Week4:SQL Constraints, Views, Truncate, Delete and update operations

Name: Mahim Dashora
SRN: PES1UG19CS251
Section:D

Problem Statement:

1. 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)**

```
postgres=# create database pes1ug19cs251_dbms_week4;
CREATE DATABASE
postgres=# \c pes1ug19cs251_dbms_week4;
You are now connected to database "pes1ug19cs251_dbms_week4" as user "postgres".
pes1ug19cs251_dbms_week4=# create table department(Dname varchar(15) unique,Dnumber int unique,Mgr_ssn int,Mgr_start_date date,primary key(Dnumber));
CREATE TABLE
pes1ug19cs251_dbms_week4=# \d department;
                Table "public.department"
    Column     |         Type          | Collation | Nullable | Default
---------------+-----------------------+-----------+----------+---------
 dname         | character varying(15) |           |          |
 dnumber       | integer               |           | not null |
 mgr_ssn       | integer               |           |          |
 mgr_start_date | date                 |           |          |
Indexes:
    "department_pkey" PRIMARY KEY, btree (dnumber)
    "department_dname_key" UNIQUE CONSTRAINT, btree (dname)

pes1ug19cs251_dbms_week4=# create table employee(Fname varchar(15) NOT NULL,Minit varchar(5),Lname varchar(15) NOT NULL,Ssn int,Bdate date CHECK(Bdate<'1985-12-31'),Address varchar(20),Sex varchar(8),Salary int,
Super_ssn int,Dno int,primary key(Ssn),foreign key(Dno) reference department(Dnumber),foreign key(Super_ssn) references employee(Ssn));
ERROR:  syntax error at or near "reference"
LINE 1: ...ssn int,Dno int,primary key(Ssn),foreign key(Dno) reference ...
                                                                      ^
```

```
pes1ug19cs251_dbms_week4=# create table employee(Fname varchar(15) NOT NULL,Minit varchar(5),Lname varchar(15) NOT NULL,Ssn int,Bdate date CHECK(Bdate<'1985-12-31'),Address varchar(20),Sex varchar(8),Salary i
Super_ssn int,Dno int,primary key(Ssn),foreign key(Dno) references department(Dnumber),foreign key(Super_ssn) references employee(Ssn));
CREATE TABLE
pes1ug19cs251_dbms_week4=# \d employee
                      Table "public.employee"
  Column   |         Type          | Collation | Nullable | Default
-----------+-----------------------+-----------+----------+---------
 fname     | character varying(15) |           | not null |
 minit     | character varying(5)  |           |          |
 lname     | character varying(15) |           | not null |
 ssn       | integer               |           | not null |
 bdate     | date                  |           |          |
 address   | character varying(20) |           |          |
 sex       | character varying(8)  |           |          |
 salary    | integer               |           |          |
 super_ssn | integer               |           |          |
 dno       | integer               |           |          |
Indexes:
    "employee_pkey" PRIMARY KEY, btree (ssn)
Check constraints:
    "employee_bdate_check" CHECK (bdate < '1985-12-31'::date)
Foreign-key constraints:
    "employee_dno_fkey" FOREIGN KEY (dno) REFERENCES department(dnumber)
    "employee_super_ssn_fkey" FOREIGN KEY (super_ssn) REFERENCES employee(ssn)
Referenced by:
    TABLE "employee" CONSTRAINT "employee_super_ssn_fkey" FOREIGN KEY (super_ssn) REFERENCES employee(ssn)


pes1ug19cs251_dbms_week4=# create table dept_locations(Dnumber int unique NOT NULL,Dlocation varchar(20),primary key(Dnumber),foreign key(Dnumber) references department(Dnumber));
CREATE TABLE
pes1ug19cs251_dbms_week4=# \d dept_locations
                 Table "public.dept_locations"
  Column   |         Type          | Collation | Nullable | Default
-----------+-----------------------+-----------+----------+---------
 dnumber   | integer               |           | not null |
 dlocation | character varying(20) |           |          |
Indexes:
    "dept_locations_pkey" PRIMARY KEY, btree (dnumber)
Foreign-key constraints:
    "dept_locations_dnumber_fkey" FOREIGN KEY (dnumber) REFERENCES department(dnumber)
```

```
pes1ug19cs251_dbms_week4=# create table project(Panem varchar(15) default 'xyz',Pnumber int,Plocation varchar(15),Dnum int unique NOT NULL,primary key(Pnumber),foreign key(Dnum) references department(Dnumber));
CREATE TABLE
pes1ug19cs251_dbms_week4=# \d project
                       Table "public.project"
  Column   |         Type          | Collation | Nullable |         Default
-----------+-----------------------+-----------+----------+--------------------------
 panem     | character varying(15) |           |          | 'xyz'::character varying
 pnumber   | integer               |           | not null |
 plocation | character varying(15) |           |          |
 dnum      | integer               |           | not null |
Indexes:
    "project_pkey" PRIMARY KEY, btree (pnumber)
    "project_dnum_key" UNIQUE CONSTRAINT, btree (dnum)
Foreign-key constraints:
    "project_dnum_fkey" FOREIGN KEY (dnum) REFERENCES department(dnumber)


pes1ug19cs251_dbms_week4=# create table works_on(Essn int,Pro unique NOT NULL ,Hours int, primary key(Essn),foreign key(Pno) references project(Pnumber));
ERROR:  syntax error at or near "unique"
LINE 1: create table works_on(Essn int,Pro unique NOT NULL ,Hours in...
                                           ^
pes1ug19cs251_dbms_week4=# create table works_on(Essn int,Pno int unique NOT NULL ,Hours int, primary key(Essn),foreign key(Pno) references project(Pnumber));
CREATE TABLE
pes1ug19cs251_dbms_week4=# \d works_on
             Table "public.works_on"
 Column | Type    | Collation | Nullable | Default
--------+---------+-----------+----------+---------
 essn   | integer |           | not null |
 pno    | integer |           | not null |
 hours  | integer |           |          |
Indexes:
    "works_on_pkey" PRIMARY KEY, btree (essn)
    "works_on_pno_key" UNIQUE CONSTRAINT, btree (pno)
Foreign-key constraints:
    "works_on_pno_fkey" FOREIGN KEY (pno) REFERENCES project(pnumber)
```

```
pes1ug19cs251_dbms_week4=# create table dependent(Essn int,Dependent_name varchar(20) unique NOT NULl,Sex varchar(8),Bdate date CHECK(Bdate<'1985-12-31'),Relationship varchar(10) NOT NULL default 'parent',primar
y key(essn,Dependent_name),foreign key(Essn) references employee(Ssn));
CREATE TABLE
pes1ug19cs251_dbms_week4=# \d dependent
                         Table "public.dependent"
     Column     |         Type          | Collation | Nullable |           Default
----------------+-----------------------+-----------+----------+-----------------------------
 essn           | integer               |           | not null |
 dependent_name | character varying(20) |           | not null |
 sex            | character varying(8)  |           |          |
 bdate          | date                  |           |          |
 relationship   | character varying(10) |           | not null | 'parent'::character varying
Indexes:
    "dependent_pkey" PRIMARY KEY, btree (essn, dependent_name)
    "dependent_dependent_name_key" UNIQUE CONSTRAINT, btree (dependent_name)
Check constraints:
    "dependent_bdate_check" CHECK (bdate < '1985-12-31'::date)
Foreign-key constraints:
    "dependent_essn_fkey" FOREIGN KEY (essn) REFERENCES employee(ssn)
```

```
pes1ug19cs251_dbms_week4=# insert into employee(fname,minit,lname,ssn,bdate,address,sex,salary,super_ssn) values('Mahim','D','Dashora',1,'1971-12-27','Gujarat','Male',20000,1);
INSERT 0 1
pes1ug19cs251_dbms_week4=# insert into employee(fname,minit,lname,ssn,bdate,address,sex,salary,super_ssn) values('Happy','D','Dashora',1,'1970-11-27','Rajasthan','Male',50000,2);
ERROR:  duplicate key value violates unique constraint "employee_pkey"
DETAIL: Key (ssn)=(1) already exists.
pes1ug19cs251_dbms_week4=# insert into employee(fname,minit,lname,ssn,bdate,address,sex,salary,super_ssn) values('Happy','D','Dashora',2,'1970-11-27','Rajasthan','Male',50000,2);
INSERT 0 1
pes1ug19cs251_dbms_week4=# insert into employee(fname,minit,lname,ssn,bdate,address,sex,salary,super_ssn) values('Smriti','J','Kashyap',3,'1969-11-25','Delhi','Female',60000,3);
INSERT 0 1
pes1ug19cs251_dbms_week4=# select * from employee;
 fname  | minit | lname   | ssn | bdate      | address   | sex    | salary | super_ssn | dno
--------+-------+---------+-----+------------+-----------+--------+--------+-----------+-----
 Mahim  | D     | Dashora |   1 | 1971-12-27 | Gujarat   | Male   |  20000 |         1 |
 Happy  | D     | Dashora |   2 | 1970-11-27 | Rajasthan | Male   |  50000 |         2 |
 Smriti | J     | Kashyap |   3 | 1969-11-25 | Delhi     | Female |  60000 |         3 |
(3 rows)


pes1ug19cs251_dbms_week4=# insert into department values('Accounting',11,1,'1972-06-19');
INSERT 0 1
pes1ug19cs251_dbms_week4=# insert into department values('Accounting',12,2,'1972-06-19');
ERROR:  duplicate key value violates unique constraint "department_dname_key"
DETAIL: Key (dname)=(Accounting) already exists.
pes1ug19cs251_dbms_week4=# insert into department values('Research',12,2,'1972-06-19');
INSERT 0 1
pes1ug19cs251_dbms_week4=# insert into department values('Sales',12,2,'1972-06-19');
ERROR:  duplicate key value violates unique constraint "department_pkey"
DETAIL: Key (dnumber)=(12) already exists.
pes1ug19cs251_dbms_week4=# insert into department values('Sales',12,3,'1972-06-19');
ERROR:  duplicate key value violates unique constraint "department_pkey"
DETAIL: Key (dnumber)=(12) already exists.
pes1ug19cs251_dbms_week4=# insert into department values('Sales',13,3,'1972-06-19');
INSERT 0 1
pes1ug19cs251_dbms_week4=# insert into department values('Operation',14,4,'1972-06-19');
INSERT 0 1
pes1ug19cs251_dbms_week4=# insert into department values('Marketing',15,2,'1972-06-19');
INSERT 0 1
pes1ug19cs251_dbms_week4=# select * from department;
   dname    | dnumber | mgr_ssn | mgr_start_date
------------+---------+---------+----------------
 Accounting |      11 |       1 | 1972-06-19
 Research   |      12 |       2 | 1972-06-19
 Sales      |      13 |       3 | 1972-06-19
 Operation  |      14 |       4 | 1972-06-19
 Marketing  |      15 |       2 | 1972-06-19
(5 rows)
```

```
pes1ug19cs251_dbms_week4=# insert into project values('Data Center',31,'Lab 101',11);
INSERT 0 1
pes1ug19cs251_dbms_week4=# insert into project values('IT Security',32,'Lab 101',12);
INSERT 0 1
pes1ug19cs251_dbms_week4=# insert into project values('Ecom',33,'Lab 102',13);
INSERT 0 1
pes1ug19cs251_dbms_week4=# insert into project values('Survey',33,'Lab 104',14);
ERROR:  duplicate key value violates unique constraint "project_pkey"
DETAIL:  Key (pnumber)=(33) already exists.
pes1ug19cs251_dbms_week4=# insert into project values('CRM',34,'Lab 104',14);
INSERT 0 1
pes1ug19cs251_dbms_week4=# insert into project values('Survey',35,'Lab 105',15);
INSERT 0 1
pes1ug19cs251_dbms_week4=# select * from project;
    panem    | pnumber | plocation | dnum
-------------+---------+-----------+------
 Data Center |      31 | Lab 101   |   11
 IT Security |      32 | Lab 101   |   12
 Ecom        |      33 | Lab 102   |   13
 CRM         |      34 | Lab 104   |   14
 Survey      |      35 | Lab 105   |   15
(5 rows)
```

```
pes1ug19cs251_dbms_week4=# insert into dependent values(1,'A','Male','1963-12-21');
INSERT 0 1
pes1ug19cs251_dbms_week4=# insert into dependent values(2,'B','Male','1953-12-21');
INSERT 0 1
pes1ug19cs251_dbms_week4=# insert into dependent values(2,'B','Female','1953-10-1');
ERROR:  duplicate key value violates unique constraint "dependent_pkey"
DETAIL:  Key (essn)=(2) already exists.
pes1ug19cs251_dbms_week4=# insert into dependent values(3,'C','Female','1953-10-1');
INSERT 0 1
pes1ug19cs251_dbms_week4=# select from dependent;
--
(3 rows)



pes1ug19cs251_dbms_week4=# select * from dependent;
 essn | dependent_name |  sex   |   bdate    | relationship
------+----------------+--------+------------+--------------
    1 | A              | Male   | 1963-12-21 | parent
    2 | B              | Male   | 1953-12-21 | parent
    3 | C              | Female | 1953-10-01 | parent
(3 rows)
```

2. 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 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

```
pes1ug19cs251_dbms_week4=# drop view worker;
DROP VIEW
pes1ug19cs251_dbms_week4=# drop view worker_gender;
DROP VIEW
pes1ug19cs251_dbms_week4=# drop view relation;
DROP VIEW
pes1ug19cs251_dbms_week4=# select * from worker_gender;
ERROR:  relation "worker_gender" does not exist
LINE 1: select * from worker_gender;
                      ^
pes1ug19cs251_dbms_week4=# select * from relation;
ERROR:  relation "relation" does not exist
LINE 1: select * from relation;
```

```
pes1ug19cs251_dbms_week4=# create user u1;
CREATE ROLE
pes1ug19cs251_dbms_week4=# grant all on employee to u1;
GRANT
pes1ug19cs251_dbms_week4=# grant select on employee tu u1;
ERROR:  syntax error at or near "tu"
LINE 1: grant select on employee tu u1;
                                 ^
pes1ug19cs251_dbms_week4=# grant select on employee to u1;
GRANT
pes1ug19cs251_dbms_week4=# create user u3;
CREATE ROLE
pes1ug19cs251_dbms_week4=# grant all privileges on databse pes1ug19cs251_dbms_week4 to u3;
ERROR:  syntax error at or near "pes1ug19cs251_dbms_week4"
LINE 1: grant all privileges on databse pes1ug19cs251_dbms_week4 to ...
                                         ^
pes1ug19cs251_dbms_week4=# grant all privileges on database pes1ug19cs251_dbms_week4 to u3;
GRANT
pes1ug19cs251_dbms_week4=# create user u4;
CREATE ROLE
pes1ug19cs251_dbms_week4=# grant delete,update on department,project to u4;
GRANT
pes1ug19cs251_dbms_week4=# grant delete,update on department,project to u4;
GRANT
pes1ug19cs251_dbms_week4=# grant delete,update on dependent,project to u4;
GRANT
pes1ug19cs251_dbms_week4=# alter table dependent owner to u4;
ALTER TABLE
pes1ug19cs251_dbms_week4=# alter table project owner to u4;
ALTER TABLE
pes1ug19cs251_dbms_week4=# alter employee add column Height int;
ERROR:  syntax error at or near "employee"
LINE 1: alter employee add column Height int;
              ^
pes1ug19cs251_dbms_week4=# alter table employee add column Height int;
ALTER TABLE
pes1ug19cs251_dbms_week4=# select * from employee;
 fname  | minit |  lname  | ssn |   bdate    |  address  |  sex   | salary | super_ssn | dno | height
--------+-------+---------+-----+------------+-----------+--------+--------+-----------+-----+--------
 Mahim  | D     | Dashora |   1 | 1971-12-27 | Gujarat   | Male   |  20000 |         1 |     |
 Happy  | D     | Dashora |   2 | 1970-11-27 | Rajasthan | Male   |  50000 |         2 |     |
 Smriti | J     | Kashyap |   3 | 1969-11-25 | Delhi     | Female |  60000 |         3 |     |
(3 rows)
```

```
pes1ug19cs251_dbms_week4=# alter table employee drop column Height;
ALTER TABLE
pes1ug19cs251_dbms_week4=# select * from employee;
 fname  | minit |  lname  | ssn |   bdate    |  address  |  sex   | salary | super_ssn | dno
--------+-------+---------+-----+------------+-----------+--------+--------+-----------+-----
 Mahim  | D     | Dashora |   1 | 1971-12-27 | Gujarat   | Male   |  20000 |         1 |
 Happy  | D     | Dashora |   2 | 1970-11-27 | Rajasthan | Male   |  50000 |         2 |
 Smriti | J     | Kashyap |   3 | 1969-11-25 | Delhi     | Female |  60000 |         3 |
(3 rows)


pes1ug19cs251_dbms_week4=# drop table dependent;
DROP TABLE
pes1ug19cs251_dbms_week4=# select * from dependent;
ERROR:  relation "dependent" does not exist
LINE 1: select * from dependent;
                      ^
pes1ug19cs251_dbms_week4=#
```