🔑 1. What is SQL?

☑ **SQL (Structured Query Language)** is the **standard programming language** used to:

- Store
- Retrieve
- Manipulate
- Delete
- Manage data in relational databases.

🔄 Key Features:

- Used by almost all database systems
- Works with tables, rows, and columns
- Commands like: `SELECT`, `INSERT`, `UPDATE`, `DELETE`, `CREATE`, `DROP`

💻 Example SQL Query:

```
SELECT * FROM employee WHERE sal > 5000;
```

🔑 2. What is MySQL?

☑ **MySQL** is an **open-source relational database management system (RDBMS)** that uses **SQL** as its query language.

📌 Key Points:

- Owned by **Oracle Corporation**
- Free & widely used (small to large applications)
- Popular in **web development** (LAMP stack: Linux, Apache, MySQL, PHP)
- Supports **multi-user environments**
- Known for **speed & reliability**

💻 Example Use Cases:

- Websites, blogs (WordPress uses MySQL)
- E-commerce apps
- Data storage for mobile apps

🔑 3. What is MS SQL Server?

☑ **Microsoft SQL Server** is a **commercial RDBMS** developed by **Microsoft** that also uses **SQL**.

📌 Key Points:

- Closed-source but offers a **free version** (SQL Server Express)

- Deep integration with **Windows OS** and **.NET Framework**
- Enterprise-level features:
  - Advanced security
  - Data analytics
  - Reporting services (SSRS)
  - Integration services (SSIS)
- Best suited for **large organizations, banking, healthcare, enterprises**

☑ Quick Comparison Table

Feature	SQL (Language)	MySQL	MS SQL Server
Type	Query Language	Open-source Database	Commercial Database (Microsoft)
Ownership	Open standard	Oracle Corporation	Microsoft
Platform	Universal	Cross-platform (Linux, Windows)	Mostly Windows (Linux supported)
Best For	Writing queries	Web Apps, CMS	Enterprise Applications
Cost	N/A	Free (Community Edition)	Paid (with Free Express Edition)
Popular Use	All databases	WordPress, PHP apps	Enterprise, .NET apps

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🔧 1. Install MySQL Server

On Windows:

1. Download MySQL Installer from the official site:
   👉 https://dev.mysql.com/downloads/installer/
2. Run the installer:
   - Select **"Server only"** or **"Full"** setup.
   - Follow prompts to set the root password and configure MySQL as a service.
3. Verify installation:

```
mysql --version
```

On Linux (Ubuntu):

```
sudo apt update
sudo apt install mysql-server
sudo systemctl start mysql
sudo systemctl enable mysql
mysql --version
```

Secure Installation (Optional but recommended):

```
sudo mysql_secure_installation
```

💻 2. Install MySQL Client

Usually, the client is bundled with the server. If you want to install it separately:

On Ubuntu:

```
sudo apt install mysql-client
```

On Windows:

- Use **MySQL Workbench** or **Command-Line Client** that comes with MySQL Installer.

🔑 3. Configure MySQL Server (Optional Advanced)

- Config file: `/etc/mysql/my.cnf` (Linux)
- Adjust:
  - `bind-address`
  - `port`
  - `max_connections`
- Restart service after config changes:

```
sudo systemctl restart mysql
```

🔌 4. Connect SQL Client to MySQL Server

Command Line Example:

```
mysql -h <hostname_or_ip> -u <username> -p
```

- Example for local:

```
mysql -h localhost -u root -p
```

Absolutely! Here's a detailed guide focused specifically on **MySQL Workbench**:

🔎 MySQL Workbench Setup & Configuration Guide

☑ 1. Download & Install MySQL Workbench

Download:

👉 https://dev.mysql.com/downloads/workbench/

Installation (Windows/macOS/Linux):

- Run the installer.
- Select **"MySQL Workbench"** (you may also install MySQL Server and Shell if needed).
- Follow prompts to finish the setup.

📌 **Note:** MySQL Workbench requires **Visual C++ Redistributable** on Windows.

☑ 2. Launch MySQL Workbench

Once installed:

- Open MySQL Workbench.
- You'll see the **Home Screen** with **MySQL Connections**.

☑ 3. Create a New Connection (SQL Client Configuration)

Steps:

1. **Click** the `+` icon next to **MySQL Connections**.
2. **Connection Name:** (Any name, e.g., `Local MySQL`)
3. **Connection Method:** Standard (TCP/IP)
4. **Hostname:** `localhost` *(or the server IP if remote)*
5. **Port:** `3306` *(default)*
6. **Username:** `root` *(or another MySQL user)*
7. **Password:** Click `Store in Vault...` to save it
8. **Test Connection:** Click and verify you get `Successfully made the MySQL connection`.
9. **Click OK** to save.

☑ 4. Server Management (Optional but Useful)

- Go to `Server` ➔ `Startup/Shutdown`
- You can:
  - Start / Stop the server
  - View status logs
  - See server running processes

☑ 5. Create Database & Table via Workbench GUI

Create Database (Schema):

- Go to **Schemas Panel (Left)**
- Right-click ➔ **Create Schema**
- Name it (e.g., `test_db`) ➔ Apply ➔ Apply SQL

Create Table:

- Right-click the schema ➔ **Create Table**
- Add columns, define data types, primary keys, etc.
- Apply changes ➔ SQL Preview appears ➔ Apply

☑ 6. Run SQL Queries (SQL Editor)

- Open your connection.
- Go to **"Query" Tab** ➔ Write queries.

```
USE test_db;
CREATE TABLE users (id INT PRIMARY KEY AUTO_INCREMENT, name VARCHAR(100));
INSERT INTO users (name) VALUES ('John Doe');
SELECT * FROM users;
```

- Execute with ⚡ **(Lightning icon)** or `Ctrl + Enter`

☑ 7. Configure & Manage Data Sources (Export/Import)

Import Data:

- Go to `Server ➔ Data Import`
- Choose:
  - Import from dump project folder
  - Import from self-contained file
- Select target schema ➔ Start Import

Export Data:

- `Server ➔ Data Export`
- Choose databases/tables to export
- Save as `.sql` or dump folder

☑ 8. Useful Tips

Feature	Action/Shortcut

Feature	Action/Shortcut
Execute SQL	`Ctrl + Enter`
Format SQL	`Ctrl + B`
Auto Complete	`Ctrl + Space`
Show Execution Plan	`Ctrl + Shift + E`
Export Results	Right-click on results ➔ Export