DBMS Week - 6

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PES1UG19CS001

Creating and inserting values

```
naren@Narendirans-MacBook-Air ~ % /Applications/Postgres.app/Contents/Versions/13/bin/psql -p5432 "postgres" -f /Users/naren/Documen
ts/5th\ Sem/DBMS/Week\ 5/companyddl.sql
DROP DATABASE
CREATE DATABASE
You are now connected to database "company" as user "naren".
CREATE TABLE
CREATE TABLE
CREATE TABLE
CREATE TABLE
CREATE TABLE
CREATE TABLE
ALTER TABLE
naren@Narendirans-MacBook-Air ~ % /Applications/Postgres.app/Contents/Versions/13/bin/psql -p5432 "postgres" -f /Users/naren/Documen
ts/5th\ Sem/DBMS/Week\ 5/company_insert.sql
You are now connected to database "company" as user "naren".
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
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INSERT 0 1
INSERT 0 1
INSERT 0 1
psql:/Users/naren/Documents/5th Sem/DBMS/Week 5/company_insert.sql:46: ERROR:  null value in column "hours" of relation "works_on" v
iolates 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
```

1. **Show the resulting salaries if every employee working on the ‘ProductX’ project is given a 10% raise.**

```
company=# update employee set salary = salary*(1.1) where ( exists( select * from project where dno = dnum and project.pname = 'Prod
uctX' ) );
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)
```

2. **Find the sum of the salaries of all employees of the ‘Research’ department, as well as the maximum salary, the minimum salary, and the average salary in this department.**

```
company=# select sum(salary) from employee, department where employee.dno = department.dnumber and department.dname = 'Research';
    sum
-----------
 146300.00
(1 row)

company=# select max(salary) from employee, department where employee.dno = department.dnumber and department.dname = 'Research';
   max
----------
 44000.00
(1 row)

company=# select min(salary) from employee, department where employee.dno = department.dnumber and department.dname = 'Research';
   min
----------
 27500.00
(1 row)

company=# select avg(salary) from employee, department where employee.dno = department.dnumber and department.dname = 'Research';
        avg
--------------------
 36575.000000000000
(1 row)
```

3. **Count the number of distinct salary values in the database.**

```
company=# select count(distinct salary) from employee;
 count
-------
     7
(1 row)
```

4. **Retrieve the names of all employees who have two or more dependents.**

```
company=# select fname, lname from employee, dependent where employee.ssn = dependent.essn group by employee.ssn having count(ssn) >
= 2;
  fname   | lname
----------+-------
 Franklin | Wong
 John     | Smith
(2 rows)
```

5. **For each department, retrieve the department number, the number of employees in the department, and their average salary.**

```
company=# select dname, dnumber, count(employee.ssn), avg(employee.salary) from department, employee where employee.dno = department
.dnumber group by dname, dnumber;
     dname      | dnumber | count |        avg
----------------+---------+-------+--------------------
 Research       |       5 |     4 | 36575.000000000000
 Administration |       4 |     3 | 31000.000000000000
 Headquarters   |       1 |     1 | 55000.000000000000
(3 rows)
```

6. **Retrieve the names of employees who make at least $10,000 more than the employee who is paid the least in the company.**

```
company=# select * from
(
select fname, salary - min(salary) over () as salary_diff
from employee
group by salary, fname
) as innerTable
where salary_diff >= 10000
;
  fname   | salary_diff
----------+-------------
 Franklin |    19000.00
 Jennifer |    18000.00
 James    |    30000.00
 Ramesh   |    16800.00
(4 rows)
```

7. **Retrieve the names of all employees who work in the department that has the employee with the highest salary among all employees.**

```
company=# select fname, lname, dno from employee where employee.dno = (select dno from employee where salary = (select max(salary) f
rom employee));
 fname | lname | dno
-------+-------+-----
 James | Borg  |   1
(1 row)
```

8. **Count the total number of employees whose salaries exceed $40,000 in each department**

```
company=# select department.dname, count(employee.ssn) from employee, department where employee.salary > 40000 group by department.d
name;
     dname      | count
----------------+-------
 Administration |     4
 Headquarters   |     4
 Research       |     4
(3 rows)
```