Experiment 2

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Title

Implementation of SELECT Queries with Filtering, Grouping and Sorting in PostgreSQL

Aim

To implement and analyze SQL SELECT queries using filtering, sorting, grouping, and aggregation concepts in PostgreSQL for efficient data retrieval and analytical reporting.

Objectives

- To retrieve specific data using filtering conditions
- To sort query results using single and multiple attributes
- To perform aggregation using grouping techniques
- To apply conditions on aggregated data
- To understand real-world analytical queries commonly asked in placement interviews

Practical:

Step 1: Database and Table Preparation

```
CREATE TABLE orders (
   order_id SERIAL PRIMARY KEY,
   customer_name VARCHAR(50),
   product VARCHAR(50),
   quantity INT,
   price NUMERIC(10,2),
   order_date DATE
);

INSERT INTO orders (customer_name, product, quantity, price, order_date) VALUES
('Amit', 'Laptop', 1, 65000, '2024-01-10'),
('Neha', 'Mobile', 2, 40000, '2024-01-12'),
('Rohan', 'Tablet', 1, 25000, '2024-01-15'),
('Simran', 'Laptop', 1, 70000, '2024-01-18'),
('Ankit', 'Mobile', 3, 60000, '2024-01-20'),
('Pooja', 'Headphones', 2, 5000, '2024-01-22'),
('Rahul', 'Laptop', 1, 68000, '2024-01-25');
```

	order_id [PK] integer	customer_name character varying (50)	product character varying (50)	quantity integer	price numeric (10,2)	order_date date
1	1	Amit	Laptop	1	65000.00	2024-01-10
2	2	Neha	Mobile	2	40000.00	2024-01-12
3	3	Rohan	Tablet	1	25000.00	2024-01-15
4	4	Simran	Laptop	1	70000.00	2024-01-18
5	5	Ankit	Mobile	3	60000.00	2024-01-20
6	6	Pooja	Headphones	2	5000.00	2024-01-22
7	7	Rahul	Laptop	1	68000.00	2024-01-25

Step 2: Filtering Data Using Conditions

SELECT * FROM orders WHERE price > 50000;

	order_id [PK] integer	customer_name character varying (50)	product character varying (50)	quantity integer	price numeric (10,2)	order_date date
1	1	Amit	Laptop	1	65000.00	2024-01-10
2	4	Simran	Laptop	1	70000.00	2024-01-18
3	5	Ankit	Mobile	3	60000.00	2024-01-20
4	7	Rahul	Laptop	1	68000.00	2024-01-25

Step 3: Sorting Query Results

SELECT order_id, customer_name, product, price FROM orders
ORDER BY price ASC;

	customer_name character varying (50)	product character varying (50)	price numeric (10,2)
1	Pooja	Headphones	5000.00
2	Rohan	Tablet	25000.00
3	Neha	Mobile	40000.00
4	Ankit	Mobile	60000.00
5	Amit	Laptop	65000.00
6	Rahul	Laptop	68000.00
7	Simran	Laptop	70000.00

SELECT customer_name, product, price, quantity FROM orders
ORDER BY product ASC, price DESC;

	customer_name character varying (50)	product character varying (50)	price numeric (10,2)	quantity integer
1	Pooja	Headphones	5000.00	2
2	Simran	Laptop	70000.00	1
3	Rahul	Laptop	68000.00	1
4	Amit	Laptop	65000.00	1
5	Ankit	Mobile	60000.00	3
6	Neha	Mobile	40000.00	2
7	Rohan	Tablet	25000.00	1

Step 4: Grouping Data for Aggregation

```
SELECT product,
    SUM(price * quantity) AS total_sales
FROM orders
GROUP BY product;
```

	product character varying (50)	total_sales numeric
1	Mobile	260000.00
2	Tablet	25000.00
3	Laptop	203000.00
4	Headphones	10000.00

Step 5: Applying Conditions on Aggregated Data

```
SELECT product,
    SUM(price * quantity) AS total_sales
FROM orders
WHERE price > 30000
GROUP BY product;
```

	product character varying (50)	total_sales numeric
1	Mobile	260000.00
2	Laptop	203000.00

Learning Outcomes

● Understand how conditional filtering is used to retrieve only relevant records from a database.
● Explain how sorting enhances the readability and usefulness of query results in reports.
● Apply grouping techniques to organize data for analytical and summary purposes.
● Distinguish clearly between row-level conditions and group-level conditions using appropriate sql clauses.
● Develop confidence in writing analytical sql queries applicable to real-world database scenarios.
● Demonstrate improved readiness for placement and interview questions related to filtering, grouping, and aggregation concepts.