



## Worksheet 2

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**Branch:**MCA (Data Science)

**Semester:** 2nd

**Subject Name:-** Technical Training

**UID:**25MCD10013

**Section/Group:** 25MCD-1(A)

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

**Subject Code:** 25CAP-652

### 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. Software Requirements

- PostgreSQL (Database Server)
- pgAdmin
- Windows Operating System

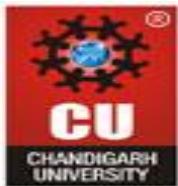
### 3. Objective of the Session

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

### 4. 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

## 5. 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),
```

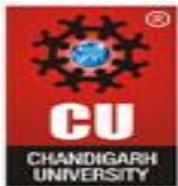
```
order_date date
```

```
);
```

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**(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

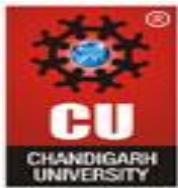
```
select order_id, customer_name, product, quantity, price
```

```
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.

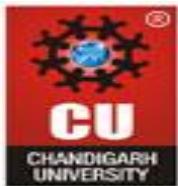
```
select product, count(*) as total_product_sale  
from customer_orders  
group by product;
```

	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

## 6. I/O Analysis (Input / Output)

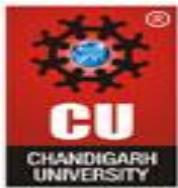
### Input:

- 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)



## 7. 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.