Experiment 2

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Subject Name: DBMS
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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.

Software Requirements

- Database Management System:
  - PostgreSQL
- Database Administration Tool:
  - pgAdmin

Objectives

- 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().

Problem Statement

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

Code

```
CREATE TABLE EMPLOYEE(
EMP_ID NUMERIC PRIMARY KEY,
EMP_NAME VARCHAR(20),
DEPARTMENT VARCHAR(20),
SALARY NUMERIC(10,2),
JOINING_DATE DATE
)

INSERT INTO EMPLOYEE VALUES(1, 'Aman', 'IT', 30000, '2023-05-23');
INSERT INTO EMPLOYEE VALUES(2, 'Sam', 'IT', 25000, '2016-05-23');
INSERT INTO EMPLOYEE VALUES(3, 'Neha', 'HR', 18000, '2025-09-19');
INSERT INTO EMPLOYEE VALUES(4, 'Suman', 'Finance', 20000, '2021-11-06');
INSERT INTO EMPLOYEE VALUES(5, 'Rohan', 'Finance', 24500, '2023-10-23');
INSERT INTO EMPLOYEE VALUES(6, 'Aditi', 'HR', 28000, '2018-04-16');
INSERT INTO EMPLOYEE VALUES(7, 'Aanya', 'IT', 26000, '2022-07-07')

SELECT DEPARTMENT, AVG(SALARY)::NUMERIC(10,2) AS AVG_SAL
FROM EMPLOYEE
GROUP BY DEPARTMENT

SELECT EMP_ID, EMP_NAME, SALARY
FROM EMPLOYEE
GROUP BY EMP_ID
HAVING SALARY>20000

SELECT DEPARTMENT, AVG(SALARY)::NUMERIC(10,2) AS AVG_SAL
FROM EMPLOYEE
GROUP BY DEPARTMENT
HAVING AVG(SALARY)>30000

SELECT DEPARTMENT, AVG(SALARY)::NUMERIC(10,2) AS AVG_SAL
FROM EMPLOYEE
```

GROUP BY DEPARTMENT
ORDER BY AVG(SALARY) DESC

Output

Table created

Data Output | Messages | Notifications

```
CREATE TABLE

Query returned successfully in 109 msec.
```

Records inserted

Data Output | Messages | Notifications

```
INSERT 0 1

Query returned successfully in 110 msec.
```

Employees with salaries greater than 20,000

Data Output | Messages | Notifications

Showing rows: 1 to 5 | Page No: 1 of 1

	emp_id [PK] numeric	emp_name character varying (20)	salary numeric (10,2)
1	1	Aman	30000.00
2	6	Aditi	28000.00
3	7	Aanya	26000.00
4	2	Sam	25000.00
5	5	Rohan	24500.00

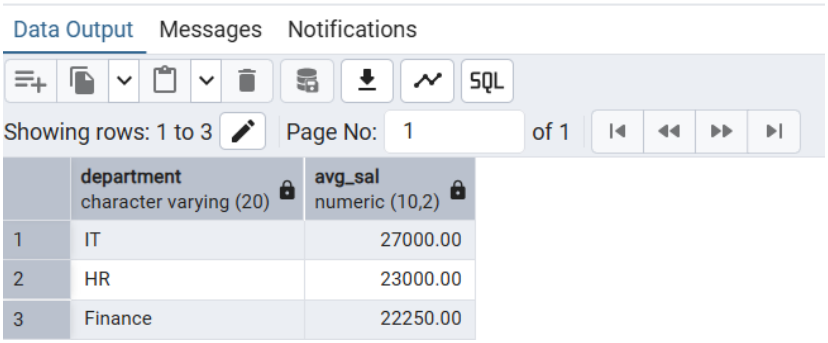
Average salaries of department

Data Output | Messages | Notifications

Showing rows: 1 to 3 | Page No: 1 of 1

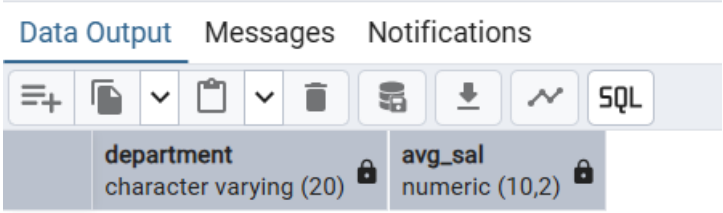
	department character varying (20)	avg_sal numeric (10,2)
1	IT	27000.00
2	HR	23000.00
3	Finance	22250.00

Sorting average salaries in descending order:



	department character varying (20)	avg_sal numeric (10,2)
1	IT	27000.00
2	HR	23000.00
3	Finance	22250.00

Departments with average salary more than 30,000 (empty because none)



Learning Outcomes

- Learn 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.