Lab 3

1.Write a query to find out which subjects are not associated with any track.

```
testdb=# SELECT subject.id, subject.sub_name FROM subject LEFT JOIN track_sub ON subject.id = track_s
ub.track_id WHERE track_sub.track_id IS NULL;
 id | sub_name
----+----------
  4 | Network
  3 | OS
(2 rows)

testdb=#
```

2.Display name and age of each students

```
testdb=# SELECT student.e_name AS name, AGE(CURRENT_DATE, birth_date) AS age FROM student;
    name    |           age
------------+--------------------------
 John Smith | 23 years 11 mons
 Mohamed    | 24 years 11 mons 21 days
 Nada       | 24 years 11 mons 15 days
(3 rows)

testdb=# SELECT student.e_name AS name, EXTRACT(YEAR FROM AGE(CURRENT_DATE, birth_date)) AS age FROM
student;
    name    | age
------------+-----
 John Smith |  23
 Mohamed    |  24
 Nada       |  24
(3 rows)
```

3.Display the name of students with their rounded score in each subject

```
                                                                                    ^
testdb=# WITH stud_subj AS (SELECT student.id, e_name, ss.stu_id, ss.sub_id FROM student JOIN stu_sub
 ss ON student.id = ss.stu_id) SELECT e_name, subject.max_score FROM stud_subj ss JOIN subject ON sub
ject.id = ss.sub_id;
   e_name   | max_score
------------+-----------
 John Smith |       100
 Nada       |        80
 Mohamed    |        75
(3 rows)
```

```
testdb=# WITH student_subject AS (SELECT student.id, e_name, stu_sub.stu_id, stu_sub.sub_id FROM student JOIN stu_sub ON student.id = stu_sub.stu_id) SELECT student_subject.sub_id, e_name, R
OUND(grade) FROM student_subject JOIN grades  ON student_subject.sub_id = grades.sub_id;
 sub_id | e_name | round
--------+--------+-------
      2 | Nada   |    79
      2 | Nada   |    80
(2 rows)

testdb=# SELECT * FROM student;
testdb=# SELECT * FROM stu_sub;
 stu_id | sub_id
--------+--------
      1 |      2
      3 |      3
(2 rows)

testdb=# SELECT * FROM grades;
 stu_id | sub_id | exam_id | grade
--------+--------+---------+-------
      1 |      1 |       1 |  85.5
      1 |      2 |       1 |  78.9
      1 |      2 |       3 |  80.0
(3 rows)

testdb=#
```

4.Display the name of students with the year of Birthdate

```
testdb=# SELECT student.e_name, EXTRACT (YEAR FROM student.birth_date) FROM student;
   e_name   | extract
------------+---------
 John Smith |    2001
 Mohamed    |    2000
 Nada       |    2000
(3 rows)

testdb=# SELECT student.e_name, EXTRACT (YEAR FROM student.birth_date) AS year_of_birth FROM student;
   e_name   | year_of_birth
------------+---------------
 John Smith |          2001
 Mohamed    |          2000
 Nada       |          2000
(3 rows)
```

5.Add new exam result, in date column use NOW() function

```
testdb=# INSERT INTO exam VALUES (4,NOW());
INSERT 0 1
```

```
testdb=# SELECT * FROM exam;
 id |    date
----+------------
  1 | 2025-02-11
  2 | 2025-01-25
  3 | 2025-05-08
  4 | 2025-04-30
(4 rows)
```

```
testdb=# SELECT exam_id, grade, date FROM grades JOIN exam ON exam.id = grades.exam_id;
 exam_id | grade |    date
---------+-------+------------
       1 |  85.5 | 2025-02-11
       1 |  88.0 | 2025-02-11
       3 |  95.5 | 2025-05-08
(3 rows)

testdb=# SELECT exam_id, grade, date FROM grades RIGHT JOIN exam ON exam.id = grades.exam_id;
 exam_id | grade |    date
---------+-------+------------
       1 |  85.5 | 2025-02-11
       1 |  88.0 | 2025-02-11
       3 |  95.5 | 2025-05-08
         |       | 2025-01-25
         |       | 2025-04-30
(5 rows)
```

```
testdb=# SELECT exam.id, date, grades.grade FROM exam LEFT JOIN grades ON exam.id = grades.exam_id;
 id |    date    | grade
----+------------+-------
  1 | 2025-02-11 |  85.5
  1 | 2025-02-11 |  88.0
  3 | 2025-05-08 |  95.5
  2 | 2025-01-25 |
  4 | 2025-04-30 |
(5 rows)
```

6.Write a query to calculate the average grade obtained by a specific student across all exams.

```
testdb=# SELECT AVG(grade) FROM grades WHERE stu_id = 1;
         avg
--------------------
 89.6666666666666667
(1 row)
```

7.Write a query to replace all occurrences of 'gmail.com' in email addresses with 'iti.com'.

```
 id |   e_name   |           email           |                      address                      | t
rack_id | birth_date | gender
----+------------+---------------------------+---------------------------------------------------+--
--------+------------+--------
  2 | John Smith | john.smith@university.edu | 123 Main St, Anytown                              |
      1 | 2001-05-30 | Male
  3 | Mohamed    | emily.j@university.edu    | 456 Oak Ave, Somewhere                            |
      2 | 2000-05-09 | Male
  1 | Nada       | dddss@gmail.com           | Assuit                                            |
      3 | 2000-05-15 | Female
(3 rows)
```

```
testdb=# SELECT email, REPLACE(email, 'gmail.com','iti.com') AS new_email FROM student WHERE email LI
KE '%gmail.com';
      email      |   new_email
-----------------+---------------
 dddss@gmail.com | dddss@iti.com
(1 row)
```

8.Write a query to calculate the difference in days between the current date and each exam date.

```
testdb=# SELECT date, CASE WHEN CURRENT_DATE > date THEN (CURRENT_DATE - date) || ' days ago' ELSE (d
ate - CURRENT_DATE) || ' days_remaning' END AS difference_in_days FROM exam;
    date    | difference_in_days
------------+--------------------
 2025-02-11 | 78 days ago
 2025-01-25 | 95 days ago
 2025-05-08 | 8 days_remaning
 2025-04-30 | 0 days_remaning
(4 rows)
```

9.Write a query to check if each student's email address ends with '.com'.

```
testdb=# SELECT email FROM student;
           email
---------------------------
 john.smith@university.edu
 emily.j@university.edu
 dddss@gmail.com
(3 rows)

testdb=# SELECT email FROM student WHERE email LIKE '%.com';
      email
-----------------
 dddss@gmail.com
(1 row)
```

10.Display each exam date like ‘MM/DD/YYYY’.

```
testdb=# SELECT TO_CHAR(date, 'MM/DD/YYYY') AS formated_date FROM exam;
 formated_date
---------------
 02/11/2025
 01/25/2025
 05/08/2025
 04/30/2025
(4 rows)
```