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Lab Experiment 2

AIM

To understand and implement SQL **SELECT** queries using various clauses such as **WHERE**, **ORDER BY**, **GROUP BY**, and **HAVING** to retrieve and manipulate data efficiently from relational database tables.

Objective of the Session

- To practice writing SQL **SELECT** statements.
- To apply filtering conditions using the **WHERE** clause.
- To sort query results using the **ORDER BY** clause.
- To group records using the **GROUP BY** clause.
- To filter grouped data using the **HAVING** clause.
- To analyze data using aggregate functions like **COUNT()**, **SUM()**, **AVG()**, **MIN()**, and **MAX()**.

Software Requirements

- **Database:**
 - Oracle Database Express Edition (Oracle XE)
 - PostgreSQL Database (PgAdmin)

Experiment Question :

An organization maintains an **EMPLOYEE** table to store details of its employees.

The structure of the table is as follows:

Column Name	Data Type
emp_id	NUMBER
emp_name	VARCHAR
Department	VARCHAR
Salary	NUMBER
joining_date	DATE

Practical/Experiment steps:

1. Display the **department name** and the **average salary** of employees for each department.
2. Consider **only those employees whose salary is greater than 20,000**.
3. Display **only those departments** where the **average salary is greater than 30,000**.
4. Arrange the final output in **descending order of average salary**.

Note: Use the following SQL clauses in your query:

- WHERE
- GROUP BY
- HAVING
- ORDER BY

Code:

```
CREATE TABLE employee (
    emp_id INT,
    emp_name VARCHAR(50),
    department VARCHAR(50),
    salary INT,
    joining_date DATE
);
```

```
INSERT INTO employee VALUES
(1, 'Amit', 'HR', 25000, '2022-01-10'),
(2, 'Neha', 'HR', 32000, '2021-03-15'),
(3, 'Rahul', 'IT', 40000, '2020-06-20'),
(4, 'Sneha', 'IT', 28000, '2022-08-05'),
(5, 'Arjun', 'Finance', 35000, '2019-11-12'),
(6, 'Pooja', 'Finance', 18000, '2023-02-18');
```

```
SELECT department, AVG(salary) AS average_salary
FROM employee
WHERE salary > 20000
GROUP BY department
HAVING AVG(salary) > 30000
```

```
ORDER BY average_salary DESC;
```

Output:

	department character varying (50)	average_salary numeric
1	Finance	35000.00000000000000
2	IT	34000.00000000000000

```
Query  Query History
1  CREATE TABLE employee (
2    emp_id INT,
3    emp_name VARCHAR(50),
4    department VARCHAR(50),
5    salary INT,
6    joining_date DATE
7  );
8
9  INSERT INTO employee VALUES
10 (1, 'Amit', 'HR', 25000, '2022-01-10'),
11 (2, 'Neha', 'HR', 32000, '2021-03-15'),
12 (3, 'Rahul', 'IT', 40000, '2020-06-20'),
13 (4, 'Sneha', 'IT', 28000, '2022-08-05'),
14 (5, 'Arjun', 'Finance', 35000, '2019-11-12'),
15 (6, 'Pooja', 'Finance', 18000, '2023-02-18');
16
17
18  SELECT department, AVG(salary) AS average_salary
19  FROM employee
20  WHERE salary > 20000
21  GROUP BY department
22  HAVING AVG(salary) > 30000
23  ORDER BY average_salary DESC;

Data Output  Messages  Notifications
```

Learning Outcome

After completing this experiment, students will be able to:

- Filter records using the **WHERE** clause.
- Group records using **GROUP BY**.
- Apply conditions on grouped data using **HAVING**.
- Sort query results using **ORDER BY**.

