



## **Experiment: 3.2**

**Aim:** Perform data analysis using SQL.

Software Required: SQL, SQL Workbench

### **Description:**

The experiment involves using SQL to perform data analysis tasks in the context of business intelligence. Participants will learn how to write SQL queries to retrieve, filter, aggregate, and analyze data stored in a database, enabling them to extract actionable insights from large datasets.

### **Algorithms:**

**STEP 1:** Connect to the Database

**STEP 2:** Retrieve and Filter Data.

**STEP 3:** Perform Aggregation and Grouping.

**STEP 4:** Join Tables

**STEP 6:** Sort and Order Data

**STEP 7:** Analyze Data and Generate Insights.

### **Code and Output:**

```
//CREATE NEW DATABASE
CREATE DATABASE project;
USE project;
CREATE TABLE CUSTOMERS(
    ID INT NOT NULL,
    NAME VARCHAR (20) NOT NULL,
    AGE INT NOT NULL,
    ADDRESS CHAR (25) ,
    SALARY DECIMAL (18, 2),
    PRIMARY KEY (ID)
);
```



-- INSERT INTO

```
INSERT INTO CUSTOMERS (ID,NAME,AGE,ADDRESS,SALARY)
VALUES (1, 'Ramesh', 32, 'Ahmedabad', 2000.00 );
```

```
INSERT INTO CUSTOMERS (ID,NAME,AGE,ADDRESS,SALARY)
VALUES (2, 'Khilan', 25, 'Delhi', 1500.00 );
```

```
INSERT INTO CUSTOMERS (ID,NAME,AGE,ADDRESS,SALARY)
VALUES (3, 'Kaushik', 23, 'Kota', 2000.00 );
```

```
INSERT INTO CUSTOMERS (ID,NAME,AGE,ADDRESS,SALARY) VALUES
(4, 'Chaitali', 25, 'Mumbai', 6500.00 ),
(5, 'Hardik', 27, 'Bhopal', 8500.00 ),
(6, 'Komal', 22, 'Hyderabad', 4500.00 );
```

```
INSERT INTO CUSTOMERS
VALUES (7, 'Muffy', 24, 'Indore', 10000.00 );
```

//VIEW TABLE

```
SELECT * FROM CUSTOMERS;
```

	ID	NAME	AGE	ADDRESS	SALARY
▶	1	Ramesh	32	Ahmedabad	2000.00
	2	Khilan	25	Delhi	1500.00
	3	Kaushik	23	Kota	2000.00
	4	Chaitali	25	Mumbai	6500.00
	5	Hardik	27	Bhopal	8500.00
	6	Komal	22	Hyderabad	4500.00
	7	Muffy	24	Indore	10000.00



-- WHERE

```
SELECT ID, NAME, SALARY FROM CUSTOMERS  
WHERE SALARY > 2000;
```

	ID	NAME	SALARY
▶	4	Chaitali	6500.00
	5	Hardik	8500.00
	6	Komal	4500.00
	7	Muffy	10000.00
▲	NULL	NULL	NULL

-- DISTINCT

```
SELECT DISTINCT SALARY FROM CUSTOMERS ORDER BY SALARY;
```

Result Grid	Filter Rows:
SALARY	
▶ 1500.00	
2000.00	
4500.00	
6500.00	
8500.00	
10000.00	

-- ORDER BY

```
SELECT * FROM CUSTOMERS ORDER BY NAME ASC;
```

	ID	NAME	AGE	ADDRESS	SALARY
▶	4	Chaitali	25	Mumbai	6500.00
	5	Hardik	27	Bhopal	8500.00
	3	Kaushik	23	Kota	2000.00
	2	Khilan	25	Delhi	1500.00
	6	Komal	22	Hyderabad	4500.00
	7	Muffy	24	Indore	10000.00
	1	Ramesh	32	Ahmedabad	2000.00

CUSTOMERS 4 ×

-- GROUP BY



```
SELECT AGE, MAX(salary) AS MAX_SALARY  
FROM CUSTOMERS GROUP BY AGE;
```

	AGE	MAX_SALARY
▶	32	2000.00
	25	6500.00
	23	2000.00
	27	8500.00
	22	4500.00
	24	10000.00

```
-- IS NULL
```

```
SELECT * FROM CUSTOMERS WHERE salary IS NULL;
```

	ID	NAME	AGE	ADDRESS	SALARY
▶	8	Ramesh	32	Ahmedabad	NULL
	9	Mahesh	32	Patna	NULL
*	NULL	NULL	NULL	NULL	NULL

```
-- JOIN
```

```
SELECT ID, NAME, AGE, AMOUNT  
FROM CUSTOMERS  
JOIN ORDERS  
ON CUSTOMERS.ID = ORDERS.CUSTOMER_ID;
```

	ID	NAME	AGE	AMOUNT
▶	3	Kaushik	23	3000.00
	3	Kaushik	23	1500.00
	2	Khilan	25	1560.00
	4	Chaitali	25	2060.00



```
-- INNER JOIN
SELECT ID, NAME, AMOUNT, DATE
FROM CUSTOMERS
INNER JOIN ORDERS
ON CUSTOMERS.ID = ORDERS.CUSTOMER_ID;
```

	ID	NAME	AMOUNT	DATE
▶	3	Kaushik	3000.00	2009-10-08 00:00:00
	3	Kaushik	1500.00	2009-10-08 00:00:00
	2	Khilan	1560.00	2009-11-20 00:00:00
	4	Chaitali	2060.00	2008-05-20 00:00:00

### Learning Outcome:

1. Develop proficiency in using SQL for data analysis in the context of business intelligence.
2. Understand how to connect to databases and retrieve data using SQL queries.
3. Learn to apply filters, aggregations, and grouping to analyze data effectively.
4. Gain knowledge of joining tables to combine related data for comprehensive analysis.
5. Acquire skills in sorting and ordering data for improved analysis and reporting.