DBMS LAB WEEK – 5

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SECTION: D

SEMESTER: 5TH

Creating "company" database and importing companyddl.sql file:

```
C:\Program Files (x86)\PostgreSQL\10\bin>psql -U postgres -f F:\WEEK5\companyddl.sql
Password for user postgres:
psql:F:/WEEK5/companyddl.sql:1: ERROR:  database "company" does not exist
CREATE DATABASE
You are now connected to database "company" as user "postgres".
CREATE TABLE
CREATE TABLE
CREATE TABLE
CREATE TABLE
CREATE TABLE
CREATE TABLE
ALTER TABLE
```

Inserting company_insert.sql file:

```
C:\Windows\System32\cmd.exe - psql -U postgres

C:\Program Files (x86)\PostgreSQL\10\bin>psql -U postgres -f F:\WEEK5\company_insert.sql
Password for user postgres:
You are now connected to database "company" as user "postgres".
ALTER TABLE
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
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INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
```

```
psql:F:/WEEK5/company_insert.sql:46: ERROR:  null value in column "hours" violates not-null constraint
DETAIL:  Failing row contains (888665555, 20, null).
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
ALTER TABLE
```

Now connecting to Company Database:

```
C:\Windows\System32\cmd.exe - psql -U postgres

C:\Program Files (x86)\PostgreSQL\10\bin>psql -U postgres
Password for user postgres:
psql (10.18)
WARNING: Console code page (437) differs from Windows code page (1252)
         8-bit characters might not work correctly. See psql reference
         page "Notes for Windows users" for details.
Type "help" for help.

postgres=# \c company
You are now connected to database "company" as user "postgres".
company=# \d
'more' is not recognized as an internal or external command,
operable program or batch file.
company=# \pset pager off
Pager usage is off.
company=# \d
             List of relations
 Schema |      Name       | Type  |  Owner
--------+-----------------+-------+----------
 public | department      | table | postgres
 public | dependent       | table | postgres
 public | dept_locations  | table | postgres
 public | employee        | table | postgres
 public | project         | table | postgres
 public | works_on        | table | postgres
(6 rows)
```

1. **SQL DML**

   - **Create a temporary table that has the employee last name, project name, and hours per week for each employee working on a project. Insert the values into the table using insert into with select command**.

```
company=# CREATE TABLE temp5 (
company(# Lname VARCHAR(15) NOT NULL,
company(# Pname VARCHAR(15) NOT NULL,
company(# Hours DECIMAL(3, 1) NOT NULL );
CREATE TABLE
```

```
company=# INSERT INTO temp5 SELECT lname,pname,hours FROM employee,project,works_on where ssn=essn and dno=dnum and pno=pnumber;
INSERT 0 12
company=# SELECT * FROM temp5;
 lname   |      pname      | hours
---------+-----------------+-------
 Smith   | ProductX        |  32.5
 Smith   | ProductY        |   7.5
 Narayan | ProductZ        |  40.0
 English | ProductX        |  20.0
 English | ProductY        |  20.0
 Wong    | ProductY        |  10.0
 Wong    | ProductZ        |  10.0
 Zelaya  | Newbenefits     |  30.0
 Zelaya  | Computerization |  10.0
 Jabbar  | Computerization |  35.0
 Jabbar  | Newbenefits     |   5.0
 Wallace | Newbenefits     |  20.0
(12 rows)
```

   - **Update the location and controlling department number of project number 10 to 'Bellaire' and 5, respectively**.

```
company=# select * from project;
      pname       | pnumber | plocation | dnum
------------------+---------+-----------+------
 ProductX         |       1 | Bellaire  |    5
 ProductY         |       2 | Sugarland |    5
 ProductZ         |       3 | Houston   |    5
 Computerization  |      10 | Stafford  |    4
 Reorganization   |      20 | Houston   |    1
 Newbenefits      |      30 | Stafford  |    4
(6 rows)
```

```
company=# UPDATE project SET plocation='Bellaire', dnum=5 WHERE pnumber=10;
UPDATE 1
company=# SELECT * FROM PROJECT;
      pname       | pnumber | plocation | dnum
------------------+---------+-----------+------
 ProductX         |       1 | Bellaire  |    5
 ProductY         |       2 | Sugarland |    5
 ProductZ         |       3 | Houston   |    5
 Reorganization   |      20 | Houston   |    1
 Newbenefits      |      30 | Stafford  |    4
 Computerization  |      10 | Bellaire  |    5
(6 rows)

company=#
```

- **Give all employees in the 'Research' department a 10% raise in salary.**

```
company=# SELECT * FROM employee;
  fname   | minit |  lname   |    ssn    |   bdate    |        address         | gender |  salary  | super_ssn | dno
----------+-------+----------+-----------+------------+------------------------+--------+----------+-----------+-----
 James    | E     | Borg     | 888665555 | 1937-11-10 | 450 Stone, Houston,TX  | M      | 55000.00 |           |   1
 John     | B     | Smith    | 123456789 | 1965-01-09 | 731 Fondren,Houston,TX | M      | 30000.00 | 888665555 |   5
 Franklin | T     | Wong     | 333445555 | 1955-12-08 | 638 voss,Houston,TX    | M      | 40000.00 | 888665555 |   5
 Alicia   | J     | Zelaya   | 999887777 | 1968-01-19 | 3321 Castle,Spring,Tx  | F      | 25000.00 | 333445555 |   4
 Jennifer | S     | Wallace  | 987654321 | 1941-06-20 | 291 Berry, Bellaire,Tx | F      | 43000.00 | 333445555 |   4
 Ramesh   | K     | Narayan  | 666884444 | 1962-09-15 | 975 Fire Oak, Humble, TX | M    | 38000.00 | 333445555 |   5
 Joyce    | A     | English  | 453453453 | 1972-07-31 | 5631 Rice,Houston,TX   | F      | 25000.00 | 333445555 |   5
 Ahmed    | V     | Jabbar   | 987987987 | 1969-03-29 | 980 Dallas, Houston,TX | M      | 25000.00 | 987654321 |   4
(8 rows)
```

```
company=# UPDATE employee SET salary = salary*1.1 WHERE dno IN (SELECT dnumber FROM department WHERE dname='Research' );
UPDATE 4
company=# SELECT * FROM employee;
  fname   | minit |  lname   |    ssn    |   bdate    |        address         | gender |  salary  | super_ssn | dno
----------+-------+----------+-----------+------------+------------------------+--------+----------+-----------+-----
 James    | E     | Borg     | 888665555 | 1937-11-10 | 450 Stone, Houston,TX  | M      | 55000.00 |           |   1
 Alicia   | J     | Zelaya   | 999887777 | 1968-01-19 | 3321 Castle,Spring,Tx  | F      | 25000.00 | 333445555 |   4
 Jennifer | S     | Wallace  | 987654321 | 1941-06-20 | 291 Berry, Bellaire,Tx | F      | 43000.00 | 333445555 |   4
 Ahmed    | V     | Jabbar   | 987987987 | 1969-03-29 | 980 Dallas, Houston,TX | M      | 25000.00 | 987654321 |   4
 John     | B     | Smith    | 123456789 | 1965-01-09 | 731 Fondren,Houston,TX | M      | 33000.00 | 888665555 |   5
 Franklin | T     | Wong     | 333445555 | 1955-12-08 | 638 voss,Houston,TX    | M      | 44000.00 | 888665555 |   5
 Ramesh   | K     | Narayan  | 666884444 | 1962-09-15 | 975 Fire Oak, Humble, TX | M    | 41800.00 | 333445555 |   5
 Joyce    | A     | English  | 453453453 | 1972-07-31 | 5631 Rice,Houston,TX   | F      | 27500.00 | 333445555 |   5
(8 rows)
```

- **Delete employee record whose lname ='Brown'**

```
company=# DELETE FROM employee WHERE lname='brown';
DELETE 0
company=#
```

As there are no lname with "brown". Therefore, there will be no alteration in Employee Table

```
company=# SELECT * FROM employee;
  fname   | minit |  lname   |    ssn    |   bdate    |        address         | gender |  salary  | super_ssn | dno
----------+-------+----------+-----------+------------+------------------------+--------+----------+-----------+-----
 James    | E     | Borg     | 888665555 | 1937-11-10 | 450 Stone, Houston,TX  | M      | 55000.00 |           |   1
 John     | B     | Smith    | 123456789 | 1965-01-09 | 731 Fondren,Houston,TX | M      | 30000.00 | 888665555 |   5
 Franklin | T     | Wong     | 333445555 | 1955-12-08 | 638 voss,Houston,TX    | M      | 40000.00 | 888665555 |   5
 Alicia   | J     | Zelaya   | 999887777 | 1968-01-19 | 3321 Castle,Spring,Tx  | F      | 25000.00 | 333445555 |   4
 Jennifer | S     | Wallace  | 987654321 | 1941-06-20 | 291 Berry, Bellaire,Tx | F      | 43000.00 | 333445555 |   4
 Ramesh   | K     | Narayan  | 666884444 | 1962-09-15 | 975 Fire Oak, Humble, TX | M    | 38000.00 | 333445555 |   5
 Joyce    | A     | English  | 453453453 | 1972-07-31 | 5631 Rice,Houston,TX   | F      | 25000.00 | 333445555 |   5
 Ahmed    | V     | Jabbar   | 987987987 | 1969-03-29 | 980 Dallas, Houston,TX | M      | 25000.00 | 987654321 |   4
(8 rows)
```

- **Delete all the records of the employee who doesn't have dependent. (use sub query).**

There are total of 5 records who doesn't have Dependent.

```
company=# SELECT * FROM employee;
  fname   | minit |  lname  |    ssn    |   bdate    |         address          | gender |  salary  | super_ssn | dno
----------+-------+---------+-----------+------------+--------------------------+--------+----------+-----------+-----
 James    | E     | Borg    | 888665555 | 1937-11-10 | 450 Stone, Houston,TX    | M      | 55000.00 |           |   1
 Alicia   | J     | Zelaya  | 999887777 | 1968-01-19 | 3321 Castle,Spring,Tx    | F      | 25000.00 | 333445555 |   4
 Jennifer | S     | Wallace | 987654321 | 1941-06-20 | 291 Berry, Bellaire,Tx   | F      | 43000.00 | 333445555 |   4
 Ahmed    | V     | Jabbar  | 987987987 | 1969-03-29 | 980 Dallas, Houston,TX   | M      | 25000.00 | 987654321 |   4
 John     | B     | Smith   | 123456789 | 1965-01-09 | 731 Fondren,Houston,TX   | M      | 33000.00 | 888665555 |   5
 Franklin | T     | Wong    | 333445555 | 1955-12-08 | 638 voss,Houston,TX      | M      | 44000.00 | 888665555 |   5
 Ramesh   | K     | Narayan | 666884444 | 1962-09-15 | 975 Fire Oak, Humble, TX | M      | 41800.00 | 333445555 |   5
 Joyce    | A     | English | 453453453 | 1972-07-31 | 5631 Rice,Houston,TX     | F      | 27500.00 | 333445555 |   5
(8 rows)

company=# SELECT fname,lname FROM employee WHERE NOT EXISTS (SELECT * FROM dependent WHERE ssn=essn);
  fname  |  lname
---------+---------
 James   | Borg
 Alicia  | Zelaya
 Ahmed   | Jabbar
 Ramesh  | Narayan
 Joyce   | English
(5 rows)
```

```
company=# DELETE FROM employee WHERE NOT EXISTS (SELECT * FROM dependent WHERE ssn=essn);
ERROR:  update or delete on table "employee" violates foreign key constraint "employee_super_ssn_fkey" on table "employee"
DETAIL:  Key (ssn)=(888665555) is still referenced from table "employee".
```

```
company=# ALTER TABLE employee DROP CONSTRAINT employee_super_ssn_fkey, ADD CONSTRAINT employee_super_ssn FOREIGN KEY (ssn) REFERENCES employee (ssn) ON DELETE CASCADE;

ALTER TABLE
```

```
company=# alter table department drop constraint department_mgr_ssn_fkey;
ALTER TABLE
```

```
company=# DELETE FROM employee WHERE NOT EXISTS (SELECT * FROM dependent WHERE ssn=essn);
ERROR:  update or delete on table "employee" violates foreign key constraint "works_on_essn_fkey" on table "works_on"
DETAIL:  Key (ssn)=(999887777) is still referenced from table "works_on".
company=# alter table works_on drop constraint works_on_essn_fkey;
ALTER TABLE
```

```
company=# DELETE FROM employee WHERE NOT EXISTS (SELECT * FROM dependent WHERE ssn=essn);
DELETE 5
```

```
company=# select * from employee;
  fname  | minit | lname  |    ssn    |   bdate    |         address          | gender | salary   | super_ssn | dno
---------+-------+--------+-----------+------------+--------------------------+--------+----------+-----------+-----
 Jennifer| S     | Wallace| 987654321 | 1941-06-20 | 291 Berry, Bellaire,Tx   | F      | 43000.00 | 333445555 |   4
 John    | B     | Smith  | 123456789 | 1965-01-09 | 731 Fondren,Houston,TX   | M      | 33000.00 | 888665555 |   5
 Franklin| T     | Wong   | 333445555 | 1955-12-08 | 638 voss,Houston,TX      | M      | 44000.00 | 888665555 |   5
(3 rows)
```

2. Transactions: Create a transaction using begin and end commands consisting of the following sql statements.

- Create a transaction consisting of a create table and multiple insert statements. After End transaction the changes should be committed and can be checked using select statement.

```
company=# BEGIN;
BEGIN
company=# CREATE TABLE person (
company(# P_id INT PRIMARY KEY,
company(# Fname VARCHAR(15),
company(# Lname VARCHAR(15),
company(# Address VARCHAR(30),
company(# Age INT );
CREATE TABLE
company=# INSERT INTO person VALUES ('101', 'Amit', 'K', 'Holton', '23' );
INSERT 0 1
company=# INSERT INTO person VALUES ('102', 'Anurag', 'S', 'Burton', '25' );
INSERT 0 1
company=# INSERT INTO person VALUES ('103', 'Vishwas', 'Singh', 'Dover Road', '35' );
INSERT 0 1
company=# INSERT INTO person VALUES ('104', 'Sakshi', 'P', 'Newmarket', '20' );
INSERT 0 1
company=# INSERT INTO person VALUES ('105', 'Roshini', 'R', 'KR colony', '19' );
INSERT 0 1
company=# SELECT * FROM person;
 p_id |  fname  | lname |   address   | age
------+---------+-------+-------------+-----
  101 | Amit    | K     | Holton      |  23
  102 | Anurag  | S     | Burton      |  25
  103 | Vishwas | Singh | Dover Road  |  35
  104 | Sakshi  | P     | Newmarket   |  20
  105 | Roshini | R     | KR colony   |  19
(5 rows)
```

```
company=# end transaction;
COMMIT
company=# SELECT * FROM person;
 p_id |  fname   | lname |  address   | age
------+----------+-------+------------+-----
  101 | Amit     | K     | Holton     |  23
  102 | Anurag   | S     | Burton     |  25
  103 | Vishwas  | Singh | Dover Road |  35
  104 | Sakshi   | P     | Newmarket  |  20
  105 | Roshini  | R     | KR colony  |  19
(5 rows)

company=#
```

- **For the above transaction introduce a roll back after inserting 2 records. The create and insert should not be reflected in the database.**

```
company=# BEGIN;
BEGIN
company=# INSERT INTO person VALUES ('101', 'Amit', 'K', 'Holton', '23' );
INSERT 0 1
company=# INSERT INTO person VALUES ('102', 'Anurag', 'S', 'Burton', '25' );
INSERT 0 1
company=# SELECT * FROM person;
 p_id | fname  | lname | address | age
------+--------+-------+---------+-----
  101 | Amit   | K     | Holton  |  23
  102 | Anurag | S     | Burton  |  25
(2 rows)

company=# rollback;
ROLLBACK
company=# SELECT * FROM person;
 p_id | fname | lname | address | age
------+-------+-------+---------+-----
(0 rows)

company=# commit;
WARNING:  there is no transaction in progress
COMMIT
company=#
```

- **For the first transaction introduce a save point after inserting 2 records and insert 2 more records and rollback to savepoint. They database should reflect only first 2 insert**.

```
BEGIN
company=# INSERT INTO person VALUES ('101', 'Amit', 'K', 'Holton', '23' );
INSERT 0 1
company=# INSERT INTO person VALUES ('102', 'Anurag', 'S', 'Burton', '25' );
INSERT 0 1
company=# savepoint my_person1;
SAVEPOINT
```

```
company=# INSERT INTO person VALUES ('103', 'Vishwas', 'Singh', 'Dover Road', '35' );
INSERT 0 1
company=# INSERT INTO person VALUES ('104', 'Sakshi', 'P', 'Newmarket', '20' );
INSERT 0 1
company=# INSERT INTO person VALUES ('105', 'Roshini', 'R', 'KR colony', '19' );
INSERT 0 1
company=# SELECT * FROM person;
 p_id |  fname  | lname |  address   | age
------+---------+-------+------------+-----
  101 | Amit    | K     | Holton     |  23
  102 | Anurag  | S     | Burton     |  25
  103 | Vishwas | Singh | Dover Road |  35
  104 | Sakshi  | P     | Newmarket  |  20
  105 | Roshini | R     | KR colony  |  19
(5 rows)
```

```
company=# rollback to my_person1;
ROLLBACK
company=# SELECT * FROM person;
 p_id | fname  | lname | address | age
------+--------+-------+---------+-----
  101 | Amit   | K     | Holton  |  23
  102 | Anurag | S     | Burton  |  25
(2 rows)

company=# commit;
COMMIT
company=#
```