

What Is SQL & How Analysts Think in SQL

What is SQL?

SQL (Structured Query Language) is how we **ask questions** from structured data stored in databases.

Theory

It is standard programming language designed for **managing and manipulating data** held in a relational database management system (RDBMS). It allows users to **create, read, update, and delete data, as well as define and modify** database structures.

A Data Analyst uses SQL to:

- Explore data
- Answer business questions
- Build metrics
- Prepare data for dashboards & models

SQL is NOT programming logic like Python. It's more of:

You describe **what you want**, not **how to compute** it.

How Analysts Think in SQL

Before writing SQL, analysts think:

1. **What table(s) contain the data?**
2. **What columns do I need?**
3. **Which rows are relevant?**
4. **How should results be grouped or summarized?**

SQL mirrors this thinking and it is very crucial for starting and implementing any query and business problem.

Tables, Rows & Columns

Imagine a table called `employees`:

employee_id	name	department	salary
1	Alice	Data	90000
2	Bob	Sales	70000
3	Carol	Data	95000

Entire Row

- **Table** → entire dataset
- **Row** → one record (e.g. 1 Alice Data 90000)
- **Column** → one attribute (e.g. name)

First SQL Query

Basic Syntax

```
>> SELECT column_name  
>> FROM table_name;
```

Example

```
>> SELECT name  
>> FROM employees;
```

This means:

“Give me the name column from the employees table”

Selecting Everything (Use Carefully)

```
SELECT *
```

```
FROM employees;
```

⚠ Analysts avoid `SELECT *` in real work—explicit is better. Always ask yourself do you really need all columns?

PRACTICE

Assume a table called **customers**:

customer_id	name	country	age

Exercises:

1. Write a query to show all customer names
2. Write a query to show name and country
3. Write a query to show all columns

Answer:

1. Write a query to show all customer names

>> `SELECT name`

>> `FROM customers;`

2. Write a query to show name and country

>> `SELECT name, country`

>> `FROM customers;`

3. Write a query to show all columns

>> `SELECT *`

>> `FROM customers;`