



PES UNIVERSITY EC CAMPUS DBMS LAB WEEK 4

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SECTION: E

Creating Tables :

1) DEPARTMENT AND EMPLOYEE :

```
Last login: Thu Oct 14 06:46:03 on ttys000

The default interactive shell is now zsh.
To update your account to use zsh, please run `chsh -s /bin/zsh`.
For more details, please visit https://support.apple.com/kb/HT208050.
Apples-MacBook-Air:~ apple$ sudo -u postgres psql
Password:
Password for user postgres:
psql (14.0, server 11.13)
Type "help" for help.

postgres=# CREATE DATABASE companydb;
CREATE DATABASE
postgres=# \c companydb
connection to server on socket "/tmp/.s.PGSQL.5432" failed: FATAL:  database "companydb" does not exist
Previous connection kept
postgres=# \c companydb
psql (14.0, server 11.13)
You are now connected to database "companydb" as user "postgres".
companydb=# CREATE TABLE DEPARTMENT(DNAME VARCHAR(30) UNIQUE,DNUMBER INT UNIQUE,MGR_SSN INT,MGR_START_DATE DATE NOT NULL,PRIMARY KEY(DNUMBER));
CREATE TABLE
companydb=# \d department
               Table "public.department"
   Column   |      Type       | Collation | Nullable | Default
-----|-----|-----|-----|-----
 dname      | character varying(30) |           |          |
 dnumber    | integer          |           | not null |
 mgr_ssn    | integer          |           |          |
 mgr_start_date | date            |           | not null |
Indexes:
    "department_pkey" PRIMARY KEY, btree (dnumber)
    "department_dname_key" UNIQUE CONSTRAINT, btree (dname)

companydb=# CREATE TABLE EMPLOYEE(FNAME VARCHAR(30) NOT NULL,MINIT VARCHAR(1),LNAME VARCHAR(30) NOT NULL,SSN INT NOT NULL,BDATE DATE NOT NULL,
CHECK(BDATE<'1985-01-01'),ADDRESS VARCHAR(100) NOT NULL,SEX VARCHAR(1) NOT NULL,SALARY INT NOT NULL,PRIMARY KEY(SSN),SUPER_SSN INT NOT NULL,
FOREIGN KEY(SUPER_SSN) REFERENCES EMPLOYEE(SSN),DNO INT,FOREIGN KEY(DNO) REFERENCES DEPARTMENT(DNUMBER));
CREATE TABLE
companydb=# \d employee
               Table "public.employee"
   Column   |      Type       | Collation | Nullable | Default
-----|-----|-----|-----|-----
 fname     | character varying(30) |           | not null |
 minit     | character varying(1) |           |          |
 lname     | character varying(30) |           | not null |

companydb=# ALTER TABLE DEPARTMENT ADD CONSTRAINT FK_MANAGER_EMP FOREIGN KEY(MGR_SSN) REFERENCES EMPLOYEE(SSN);
ALTER TABLE
companydb=# \d department
               Table "public.department"
   Column   |      Type       | Collation | Nullable | Default
-----|-----|-----|-----|-----
 dname      | character varying(30) |           |          |
 dnumber    | integer          |           | not null |
 mgr_ssn    | integer          |           |          |
 mgr_start_date | date            |           | not null |
Indexes:
    "department_pkey" PRIMARY KEY, btree (dnumber)
    "department_dname_key" UNIQUE CONSTRAINT, btree (dname)
Foreign-key constraints:
    "fk_manager_emp" FOREIGN KEY (mgr_ssn) REFERENCES employee(ssn)
Referenced by:
    TABLE "employee" CONSTRAINT "employee_dno_fkey" FOREIGN KEY (dno) REFERENCES department(dnumber)

companydb=#
```

2) DEPT_LOCATIONS

```
companydb=# CREATE TABLE DEPT_LOCATIONS(DNUMBER INT NOT NULL,DLOCATION VARCHAR(50) NOT NULL,PRIMARY KEY(DNUMBER,DLOCATION),
FOREIGN KEY(DNUMBER) REFERENCES DEPARTMENT(DNUMBER));
CREATE TABLE
companydb=# \d dept_locations
               Table "public.dept_locations"
  Column      |      Type      | Collation | Nullable | Default
-----|-----|-----|-----|-----
 dnumber      |      integer    |           |    not null
 dlocation    | character varying(50) |           |    not null
Indexes:
    "dept_locations_pkey" PRIMARY KEY, btree (dnumber, dlocation)
Foreign-key constraints:
    "dept_locations_dnumber_fkey" FOREIGN KEY (dnumber) REFERENCES department(dnumber)
companydb=#
```

3) PROJECT

```
companydb=# CREATE TABLE PROJECT(PNAME VARCHAR(20) DEFAULT 'Project',PNUMBER INT NOT NULL,PLOCATION VARCHAR(100) NOT NULL,DNUM INT NOT NULL,
PRIMARY KEY(PNUMBER));
CREATE TABLE
companydb=# \d project
               Table "public.project"
  Column      |      Type      | Collation | Nullable |      Default
-----|-----|-----|-----|-----
 pname        | character varying(20) |           |
 pnumber      |      integer    |           |    not null
 plocation    | character varying(100) |           |    not null
 dnum         |      integer    |           |    not null
Indexes:
    "project_pkey" PRIMARY KEY, btree (pnumber)
companydb=#
```

4) WORKS_ON

```
companydb=# CREATE TABLE WORKS_ON(ESSN INT NOT NULL,PNO INT NOT NULL,HOURS INT NOT NULL,PRIMARY KEY(ESSN,PNO),FOREIGN KEY(ESSN) REFERENCES EMPL
OYEE(SSN),
FOREIGN KEY(PNO) REFERENCES PROJECT(PNUMBER));
CREATE TABLE
companydb=# \d works_on
               Table "public.works_on"
  Column | Type | Collation | Nullable | Default
-----|-----|-----|-----|-----
 essn    | integer |           |    not null
 pno     | integer |           |    not null
 hours   | integer |           |    not null
Indexes:
    "works_on_pkey" PRIMARY KEY, btree (essn, pno)
Foreign-key constraints:
    "works_on_essn_fkey" FOREIGN KEY (essn) REFERENCES employee(ssn)
    "works_on_pno_fkey" FOREIGN KEY (pno) REFERENCES project(pnumber)
companydb=#
```

5) DEPENDENT

```
companydb=# CREATE TABLE DEPENDENT(ESSN INT NOT NULL,DEPENDENT_NAME VARCHAR(30) NOT NULL,SEX VARCHAR(1) NOT NULL,BDATE DATE NOT NULL CHECK(BDAT
E<'1985-01-01'),RELATIONSHIP VARCHAR(30) NOT NULL DEFAULT 'Parent',PRIMARY KEY(ESSN,DEPENDENT_NAME),FOREIGN KEY(ESSN) REFERENCES EMPLOYEE(SSN))
;
CREATE TABLE
companydb=# \d dependent
               Table "public.dependent"
  Column      |      Type      | Collation | Nullable |      Default
-----|-----|-----|-----|-----
 essn         |      integer    |           |    not null
 dependent_name | character varying(30) |           |    not null
 sex          | character varying(1) |           |    not null
 bdate        |      date       |           |    not null
 relationship  | character varying(30) |           |    not null
Indexes:
    "dependent_pkey" PRIMARY KEY, btree (essn, dependent_name)
Check constraints:
    "dependent_bdate_check" CHECK (bdate < '1985-01-01'::date)
Foreign-key constraints:
    "dependent_essn_fkey" FOREIGN KEY (essn) REFERENCES employee(ssn)
companydb=#
```

INSERTING VALUES INTO TABLES :

1) DEPARTMENT

```
companydb=# INSERT INTO DEPARTMENT(DNAME,DNUMBER,MGR_SSN,MGR_START_DATE) VALUES('RESEARCH',5,NULL,'1988-05-22');
INSERT 0 1
companydb=# INSERT INTO DEPARTMENT(DNAME,DNUMBER,MGR_SSN,MGR_START_DATE) VALUES('ADMINISTRATION',4,NULL,'1995-01-01');
INSERT 0 1
companydb=# INSERT INTO DEPARTMENT(DNAME,DNUMBER,MGR_SSN,MGR_START_DATE) VALUES('HEADQUARTERS',1,NULL,'1981-06-19');
INSERT 0 1
companydb=# SELECT * FROM DEPARTMENT
companydb=# ^C
companydb=# SELECT * FROM DEPARTMENT;
  dname      | dnumber | mgr_ssn | mgr_start_date
-----+-----+-----+-----
 RESEARCH   |      5  |         | 1988-05-22
ADMINISTRATION |      4  |         | 1995-01-01
HEADQUARTERS |      1  |         | 1981-06-19
(3 rows)

companydb=#
```

2) EMPLOYEE

```
companydb=# INSERT INTO EMPLOYEE(FNAME,MINIT,LNAME,SSN,BDATE,ADDRESS,SEX,SALARY,SUPER_SSN,DNO) VALUES('JAMES','E','BORG',888665555,'1937-11-10',
'405 STONE,HOUSTON,TX','M',55000,NULL,1);
INSERT 0 1
companydb=# INSERT INTO EMPLOYEE(FNAME,MINIT,LNAME,SSN,BDATE,ADDRESS,SEX,SALARY,SUPER_SSN,DNO) VALUES('FRANKLIN','T','WONG',333445555,'1955-12-
08','638 VOSS,HOUSTON,TX','M',40000,888665555,5);
INSERT 0 1
companydb=# INSERT INTO EMPLOYEE(FNAME,MINIT,LNAME,SSN,BDATE,ADDRESS,SEX,SALARY,SUPER_SSN,DNO) VALUES('JOHN','B','SMITH',123456789,'1965-01-09',
'731 FONDREN,HOUSTON,TX','M',30000,333445555,5);
INSERT 0 1
companydb=# INSERT INTO EMPLOYEE(FNAME,MINIT,LNAME,SSN,BDATE,ADDRESS,SEX,SALARY,SUPER_SSN,DNO) VALUES('JENNIFER','S','WALLACE',987654321,'1941-
06-20','291 BERRY,BELLAIRE,TX','F',43000,888665555,4);
INSERT 0 1
companydb=# INSERT INTO EMPLOYEE(FNAME,MINIT,LNAME,SSN,BDATE,ADDRESS,SEX,SALARY,SUPER_SSN,DNO) VALUES('ALICIA','J','ZELAYA',999887777,'1968-01-
19','3321 CASTLE,SPRING,TX','F',25000,987654321,4);
INSERT 0 1
companydb=# INSERT INTO EMPLOYEE(FNAME,MINIT,LNAME,SSN,BDATE,ADDRESS,SEX,SALARY,SUPER_SSN,DNO) VALUES('RAMESH','K','NARAYAN',666884444,'1962-09-
15','975 FIRE OAK,HOUSTON,TX','M',38000,333445555,5);
INSERT 0 1
companydb=# INSERT INTO EMPLOYEE(FNAME,MINIT,LNAME,SSN,BDATE,ADDRESS,SEX,SALARY,SUPER_SSN,DNO) VALUES('JOYCE','A','ENGLISH',453453453,'1972-07-
31','5631 RICE,HOUSTON,TX','F',25000,333445555,5);
INSERT 0 1
companydb=# INSERT INTO EMPLOYEE(FNAME,MINIT,LNAME,SSN,BDATE,ADDRESS,SEX,SALARY,SUPER_SSN,DNO) VALUES('AHMAD','V','JABBAR',987987987,'1969-03-2
9','975 FIRE OAK,HOUSTON,TX','M',25000,987654321,4);
INSERT 0 1
companydb=# SELECT * FROM EMPLOYEE;
  fname | minit | lname  | ssn      | bdate      | address                | sex | salary | dno | super_ssn
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----
 JAMES  | E     | BORG   | 888665555 | 1937-11-10 | 405 STONE,HOUSTON,TX   | M   | 55000  | 1   | 888665555
FRANKLIN | T     | WONG   | 333445555 | 1955-12-08 | 638 VOSS,HOUSTON,TX   | M   | 40000  | 5   | 888665555
JOHN    | B     | SMITH  | 123456789 | 1965-01-09 | 731 FONDREN,HOUSTON,TX | M   | 30000  | 5   | 333445555
JENNIFER | S     | WALLACE | 987654321 | 1941-06-20 | 291 BERRY,BELLAIRE,TX | F   | 43000  | 4   | 888665555
ALICIA  | J     | ZELAYA | 999887777 | 1968-01-19 | 3321 CASTLE,SPRING,TX | F   | 25000  | 4   | 987654321
RAMESH  | K     | NARAYAN | 666884444 | 1962-09-15 | 975 FIRE OAK,HOUSTON,TX | M   | 38000  | 5   | 333445555
JOYCE   | A     | ENGLISH | 453453453 | 1972-07-31 | 5631 RICE,HOUSTON,TX   | F   | 25000  | 5   | 333445555
AHMAD   | V     | JABBAR  | 987987987 | 1969-03-29 | 975 FIRE OAK,HOUSTON,TX | M   | 25000  | 4   | 987654321
(8 rows)

companydb=#
```

```
companydb=# UPDATE DEPARTMENT SET MGR_SSN=333445555 WHERE DNUMBER=5;
UPDATE 1
companydb=# UPDATE DEPARTMENT SET MGR_SSN=987654321 WHERE DNUMBER=4;
UPDATE 1
companydb=# UPDATE DEPARTMENT SET MGR_SSN=888665555 WHERE DNUMBER=1;
UPDATE 1
companydb=# SELECT * FROM DEPARTMENT;
  dname      | dnumber | mgr_ssn | mgr_start_date
-----+-----+-----+-----
 RESEARCH   |      5  | 333445555 | 1988-05-22
ADMINISTRATION |      4  | 987654321 | 1995-01-01
HEADQUARTERS |      1  | 888665555 | 1981-06-19
(3 rows)

companydb=#
```

3) DEPT_LOCATIONS

```
companydb=# INSERT INTO DEPT_LOCATIONS(DNUMBER,DLOCATION) VALUES (1,'HOUSTON'),(4,'STAFFORD'),(5,'BELLAIRE'),(5,'SUGARLAND'),(5,'HOUSTON');
INSERT 0 5
companydb=# SELECT * DEPT_LOCATIONS;
ERROR:  syntax error at or near "DEPT_LOCATIONS"
LINE 1: SELECT * DEPT_LOCATIONS;
              ^
companydb=# SELECT * FROM DEPT_LOCATIONS;
 dnumber | dlocation
-----+-----
      1  | HOUSTON
      4  | STAFFORD
      5  | BELLAIRE
      5  | SUGARLAND
      5  | HOUSTON
(5 rows)

companydb=#
```

4) PROJECT

```
companydb=# INSERT INTO PROJECT(PNAME,PNUMBER,PLOCATION,DNUM) VALUES('PRODUCTX',1,'BELLAIRE',5),('PRODUCTY',2,'SUGARLAND',5),('PRODUCTZ',3,'HOUSTON',5),('COMPUTERIZATION',10,'STAFFORD',4),('REORGANIZATION',20,'HOUSTON',1),('NEWBENEFITS',30,'STAFFORD',4);
INSERT 0 6
companydb=# SELECT * FROM PROJECT
companydb=# ^C
companydb=# 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)

companydb=#
```

5)WORKS_ON

```
companydb=# INSERT INTO WORKS_ON(ESSN,PNO,HOURS) VALUES (123456789,1,32.5),(123456789,2,7.5),(666884444,3,40.0),(453453453,1,20.0),(453453453,2,20.0),(333445555,2,10.0),(333445555,3,10.0),(333445555,10,10.0),(333445555,20,10.0),(999887777,30,30.0),(999887777,10,10.0),(987987987,10,35.0),(987987987,30,5.0),(987654321,30,20.0),(987654321,20,15.0);
INSERT 0 15
companydb=# SELECT * FROM WORKS_ON;
      essn      | pno | hours
-----+-----+-----
123456789       |    1 |    33
123456789       |    2 |     8
666884444       |    3 |    40
453453453       |    1 |    20
453453453       |    2 |    20
333445555       |    2 |    10
333445555       |    3 |    10
333445555       |   10 |    10
333445555       |   20 |    10
999887777       |   30 |    30
999887777       |   10 |    10
987987987       |   10 |    35
987987987       |   30 |     5
987654321       |   30 |    20
987654321       |   20 |    15
(15 rows)

companydb=#

companydb=# INSERT INTO WORKS_ON(ESSN,PNO,HOURS) VALUES (888665555,20,NULL);
INSERT 0 1
companydb=# SELECT * FROM WORKS_ON;
      essn      | pno | hours
-----+-----+-----
123456789       |    1 |    33
123456789       |    2 |     8
666884444       |    3 |    40
453453453       |    1 |    20
453453453       |    2 |    20
333445555       |    2 |    10
333445555       |    3 |    10
333445555       |   10 |    10
333445555       |   20 |    10
999887777       |   30 |    30
999887777       |   10 |    10
987987987       |   10 |    35
987987987       |   30 |     5
987654321       |   30 |    20
987654321       |   20 |    15
888665555       |   20 |
(16 rows)

companydb=#
```

6) INSERT INTO DEPENDENT

```
companydb=# INSERT INTO DEPENDENT(ESSN,DEPENDENT_NAME,SEX,BDATE,RELATIONSHIP) VALUES(333445555,'ALICE','F','1986-04-05','DAUGHTER'),(333445555,'THEODORE','M','1983-10-25','SON'),(333445555,'JOY','F','1958-05-03','SPOUSE'),(987654321,'ABNER','M','1942-02-28','SPOUSE'),(123456789,'MICHAEL','M','1988-01-04','SON'),(123456789,'ALICE','F','1988-12-30','DAUGHTER'),(123456789,'ELIZABETH','F','1967-05-05','SPOUSE');
INSERT 0 7
companydb=# SELECT * FROM DEPENDENT;
      essn      | dependent_name | sex | relationship | bdate
-----+-----+-----+-----+-----
333445555       | ALICE          | F   | DAUGHTER     | 1986-04-05
333445555       | THEODORE       | M   | SON          | 1983-10-25
333445555       | JOY            | F   | SPOUSE       | 1958-05-03
987654321       | ABNER          | M   | SPOUSE       | 1942-02-28
123456789       | MICHAEL        | M   | SON          | 1988-01-04
123456789       | ALICE          | F   | DAUGHTER     | 1988-12-30
123456789       | ELIZABETH      | F   | SPOUSE       | 1967-05-05
(7 rows)

companydb=#
```