

## Worksheet 2

**Student Name:**Aryan Tomar

**Branch:**MCA (AI&ML)

**Semester:**2nd

**Subject Name:-** DBMS LAB

**UID:**25MCI10167

**Section/Group:**1/A

**Date of Performance:**22/01/2026

**Subject Code:**

### 1. Aim of the Session

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

### 2. Objective of the Session

After completing this practical, the student will be able to:

- Retrieve specific data using filtering conditions
- Sort query results using single and multiple attributes
- Perform aggregation using grouping techniques
- Apply conditions on aggregated data using HAVING clause
- Understand real-world analytical queries commonly asked in placement interviews

### 3. Practical / Experiment Steps

- Create a sample table representing customer orders
- Insert realistic records into the table
- Retrieve filtered data using WHERE clause
- Sort query results using ORDER BY
- Group records and apply aggregate functions
- Apply conditions on grouped data using HAVING
- Analyze execution order of WHERE and HAVING clauses

#### **4. Procedure of the Practical**

**(i)** Start the system and log in to the computer.

**(ii)** Open PostgreSQL software.

**iii) Create and select the database.**

create database CompanyDB;

**(iv) Create table using DDL command.**

create table customer\_orders(

order\_id serial primary key,

customer\_name varchar(20),

product varchar(20),

quantity int,

price numeric(10,2),

order\_date date

);

---

**(v) Insert records into the table.**

insert into customer\_orders(customer\_name,product,quantity,price,order\_date) values

('Amit', 'Laptop', 1, 55000, '2025-01-05'),

('Amit', 'Mouse', 2, 800, '2025-01-06'),

('Riya', 'Mobile', 1, 22000, '2025-01-10'),

('Riya', 'Headphones', 1, 2000, '2025-01-10'),

('Karan', 'Laptop', 1, 60000, '2025-02-02'),

('Karan', 'Keyboard', 1, 1500, '2025-02-05'),

('Neha', 'Mobile', 2, 21000, '2025-02-15'),

('Neha', 'Charger', 3, 900, '2025-02-18');

**(vi) Display all records.**

select \* from customer\_orders;

	order_id [PK] integer	customer_name character varying (20)	product character varying (20)	quantity integer	price numeric (10,2)	order_date date
1	1	Amit	Laptop	1	55000.00	2025-01-05
2	2	Amit	Mouse	2	800.00	2025-01-06
3	3	Riya	Mobile	1	22000.00	2025-01-10
4	4	Riya	Headphones	1	2000.00	2025-01-10
5	5	Karan	Laptop	1	60000.00	2025-02-02
6	6	Karan	Keyboard	1	1500.00	2025-02-05
7	7	Neha	Mobile	2	21000.00	2025-02-15
8	8	Neha	Charger	3	900.00	2025-02-18

**(vii) Filtering Data Using WHERE clause.**

select order\_id, customer\_name, product, quantity, price

from customer\_orders

where price > 20000;

	order_id [PK] integer	customer_name character varying (20)	product character varying (20)	quantity integer	price numeric (10,2)
1	1	Amit	Laptop	1	55000.00
2	3	Riya	Mobile	1	22000.00
3	5	Karan	Laptop	1	60000.00
4	7	Neha	Mobile	2	21000.00

### (viii) Sorting Query Results.

#### Ascending Order

select order\_id, customer\_name, product, quantity, price

from customer\_orders

where price > 20000

order by price;

	order_id [PK] integer	customer_name character varying (20)	product character varying (20)	quantity integer	price numeric (10,2)
1	7	Neha	Mobile	2	21000.00
2	3	Riya	Mobile	1	22000.00
3	1	Amit	Laptop	1	55000.00
4	5	Karan	Laptop	1	60000.00

#### Descending Order

select order\_id, customer\_name, product, quantity, price

from customer\_orders

where price > 20000

order by price desc;

	order_id [PK] integer	customer_name character varying (20)	product character varying (20)	quantity integer	price numeric (10,2)
1	5	Karan	Laptop	1	60000.00
2	1	Amit	Laptop	1	55000.00
3	3	Riya	Mobile	1	22000.00
4	7	Neha	Mobile	2	21000.00

**(ix) Grouping Data for Aggregation.**

```
select product, count(*) as total_product_sale  
from customer_orders  
group by product;
```

	product character varying (20) 🔒	total_product_sale bigint 🔒
1	Charger	1
2	Mobile	2
3	Mouse	1
4	Keyboard	1
5	Laptop	2
6	Headphones	1

**(x) Applying conditions on aggregated data (HAVING).**

```
select product,  
sum(quantity*price) as total_revenue  
from customer_orders  
group by product  
having sum(quantity*price) > 50000;
```

	product character varying (20) 🔒	total_revenue numeric 🔒
1	Mobile	64000.00
2	Laptop	115000.00

**(xi) Using WHERE and HAVING together.**

```
select product, sum(quantity*price) as total_revenue  
from customer_orders  
where order_date >= '2025-01-01'  
group by product  
having sum(quantity*price) > 50000;
```

	product character varying (20) 🔒	total_revenue numeric 🔒
1	Mobile	64000.00
2	Laptop	115000.00

**5. I/O Analysis (Input / Output)**

**Input:**

- Customer order details
- Filtering, sorting, grouping, and aggregation queries

**Output:**

- Filtered customer records
- Sorted result sets
- Group-wise sales summary
- Aggregated revenue reports

(Screenshots of execution and output attached)

## 6. Learning Outcomes

- Students understand how data can be filtered to retrieve only relevant records.
- Students learn how sorting improves readability and usefulness of reports.
- Students gain the ability to group data for analytical purposes.
- Students clearly differentiate between WHERE and HAVING clauses.
- Students develop confidence in writing analytical SQL queries.
- Students are better prepared for SQL-based placement and interview questions.