truncating the table

pes1ug19cs019\_lab\_4=#

#### ---> Dropping the table

```
pes1ug19cs019_lab_4=# drop table dependent_019;
DROP TABLE
pes1ug19cs019_lab_4=# drop table works_on_019;
DROP TABLE
```