Apex Institute of Technology

Computer Science & Engineering

Worksheet 2

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Semester: 4	**Date of Performance: 16.01.2026**
Subject Name: Database Management System	**Subject Code: 24CSH-298**

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.

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().**

SOFTWARE REQUIREMENTS:

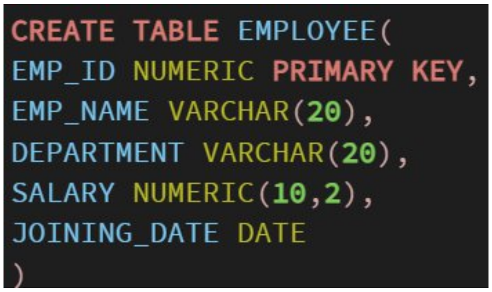
- Database Management System
  - PostgreSQL
- Database Administration Tool
  - pgAdmin

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**.

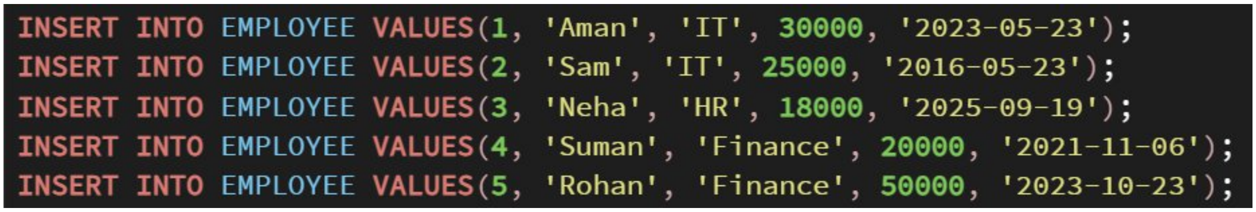
PROCEDURE:

1. Open PostgreSQL and create a new database.
2. Execute the following command to create a table EMPLOYEE.



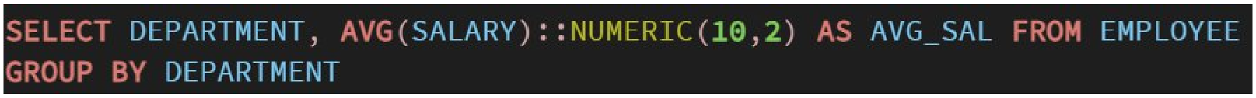
```
CREATE TABLE EMPLOYEE(
EMP_ID NUMERIC PRIMARY KEY,
EMP_NAME VARCHAR(20),
DEPARTMENT VARCHAR(20),
SALARY NUMERIC(10,2),
JOINING_DATE DATE
)
```

3. Using INSERT command, insert records into table EMPLOYEE.



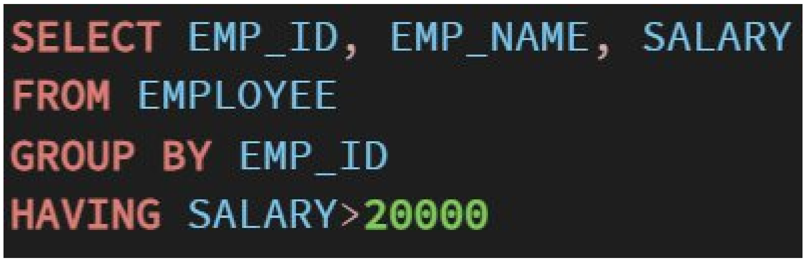
```
INSERT INTO EMPLOYEE VALUES(1, 'Aman', 'IT', 30000, '2023-05-23');
INSERT INTO EMPLOYEE VALUES(2, 'Sam', 'IT', 25000, '2016-05-23');
INSERT INTO EMPLOYEE VALUES(3, 'Neha', 'HR', 18000, '2025-09-19');
INSERT INTO EMPLOYEE VALUES(4, 'Suman', 'Finance', 20000, '2021-11-06');
INSERT INTO EMPLOYEE VALUES(5, 'Rohan', 'Finance', 50000, '2023-10-23');
```

4. Display the department name and average salary of employees for each department using using SELECT and GROUP BY command, and AVG() function.



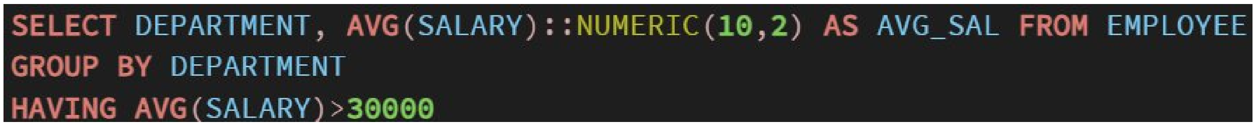
```
SELECT DEPARTMENT, AVG(SALARY)::NUMERIC(10,2) AS AVG_SAL FROM EMPLOYEE
GROUP BY DEPARTMENT
```

5. Filter employees having salary greater than 20,000 using HAVING.



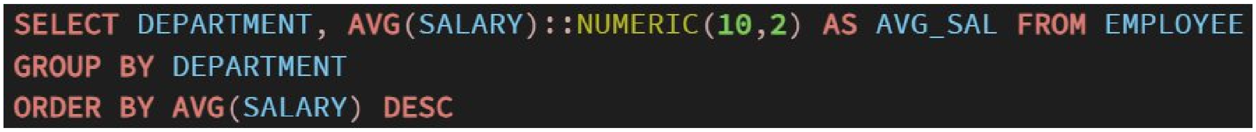
```
SELECT EMP_ID, EMP_NAME, SALARY
FROM EMPLOYEE
GROUP BY EMP_ID
HAVING SALARY>20000
```

6. Display only departments where average salary is greater than 30,000 using HAVING.



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

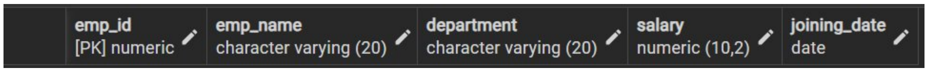
7. Sort the result in descending order of average salary using ORDER BY.



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

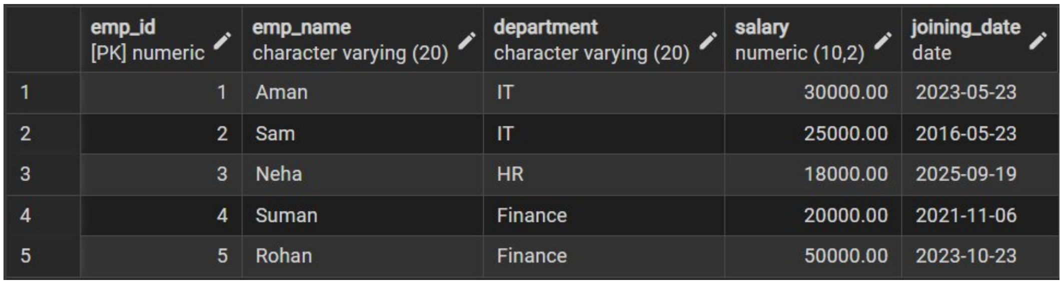
I/O ANALYSIS:

- The EMPLOYEE table was created successfully.



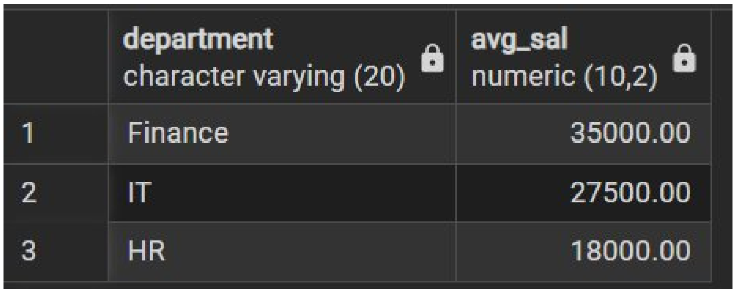
	emp_id [PK] numeric	emp_name character varying (20)	department character varying (20)	salary numeric (10,2)	joining_date date

- Records inserted into EMPLOYEE table.



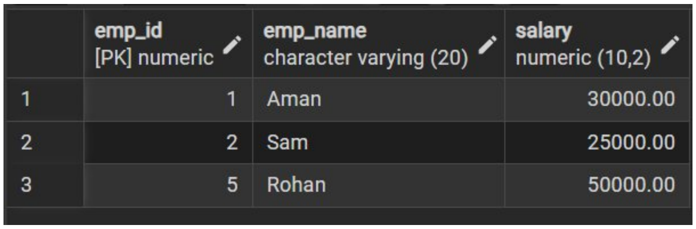
	emp_id [PK] numeric	emp_name character varying (20)	department character varying (20)	salary numeric (10,2)	joining_date date
1	1	Aman	IT	30000.00	2023-05-23
2	2	Sam	IT	25000.00	2016-05-23
3	3	Neha	HR	18000.00	2025-09-19
4	4	Suman	Finance	20000.00	2021-11-06
5	5	Rohan	Finance	50000.00	2023-10-23

- Department-wise average salary was calculated and displayed.



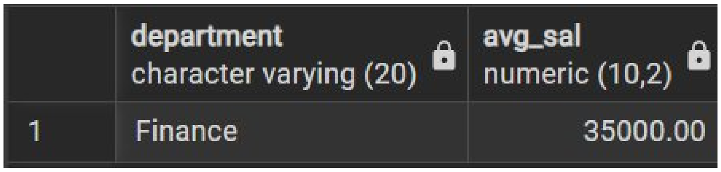
	department character varying (20)	avg_sal numeric (10,2)
1	Finance	35000.00
2	IT	27500.00
3	HR	18000.00

- Employees having salary greater than 20,000 were retrieved.



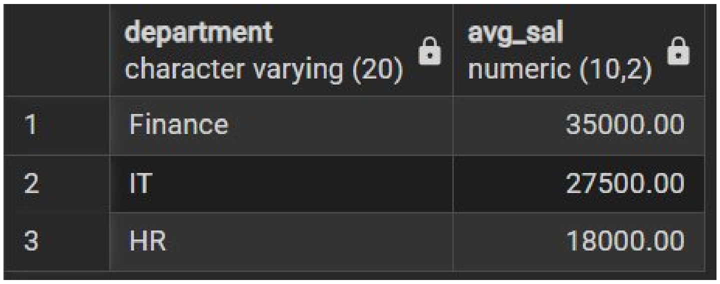
	emp_id [PK] numeric	emp_name character varying (20)	salary numeric (10,2)
1	1	Aman	30000.00
2	2	Sam	25000.00
3	5	Rohan	50000.00

- Departments with average salary above 30,000 were displayed.



	department character varying (20)	avg_sal numeric (10,2)
1	Finance	35000.00

- The final output was sorted in descending order of average salary.



	department character varying (20)	avg_sal numeric (10,2)
1	Finance	35000.00
2	IT	27500.00
3	HR	18000.00

LEARNING OUTCOMES:

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