

Introduction to MySQL Workbench (LAB Lecture)



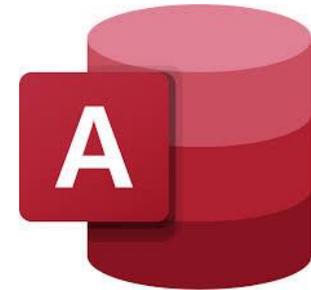
Department of Information Technology
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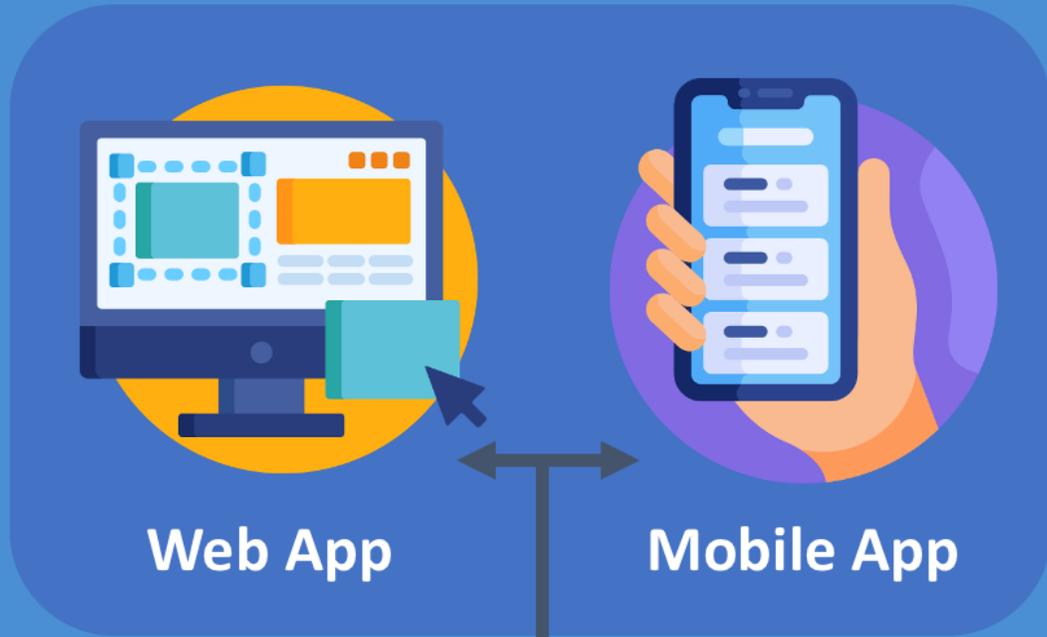
Contents

- **MySQL and MySQL Workbench**
- **Create a Database and Create Table**

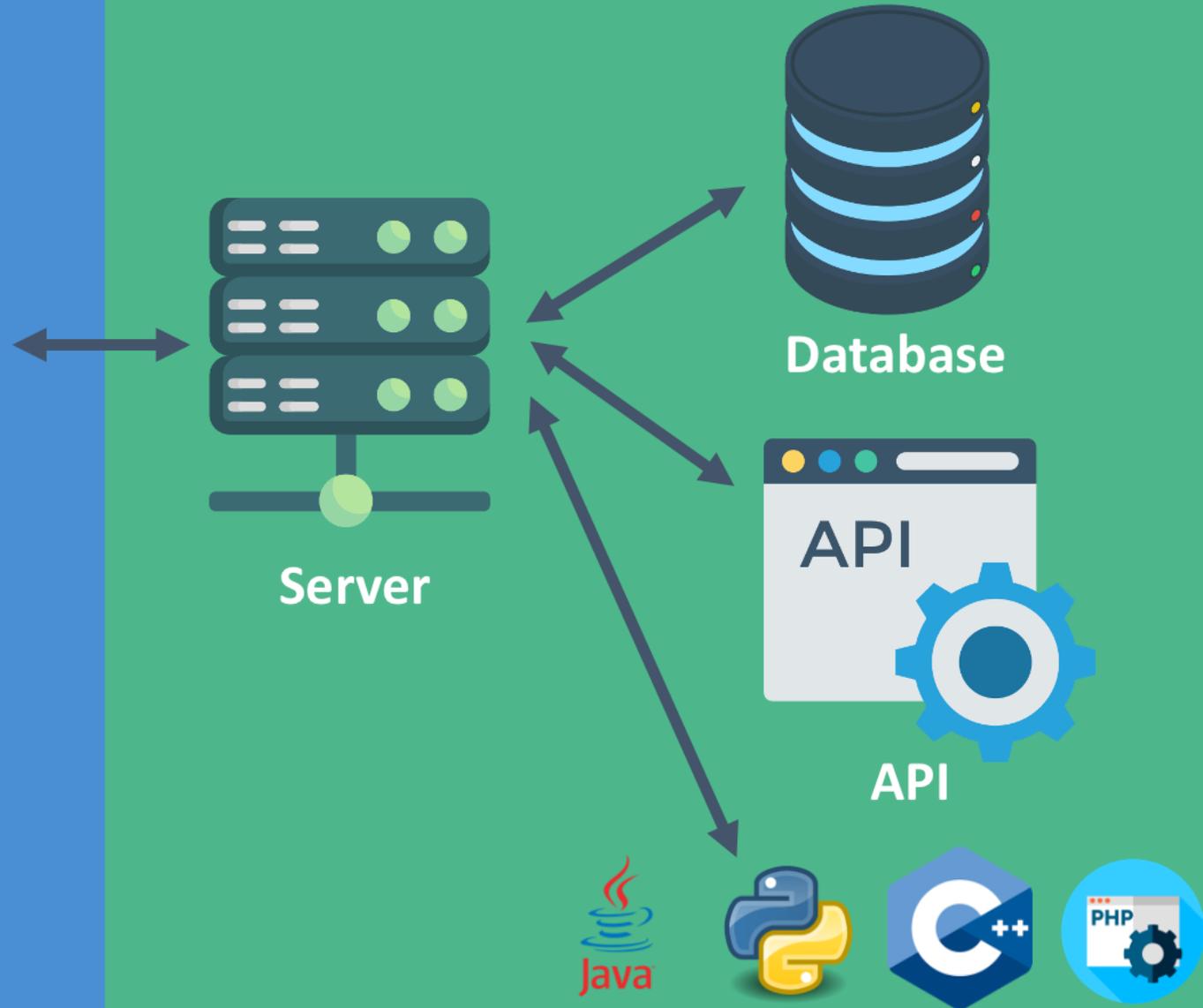
RDBMS Software



FRONT-END



BACK-END



MySQL

- **MySQL** is the world's most popular open-source database management system.
- **MySQL** is an SQL-based relational database designed to store and manage structured data.
- **MySQL** is a popular database management system used in web development as a web application backend.

SQL Language

- **SQL (Structured Query Language)** is used for
 - managing and manipulating relational databases.
- **SQL** is designed to interact with databases
 - by defining, querying, updating, and managing the data within them.

Microsoft Access vs. MySQL

MS Access	MySQL
Slower, small number of users	Quicker, better performance for many users
Single login and password	Multiple security options
Can handle lower numbers of queries & payment transactions	Better for eCommerce - can support multiple queries and payment transactions
Cost per user licence can become expensive	No licences, more cost effective
Has a maximum storage and user number	Easily scalable for a growing business

MySQL Workbench

- **MySQL Workbench** is a graphical tool for working with **MySQL** servers and databases.
- **MySQL Workbench** is available in two editions:
 - **Community** Edition → free of charge
 - **Commercial** Edition → provides advanced features, not free.



MySQL Workbench Environment

Home Screen Tab

Sidebar Panel –
Navigator

Sidebar Panel –
Information

The screenshot shows the MySQL Workbench interface. At the top, the title bar reads 'MySQL Workbench' and the connection tab is labeled 'Local instance MySQL80'. Below this is a menu bar with 'File', 'Edit', 'View', 'Query', 'Database', 'Server', 'Tools', 'Scripting', and 'Help'. A toolbar with various icons is located below the menu bar. The main workspace is divided into several panels:

- Navigator:** A sidebar panel on the left showing a tree view of databases under the heading 'SCHEMAS'. The databases listed are 'company', 'school', 'sys', and 'userdb'. A search box labeled 'Filter objects' is at the top of this panel.
- SQL Query Tab:** A central panel titled 'SQL File 3' containing a single line of text: '1'. Above the text is a toolbar with icons for file operations and a 'Limit to 1000 rows' dropdown.
- Administration / Schemas:** A panel below the Navigator showing 'Information' for the selected 'company' schema, displaying 'Schema: company'.
- Output Area Panel:** A panel at the bottom right titled 'Output' with a dropdown menu set to 'Action Output'. It contains a table with columns '#', 'Time', 'Action', and 'Message'.

Red arrows point from text labels to these specific components: 'Home Screen Tab' points to the home icon; 'Connection Tab' points to the 'Local instance MySQL80' tab; 'SQL Query Tab' points to the 'SQL File 3' tab; 'Sidebar Panel – Navigator' points to the Navigator sidebar; 'Sidebar Panel – Information' points to the 'Information' section of the Administration/Schemas panel; and 'Output Area Panel' points to the Output panel.

Connection Tab

SQL Query Tab

Output Area Panel

SQL Editor - SQL Query Tab

The screenshot shows the MySQL Workbench interface. The main window is titled "MyFirstConnection (world)". The menu bar includes File, Edit, View, Query, Database, Server, Tools, Scripting, and Help. The toolbar contains various icons, with a lightning bolt icon highlighted by a red box and a red arrow pointing to it, labeled "Executes the SQL statement".

The "Navigator" panel on the left shows a tree view of "SCHEMAS" with "world" selected. Under "world", the "country" table is highlighted.

The "Query 1" tab is active, showing the SQL query: `SELECT name, code FROM country;`. The text "SQL query panel" is written in red below the query.

The "Result Grid" panel at the bottom displays the output of the query as a table with two columns: "name" and "code". The data rows are:

name	code
Aruba	ABW
Afghanistan	AFG
Angola	AGO
Anguilla	AIA

A red arrow points from the text "Output (results) from statements" to the result grid. The "Result Grid" panel also has a "Form Editor" button visible at the bottom right.

Some Data Types in MySQL

Data Type	Description	Storage (Bytes)
INT	A standard integer	4 Bytes
DECIMAL	A fixed-point number	4 Bytes
NUMERIC	A fixed-point number	4 Bytes
FLOAT	A floating-point number	4 Bytes
DOUBLE	A floating-point number that stores larger values than FLOAT	8 bytes

Some Data Types in MySQL

Data Type	Description	Number of Characters
CHAR (M)	A fixed-length string	M → 0-255
VARCHAR (M)	A variable-length string	M → 0-255
TEXT (M)	A long string	M → 0-65,535

Some Data Types in MySQL

Data Type	Description	Storage
DATE	A date	3 Bytes
DATETIME	A date and time combination	8 Bytes
TIME	A time	3 Bytes
YEAR	A year in four-digit format	1 Byte
TIMESTAMP	A timestamp	4 Bytes

Create and Use a Database

- **Creating a new database in MySQL:**

```
create database <database_name> ;
```

- **Selecting the Database for Use:**

```
use <database_name> ;
```

- **Show list of all databases:**

```
show databases;
```

First Database – Company Database

Department

deptName	Budget	Floor
HR	11000	3
Accounting	7000	1
Customer Services	5000	4

Employee

ID	name	salary	deptName
1	Mike	4000.5	Accounting
2	Kate	2500.75	Customer Services
3	Sandy	7000	HR

Create Table

- **Creating a new table in MySQL:**

```
create table <table_name>
```

```
(column_names data_type,
```

```
constraints);
```