College of Engineering, Trivandrum

Department of Computer Science and Engineering

CS333 APPLICATION SOFTWARE DEVELOPMENT LAB

LABORATORY REPORT 3

Learning Basic SQL queries(Part 1)

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1 Introduction

A Database usually involves in addition, deletion, updating and querying of data. SQL provides many queries to work with but there are four queries that plays a crucial role in any Database Management System. They are:

1. SELECT
   (a) A SELECT statement retrieves zero or more rows from one or more database tables or database views.
   (b) SELECT is the most commonly used data query language (DQL) command.
   (c) The SELECT statement has many optional clauses like WHERE, GROUP BY, HAVING etc.
2. INSERT
   (a) The INSERT INTO statement is used to insert new records in a table.
   (b) It has a compulsary clause VALUES where the values are entered in order of the selected columns.
3. UPDATE
   (a) The UPDATE statement is used to modify the existing records in a table.
   (b) It has two clauses SET and WHERE.
4. DELETE
   (a) The DELETE statement is used to delete existing records in a table.
   (b) It has a WHERE clause used to specify the checking condition.

All these SQL queries are supported by PostgreSQL and can be implemented in a similar fashion.

2 Implementation in PostgreSQL

1. First we need to create a database to work with.
   This can be done using the following query:

   ```
   CREATE DATABASE test;
   ```

   To ensure the creation of the database we can list all the existing databases using:

   ```
   \l
   ```

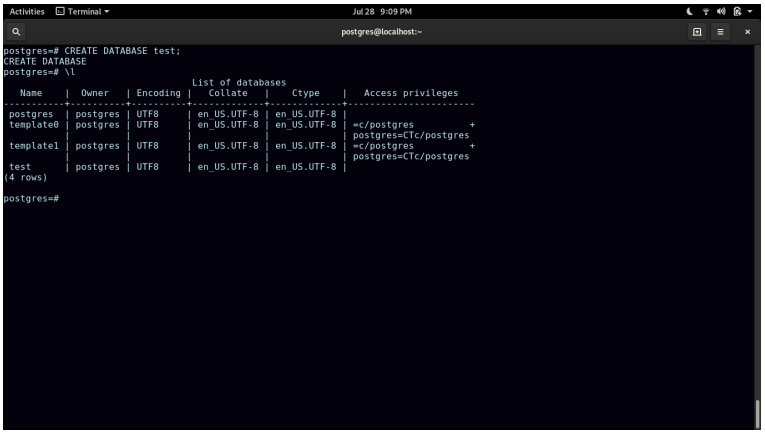


Figure 1: Creating Database 'test'

2. Next we need to connect to the newly created database. This is done as:

   ```
   \c test
   ```

   We can view the tables present in the database. Since this is a newly created database we won't have any tables but, we can do this by the following command.

   ```
   \d
   ```

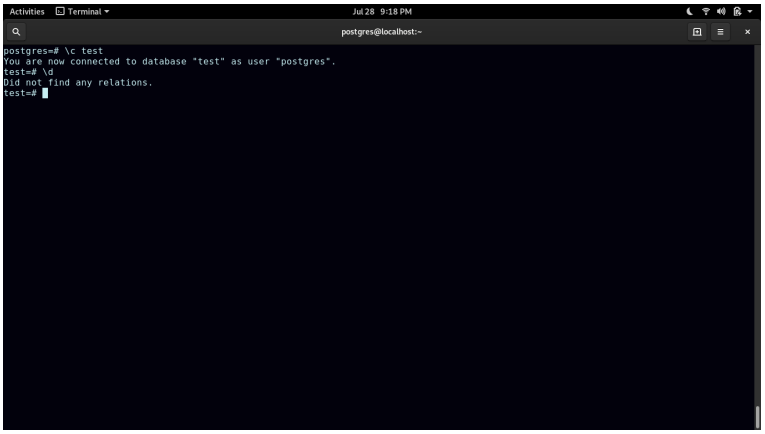


Figure 2: Connecting to database 'test'

3. We can now create a new table using the following query

```
CREATE TABLE person (
id BIGSERIAL NOT NULL PRIMARY KEY,
first_name VARCHAR(20) NOT NULL,
last_name VARCHAR(20),
gender VARCHAR(8) NOT NULL,
dob DATE NOT NULL);
```

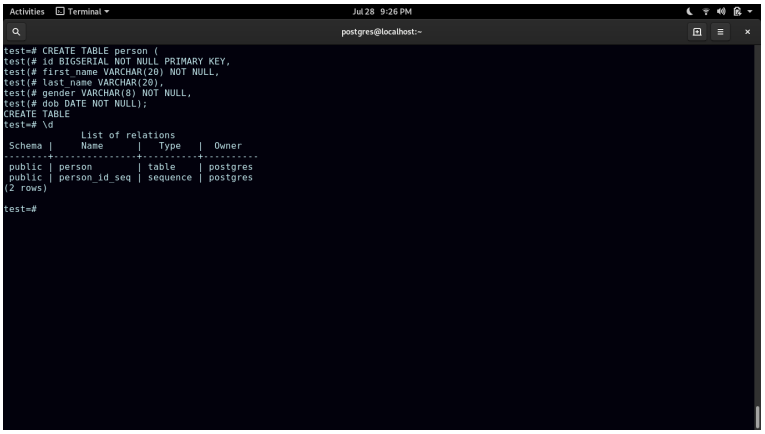


Figure 3: Creating table 'person'

4. We can now enter values using the INSERT INTO query.

```
INSERT INTO person (first_name, last_name, gender,
dob)
VALUES ('Justine', 'Biju', 'Male',
DATE '1999-02-05');
```

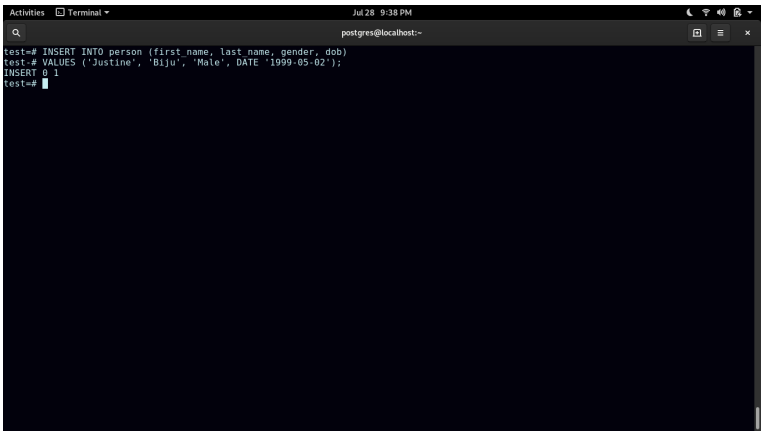


Figure 4: Inserting details of a person

5. To ensure the insertion of the person's details we can use the SELECT query to display the contents of the table.

```
SELECT * FROM person;
```

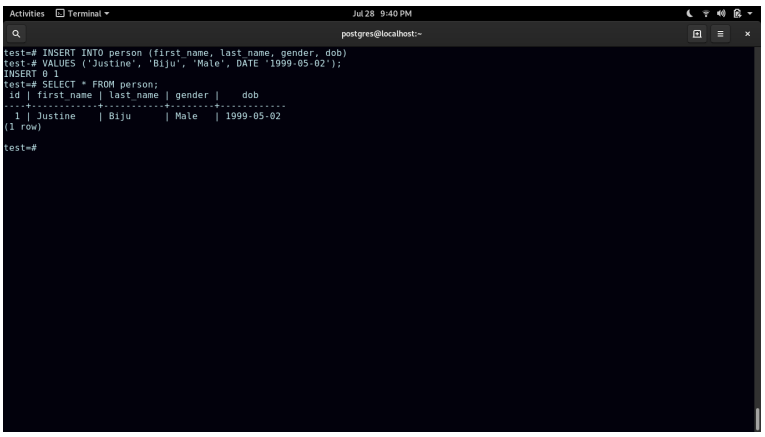


Figure 5: Viewing the entire table 'person'

6. Now suppose we need to update a person's details, we can do that by the UPDATE query.

```
UPDATE person
SET last_name = 'B'
WHERE first_name = 'Justine' AND id = 1;

SELECT * FROM person;
```

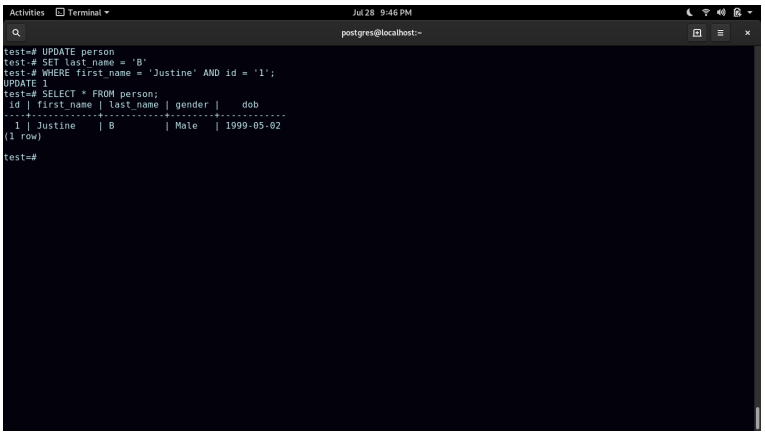


Figure 6: Updating a record

7. Lastly, lets delete a record from the table using the DELETE query.

```
DELETE FROM person
WHERE id = 1;

SELECT * FROM person;
```

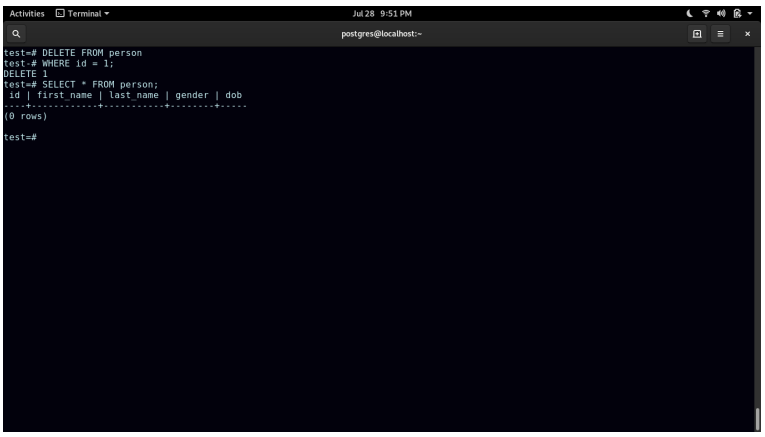


Figure 7: Deleting a record

3 Questions

1. Display the details of all the employees.

$$\text{SELECT} \ * \ \text{FROM Employee};$$

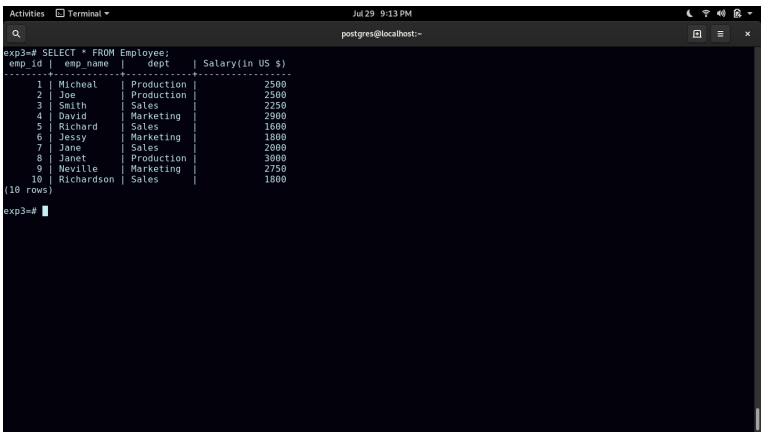


Figure 8: Question 1

2. Display the names and id's of all employees.

$$\text{SELECT Emp\_id}, \ \text{Emp\_name}$$
$$\text{FROM Employee};$$

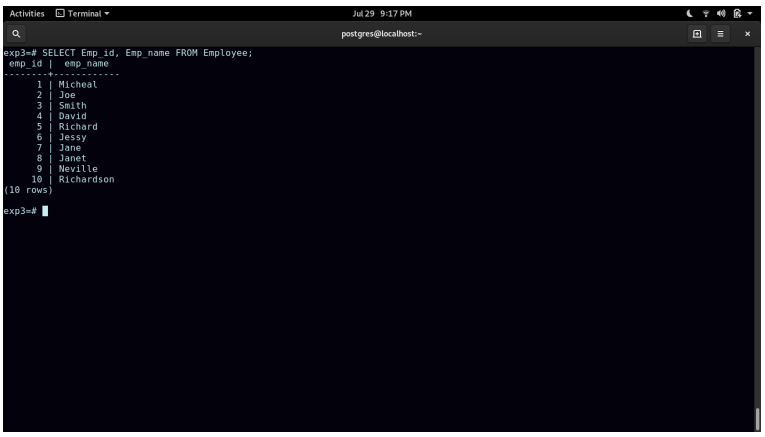


Figure 9: Question 2

3. Delete the entry corresponding to employee id:10.

```
DELETE FROM Employee
WHERE Emp_id = 10;

SELECT * FROM Employee;
```

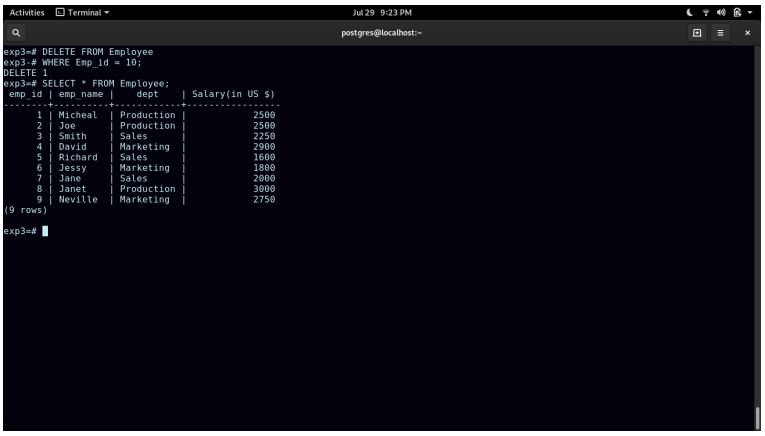


Figure 10: Question 3

4. Insert a new tuple to the table. The salary field of the new employee should be kept NULL.

```
INSERT INTO Employee(Emp_name, Dept)
VALUES ('Johnson', 'Sales');

SELECT * FROM Emplolyee;
```

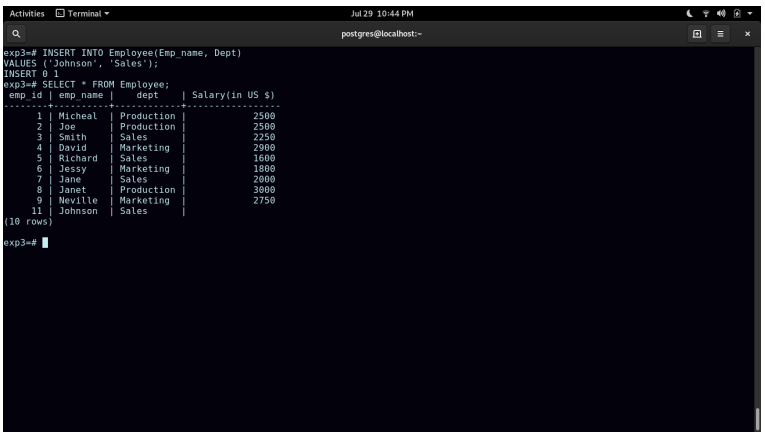


Figure 11: Question 4

5. Find the details of all employees working in the marketing department.

```
SELECT * FROM Employee
WHERE Dept = 'Marketing';
```

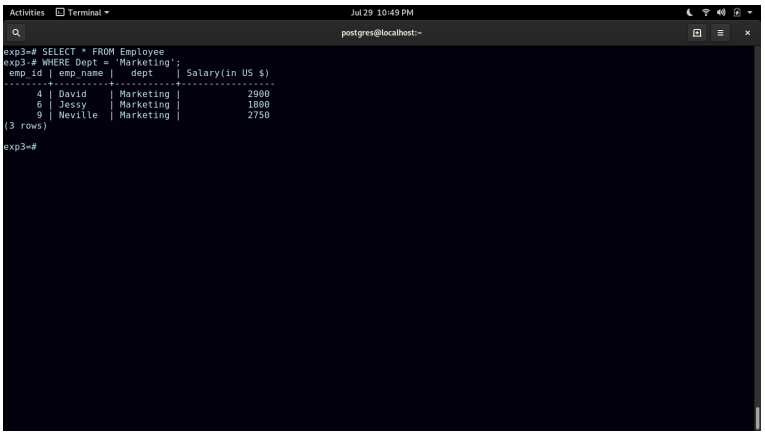


Figure 12: Question 5

6. Add the salary details of the newly added employee.

```
UPDATE Employee
SET "Salary(in US $)" = 1900
WHERE Emp_id = 11;

SELECT * FROM Employee
WHERE Emp_id = 11;
```

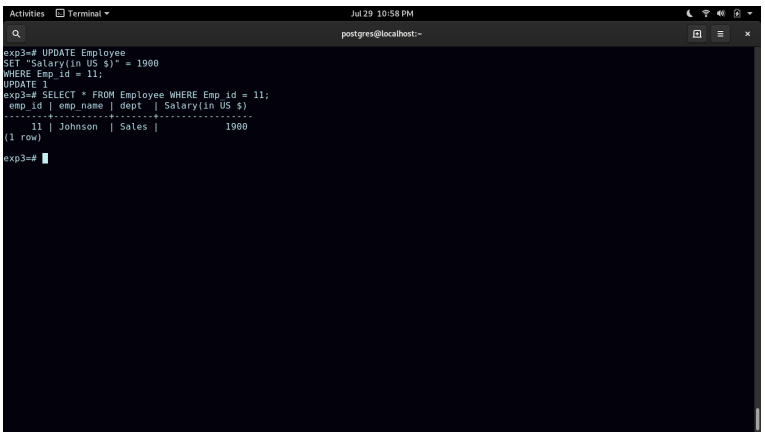


Figure 13: Question 6

7. Update the salary of Richard to 1900$.

```
UPDATE Employee
SET "Salary(in US $)" = 1900
WHERE Emp_name = 'Richard';

SELECT * FROM Employee
WHERE Emp_name = 'Richard';
```

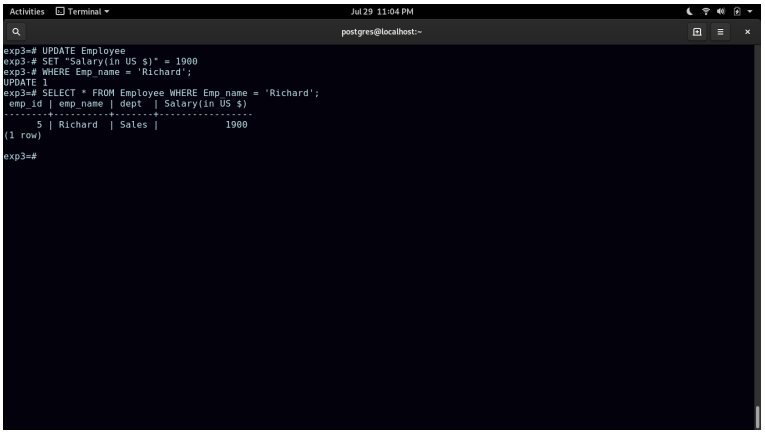


Figure 14: Question 7

8. Find the details of all employees who are working for marketing and has a salary greater than 2000$.

```
SELECT * FROM Employee
WHERE Dept = 'Marketing' AND
"Salary(in US $)" > 2000;
```

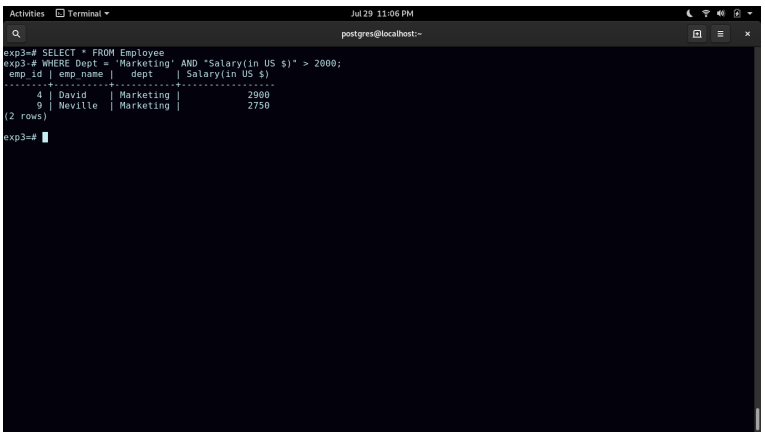


Figure 15: Question 8

9. List the names of all employees working in the sales department or marketing department

```
SELECT Emp_name FROM Employee
WHERE Dept = 'Marketing' OR
Dept = 'Sales';
```

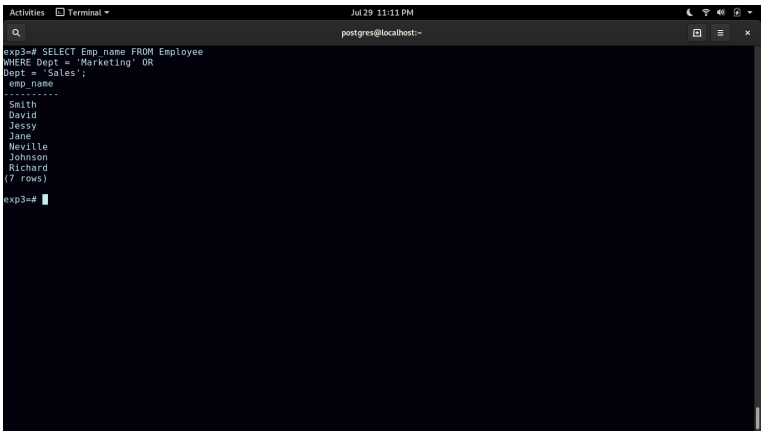
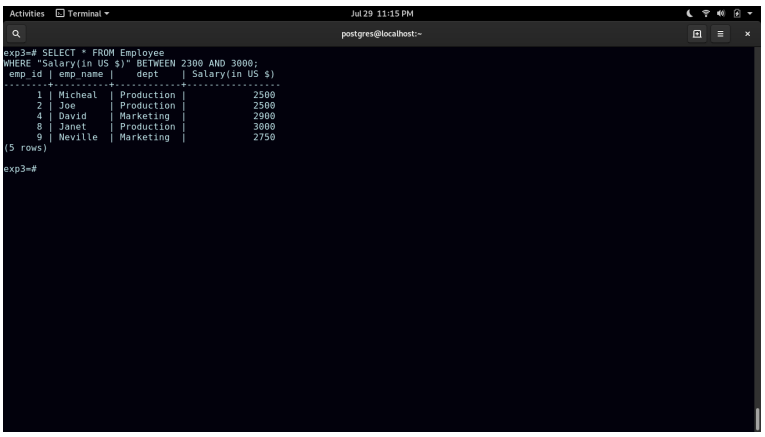


Figure 16: Question 9

10. List the names and department of all employees whose salary is between2300$ and 3000$.

```
SELECT * FROM Employee
WHERE "Salary(in US $)" BETWEEN
2300 AND 3000;
```



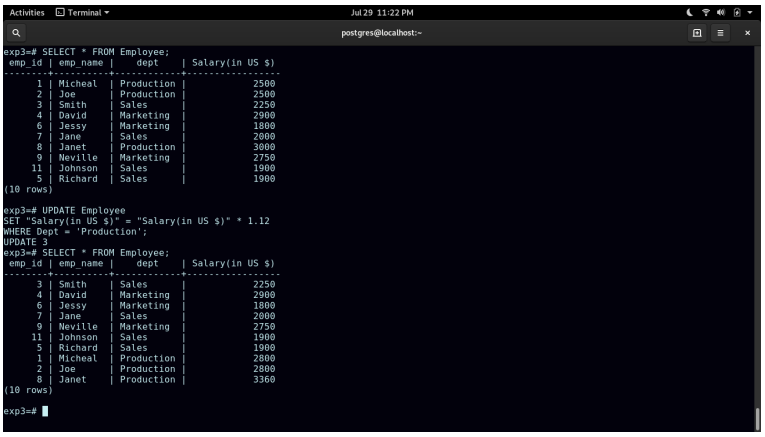
```
exp3=# SELECT * FROM Employee
WHERE "Salary(in US $)" BETWEEN 2300 AND 3000;
 emp_id | emp_name |    dept    | Salary(in US $)
--------+----------+------------+-----------------
      1 | Micheal  | Production |            2500
      2 | Joe      | Production |            2500
      4 | David    | Marketing  |            2900
      8 | Janet    | Production |            3000
      9 | Neville  | Marketing  |            2750
(5 rows)

exp3=#
```

Figure 17: Question 10

11. Update the salary of all employees working in production department 12%.

```
UPDATE Employee
SET "Salary(in US $)" = "Salary(in US $)" * 1.12
WHERE Dept = 'Production';
```



```
exp3=# SELECT * FROM Employee;
 emp_id | emp_name |    dept    | Salary(in US $)
--------+----------+------------+-----------------
      1 | Micheal  | Production |            2500
      2 | Joe      | Production |            2500
      3 | Smith    | Sales      |            2250
      4 | David    | Marketing  |            2900
      6 | Jessy    | Marketing  |            1800
      7 | Jane     | Sales      |            2000
      8 | Janet    | Production |            3000
      9 | Neville  | Marketing  |            2750
     11 | Johnson  | Sales      |            1900
      5 | Richard  | Sales      |            1900
(10 rows)

exp3=# UPDATE Employee
SET "Salary(in US $)" = "Salary(in US $)" * 1.12
WHERE Dept = 'Production';
UPDATE 3
exp3=# SELECT * FROM Employee;
 emp_id | emp_name |    dept    | Salary(in US $)
--------+----------+------------+-----------------
      3 | Smith    | Sales      |            2250
      4 | David    | Marketing  |            2900
      6 | Jessy    | Marketing  |            1800
      7 | Jane     | Sales      |            2000
      9 | Neville  | Marketing  |            2750
     11 | Johnson  | Sales      |            1900
      5 | Richard  | Sales      |            1900
      1 | Micheal  | Production |            2800
      2 | Joe      | Production |            2800
      8 | Janet    | Production |            3360
(10 rows)

exp3=#
```

Figure 18: Question 11

12. Display the names of all employees whose salary is less than 2000$ or working for sales department.

```
SELECT Emp_name FROM Employee
WHERE "Salary(in US $)" < 2000 OR
Dept = 'Sales';
```

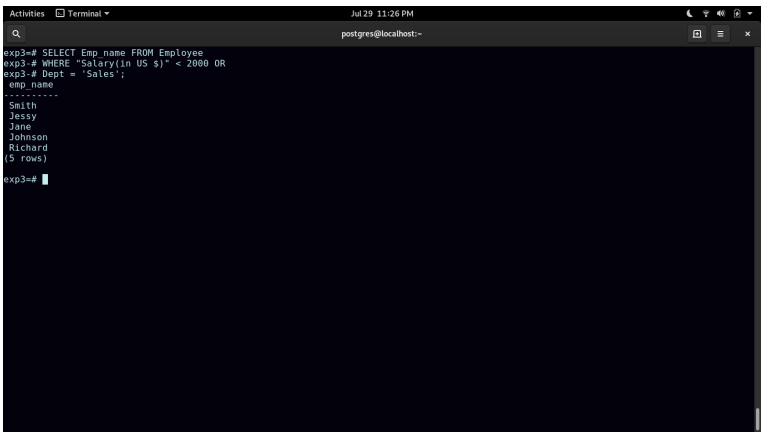


Figure 19: Question 12

4 Result

- Learned some basic PostgreSQL commands.
- Learned to set up and connect to a database.
- Learned to create a new table in a database.
- Successfully implemented SELECT, INSERT, UPDATE and DELETE queries on PostgreSQL.