BIG DATA TOOLS FOR MANAGERS (N2MBA07)

Unit -1 : Overview of Database, SQL and MySQL

Database

?

Database

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Or

The database is an organized collection of data so that, it can be easy to access and manipulate stored information.

Database

Unorganized collection of data

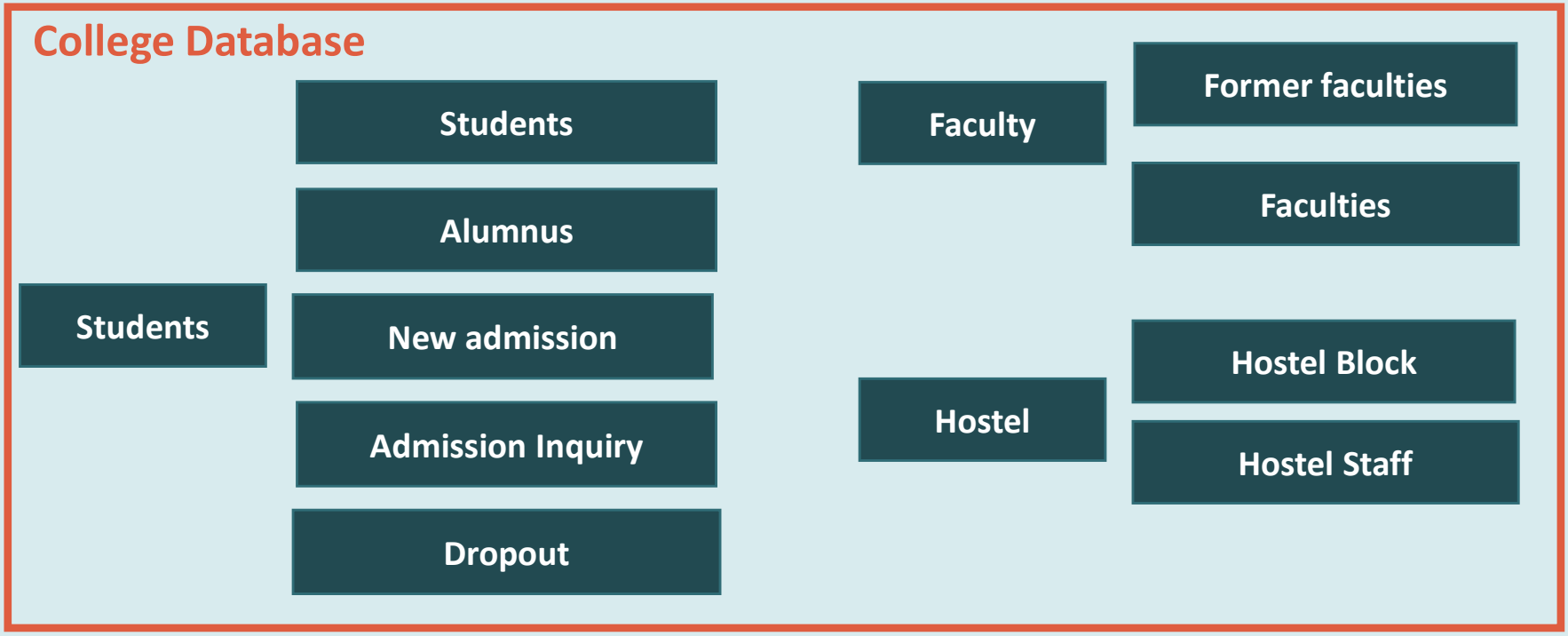
Database

Unorganized collection of data

Organized collection of data

Database Example :

- Consider college database organizes the data about the admin, students, libraries, and faculty.
- Using the database, it can be easy to retrieve, insert, and delete information.



File based approach

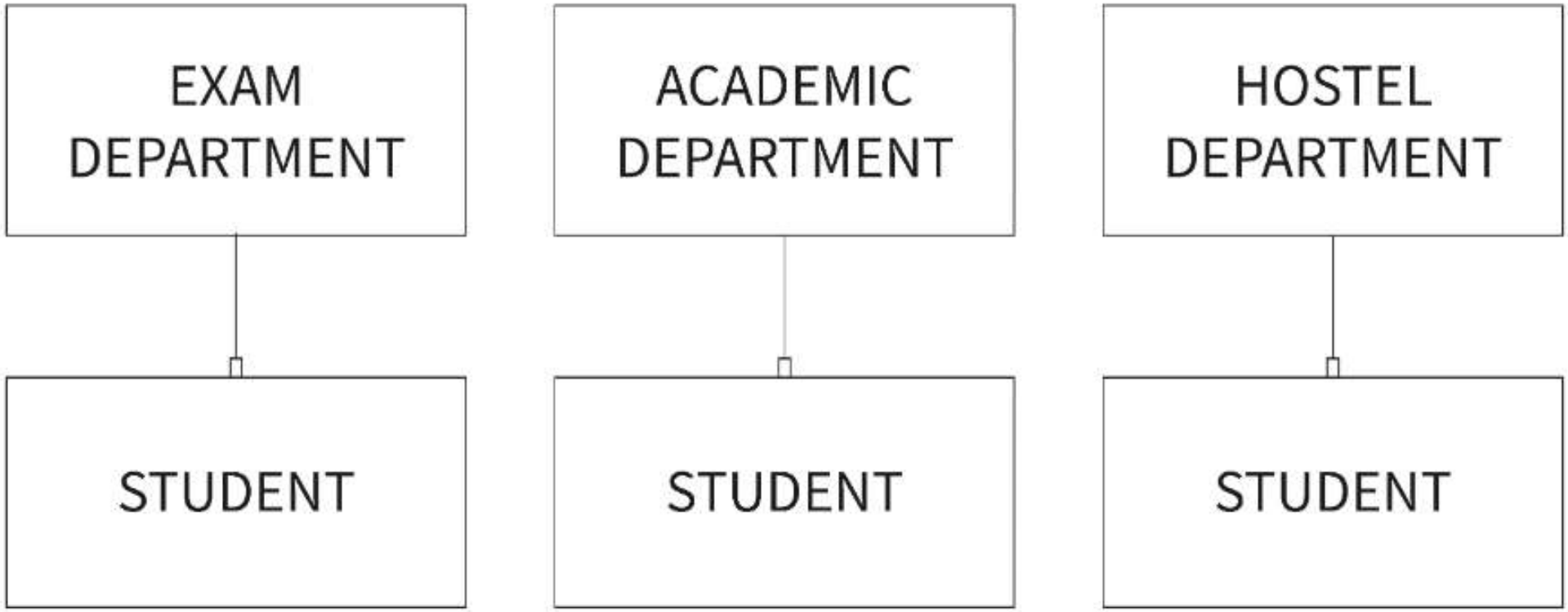
File base approach/File Management system used to manage data needed for a specific use case or application.

Each user stores separate data for the application even if the same data stored by another user.

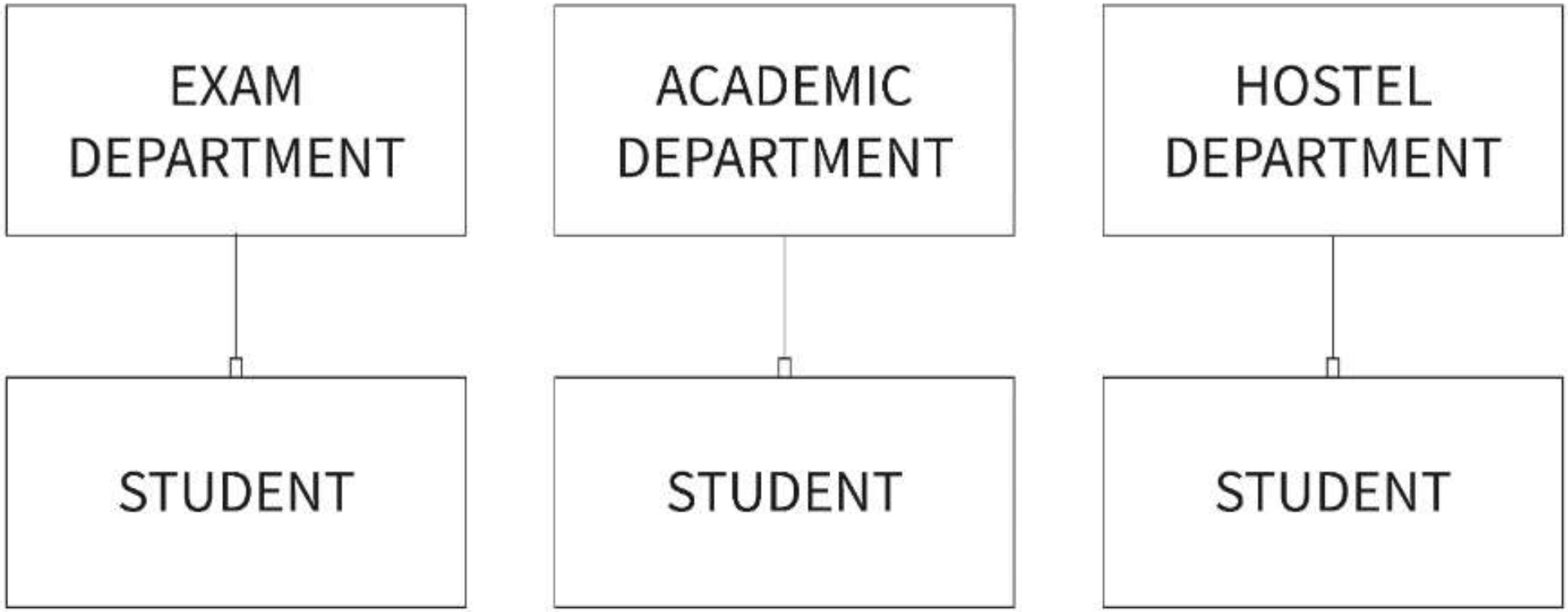
- Like College, there are multiple department such as admin, hostel, library, exam each departments are maintaining student details separately

- If there are 100 students and 5 departments then will be storing 5x100 = 500 records

File Based Approach



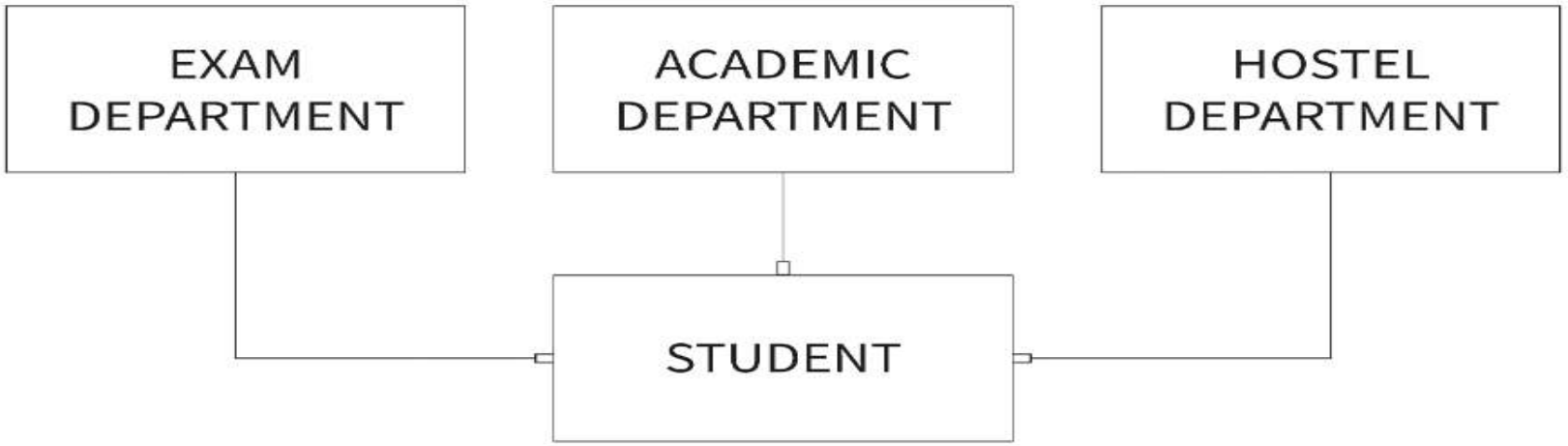
File Based Approach



**Major drawback of file-based approach is repetition of data and wastage of resources.

Database Approach

A database is used for storing and maintaining the data where data defined once and stored in single location, it available for multiple users or departments.



Characteristics of Database approach

- Self-Describing Nature of a Database System

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- Insulation between Programs and Data, Data Abstraction and Multi-user Transaction Processing
- Support of Multiple Views of the Data
- Security
- Supports Query Language to perform database operation effectively.

Database management system

A database management system (DBMS) is a software tool that helps organize, store and retrieve data from a database.

It involves several functions that collectively work together to ensure that the data is accurate, available and accessible.

DBMS Elements

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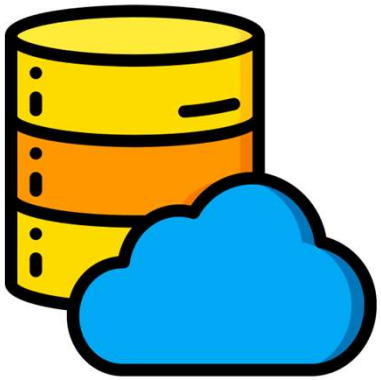
2. A database engine that helps to access the data and modify its contents.
3. A database schema which provides the logical structure of the data stored in the database.

Types of Database Management System



1. Relational database management system
2. Distributed database management system
3. Network database management system
4. Object-oriented database management system
5. Hierarchical database management system

Relational Database Management System (RDBMS)

A relational database management system or RDBMS is a database system that stores and fetches data in the form of tables.

How Does a Relational Database Work?

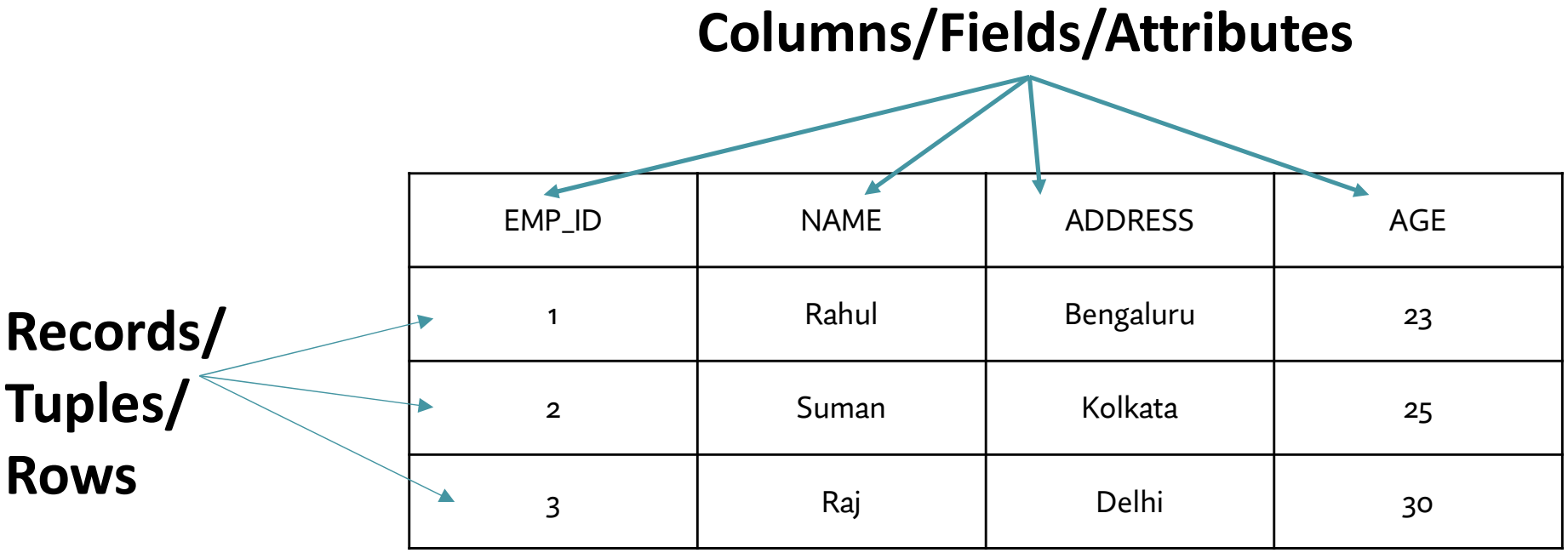
- ✓ Relational Databases use tables to store data about related objects. Each column contains data attributes, whereas each row holds a record of unique data known as Key.
- ✓ Relational Databases or RDBMS are managed using SQL.

RDBMS Software

- MySQL is currently the most popular database management system software used for managing the relational database.
- It is open-source database software, which is supported by Oracle Company.

**Other RDBMS Software

In RDBMS terminologies



In RDBMS terminologies

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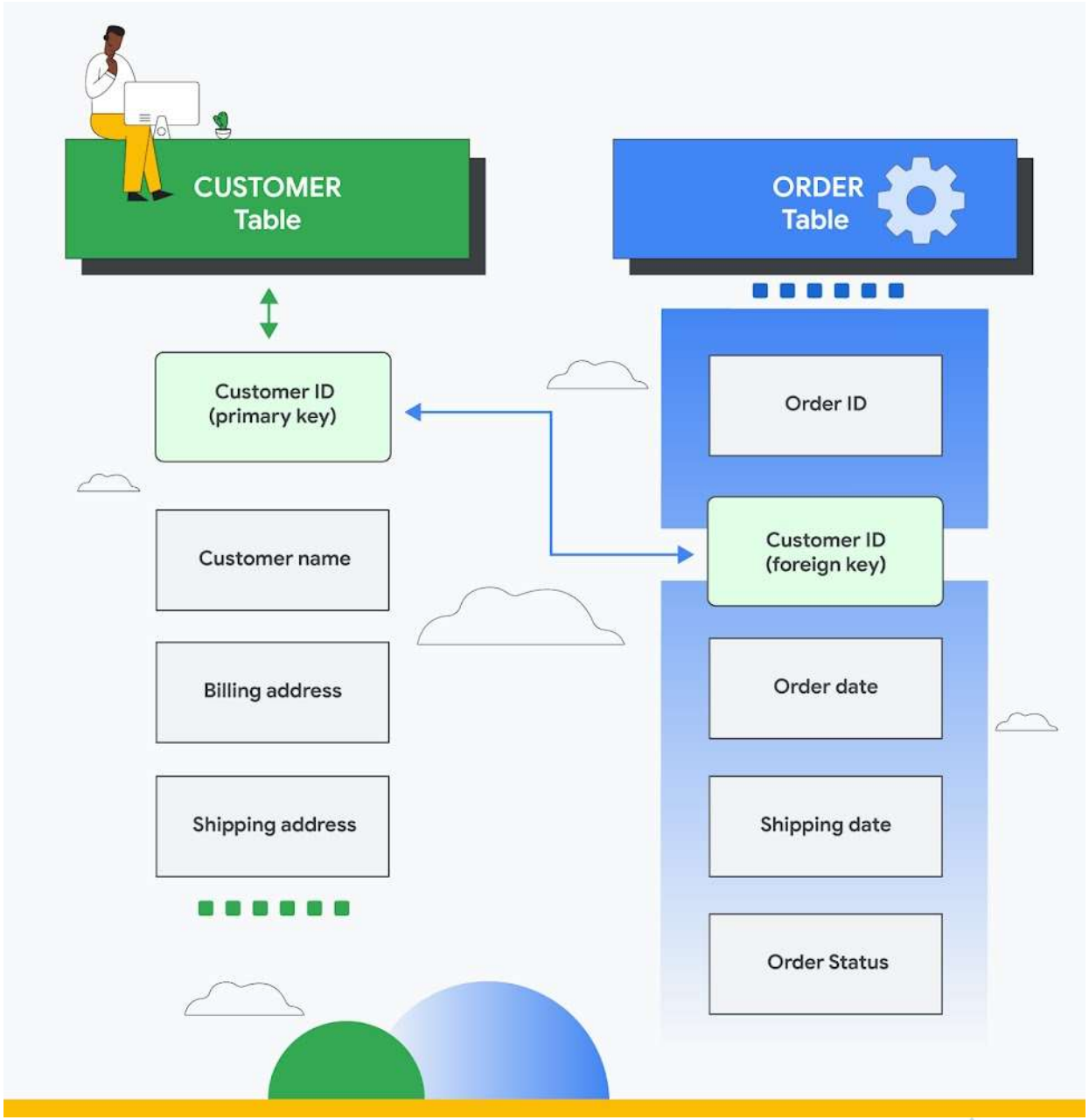
CUSTOMER
Table
ORDER
Table
Customer ID
(primary key)
Customer name
Billing address
Shipping address
Order ID
Customer ID
(foreign key)
Order date
Shipping date
Order Status

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NULL Values: The values or data which are unknown are kept as NULL.

SQL

- SQL is a standard programming language used to operate Relational Databases and carry out various operations such as inserting, manipulating, updating, and retrieving data from relational databases.

- SQL is not a database system, but it is a query language.

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OR

- **This database language is mainly designed for maintaining the data in relational database management systems.**
- **It is a special tool used by data professionals for handling structured data (data which is stored in the form of tables)**

Features of SQL

- RDBMS only understand SQL command and instruction to perform any kind of operation.
- SQL is used to access data within the relational database.
- SQL is very fast in extracting large amounts of data very efficiently.
- SQL is flexible as it works with multiple database systems from Oracle, IBM, Microsoft, etc.
- SQL helps you manage databases without knowing a lot of coding.

Some SQL Commands

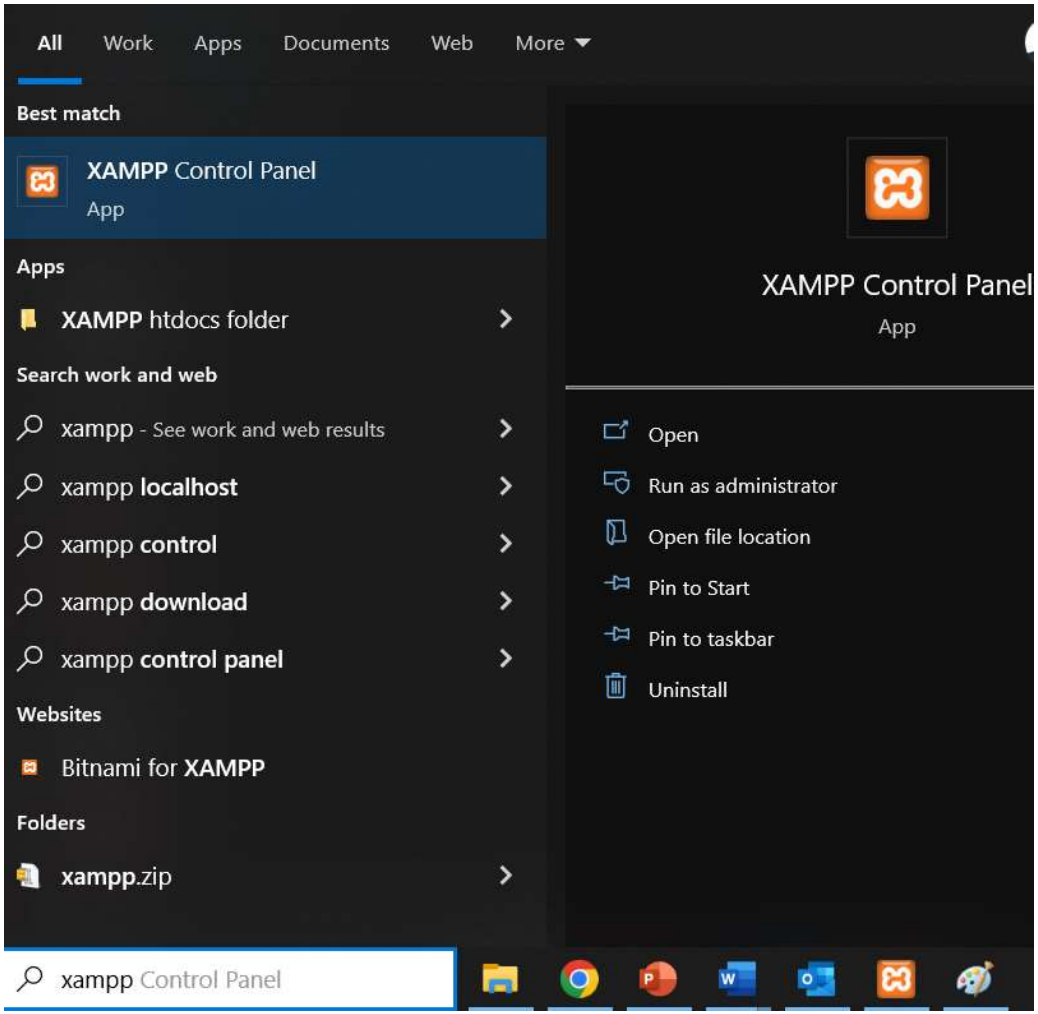
The SQL commands help in creating and managing the database.

The most common SQL commands which are highly used are mentioned below:

- CREATE command
- UPDATE command
- DELETE command
- SELECT command
- DROP command
- INSERT command

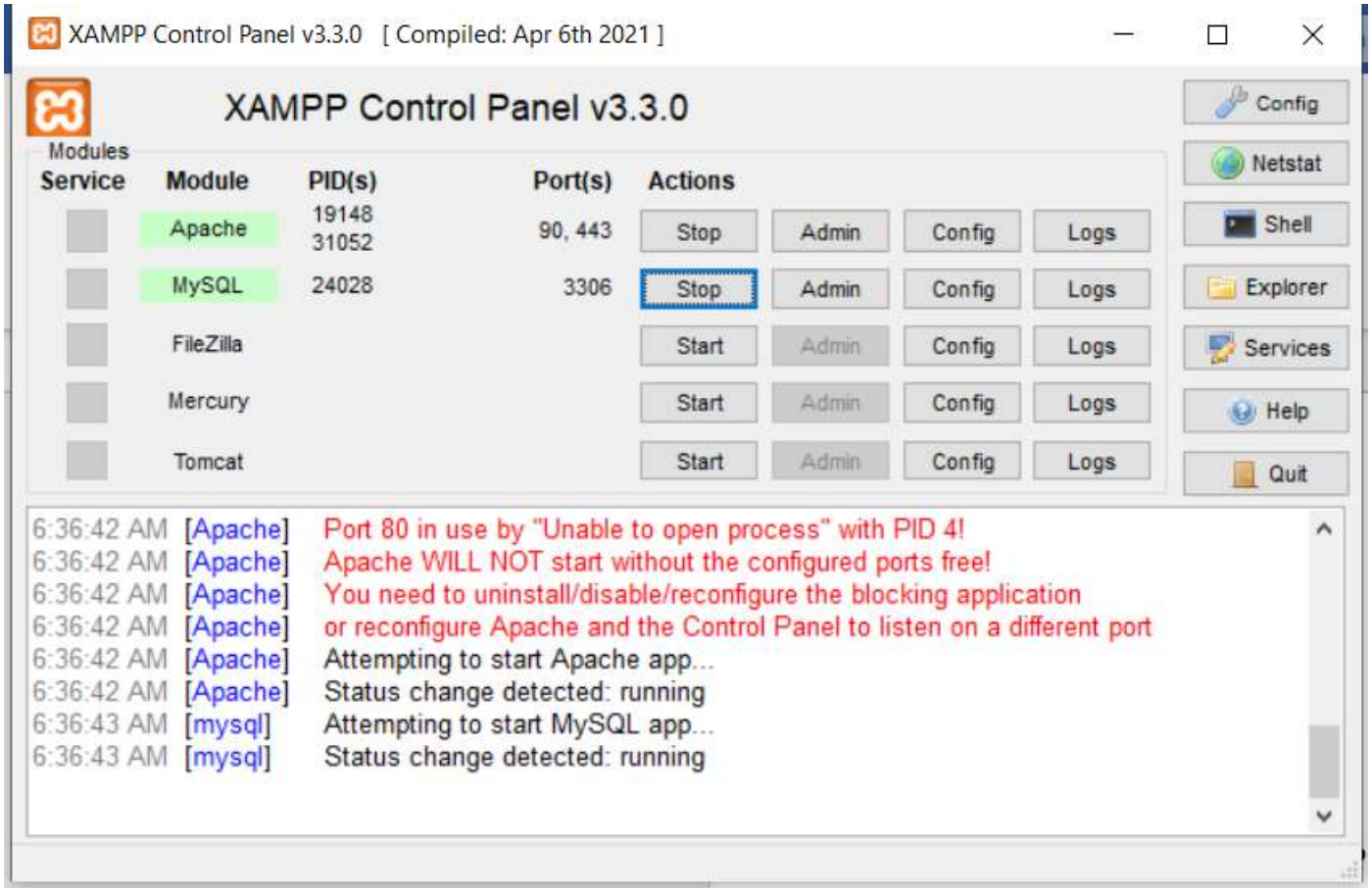
Working with MYSQL (XAMPP phpMyAdmin)

Start XAMPP application from all programs in Windows laptop



Working with MYSQL (XAMPP phpMyAdmin)

Start **Apache** & **MySQL** services on XAMPP control panel



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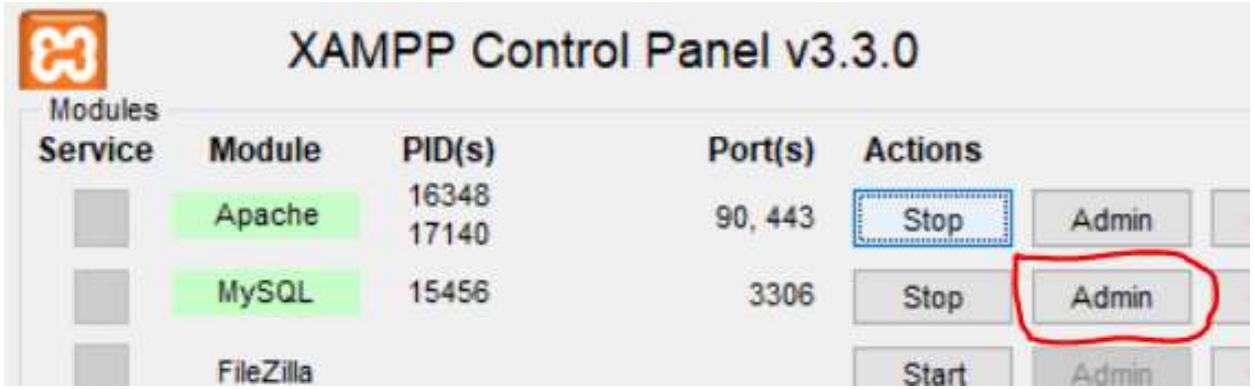


Once both services are running click on **Admin** button of **MySQL** services. It will take you on web browser with URL like

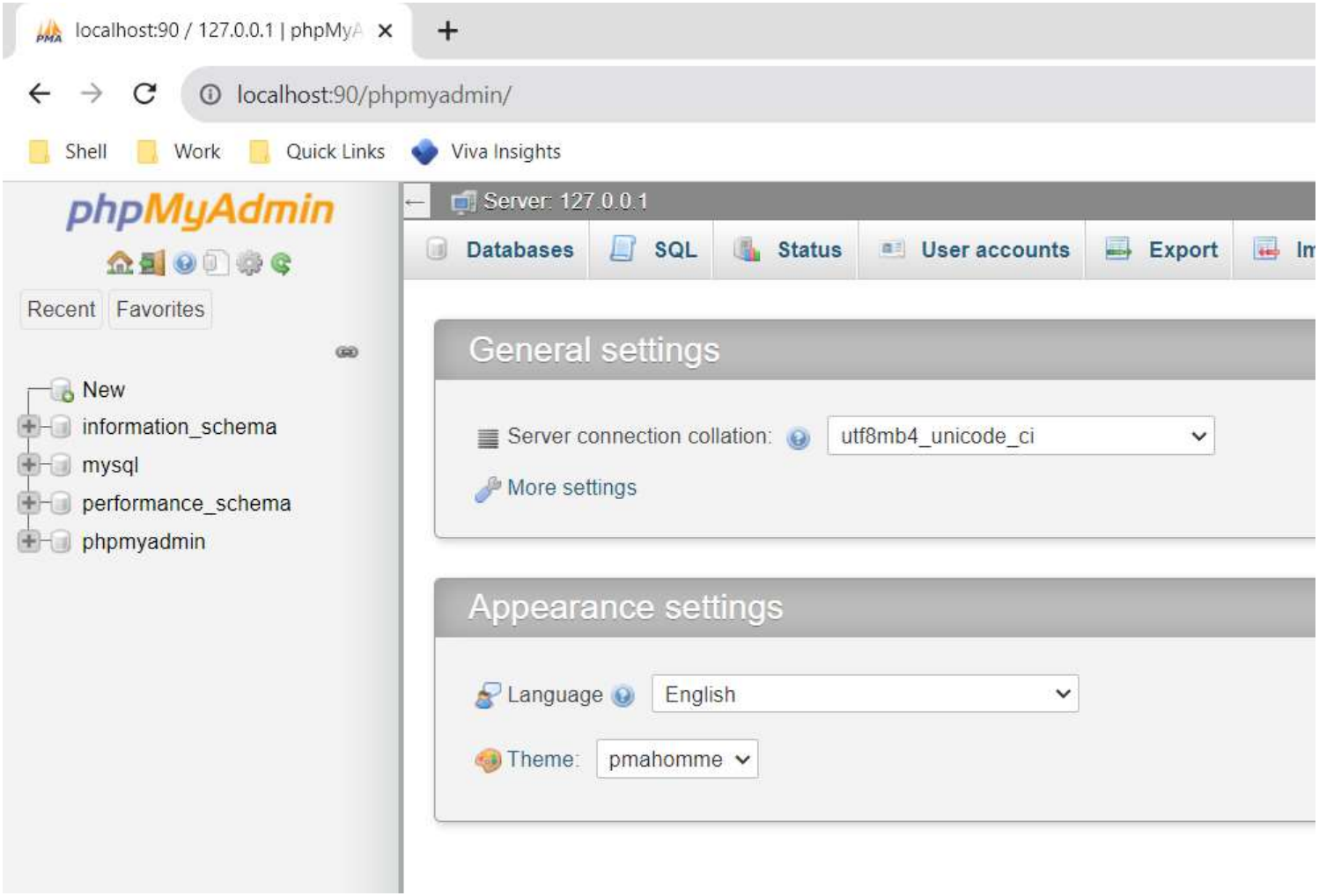
http://localhost/phpmyadmin

http://localhost:8080/phpmyadmin

http://localhost:90/phpmyadmin

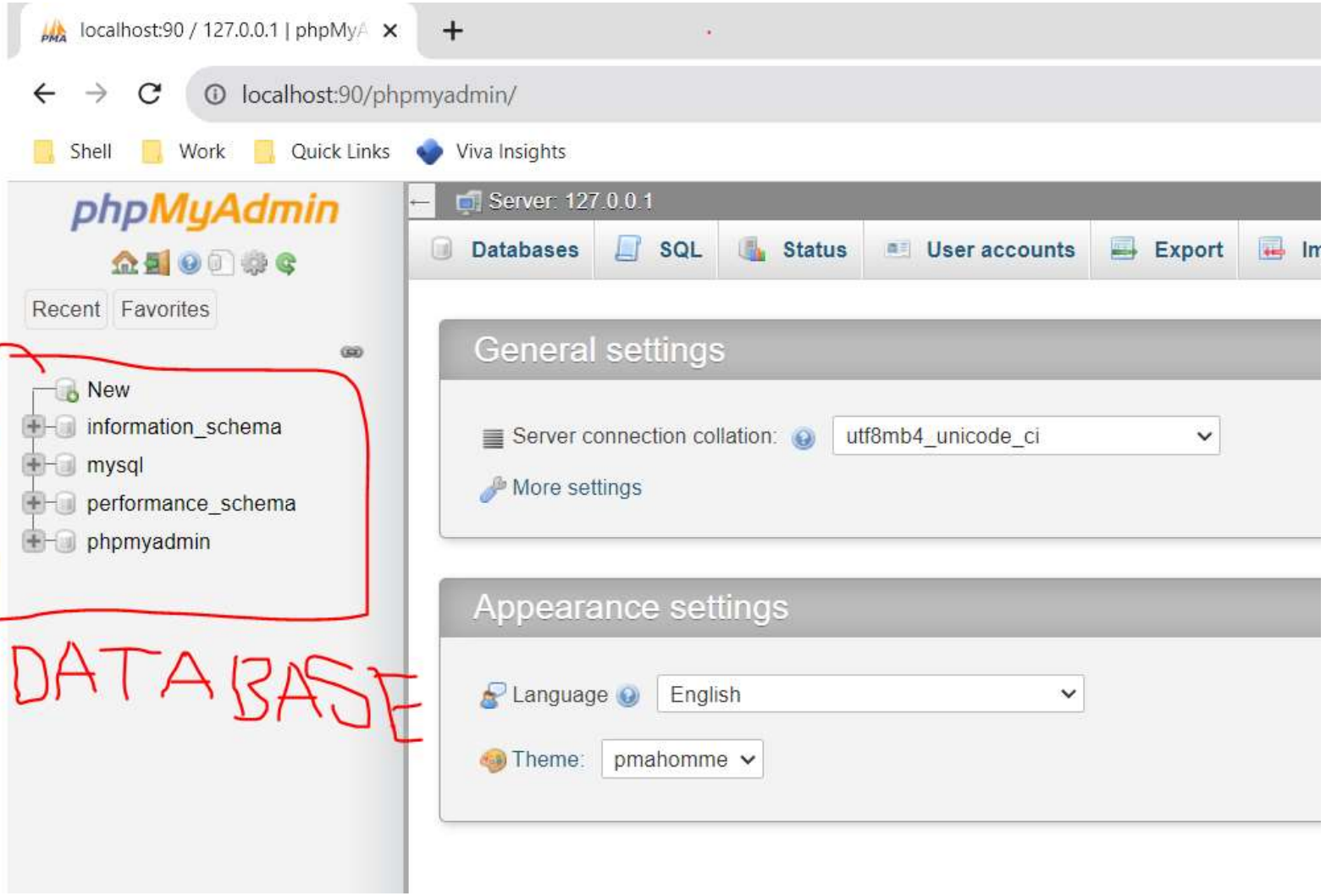
Working with MYSQL (XAMPP phpMyAdmin)

phpMyAdmin home page on web browser



Working with MYSQL (XAMPP phpMyAdmin)

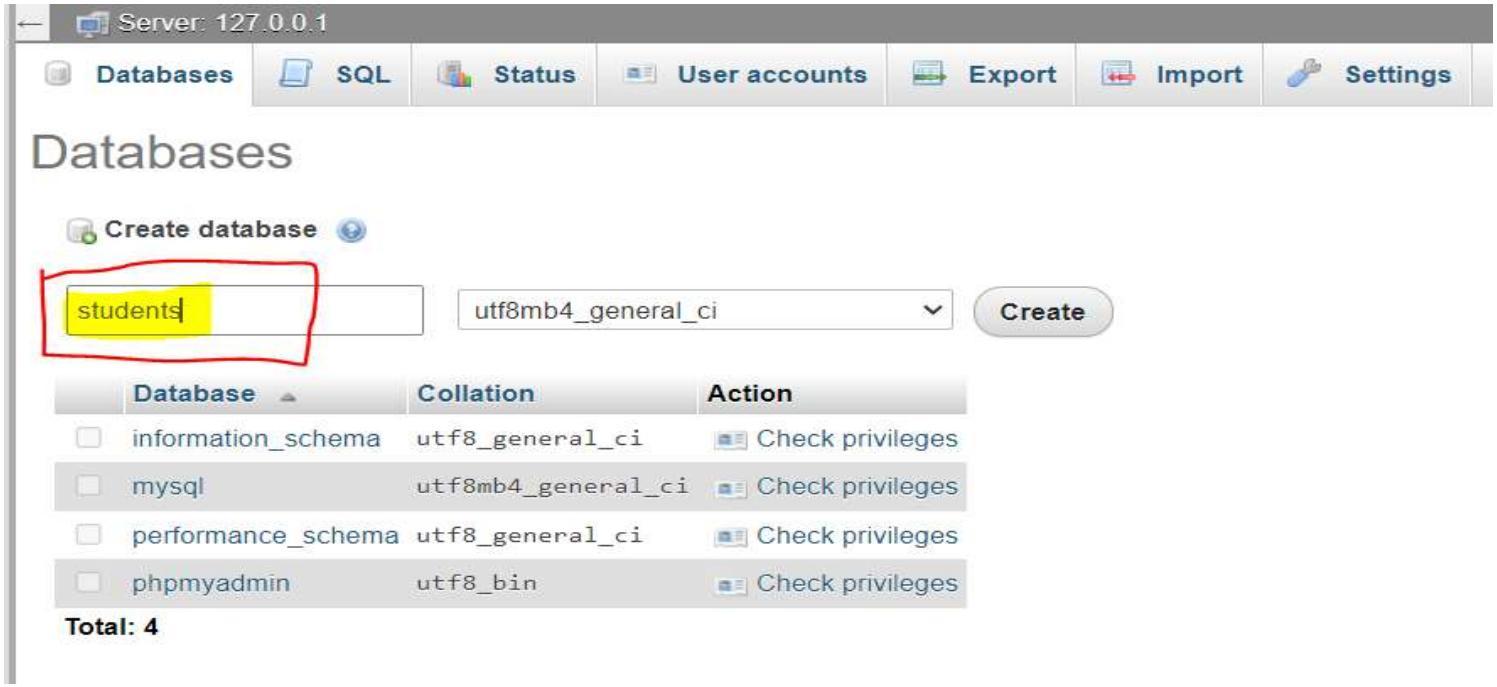
On left panel it contains all the database available on MySQL server.



Working with MYSQL (XAMPP phpMyAdmin)

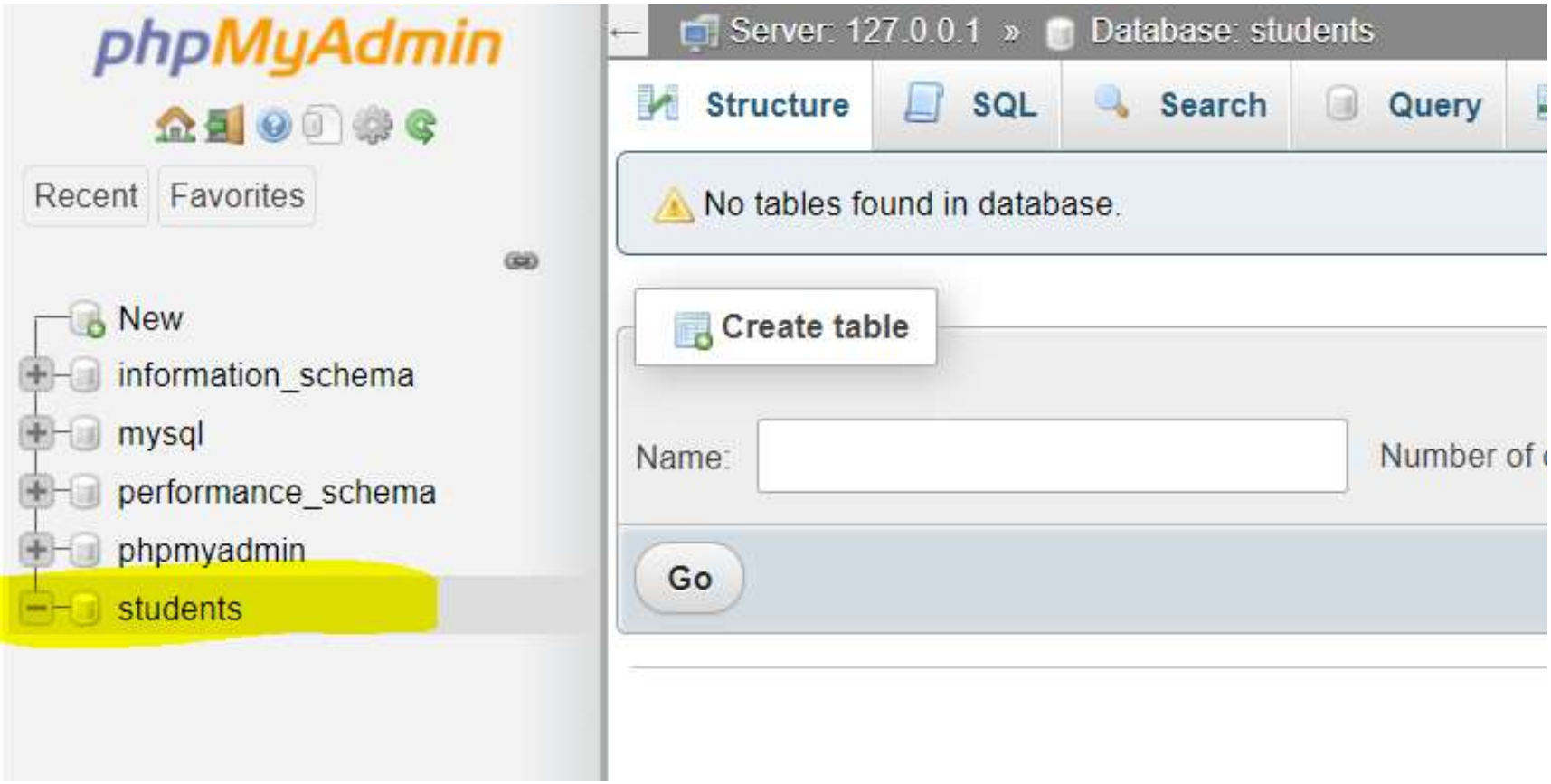
Creation of Database: Click on database on top row of phpMyAdmin

Type database name and click on **Create** button



Working with MYSQL (XAMPP phpMyAdmin)

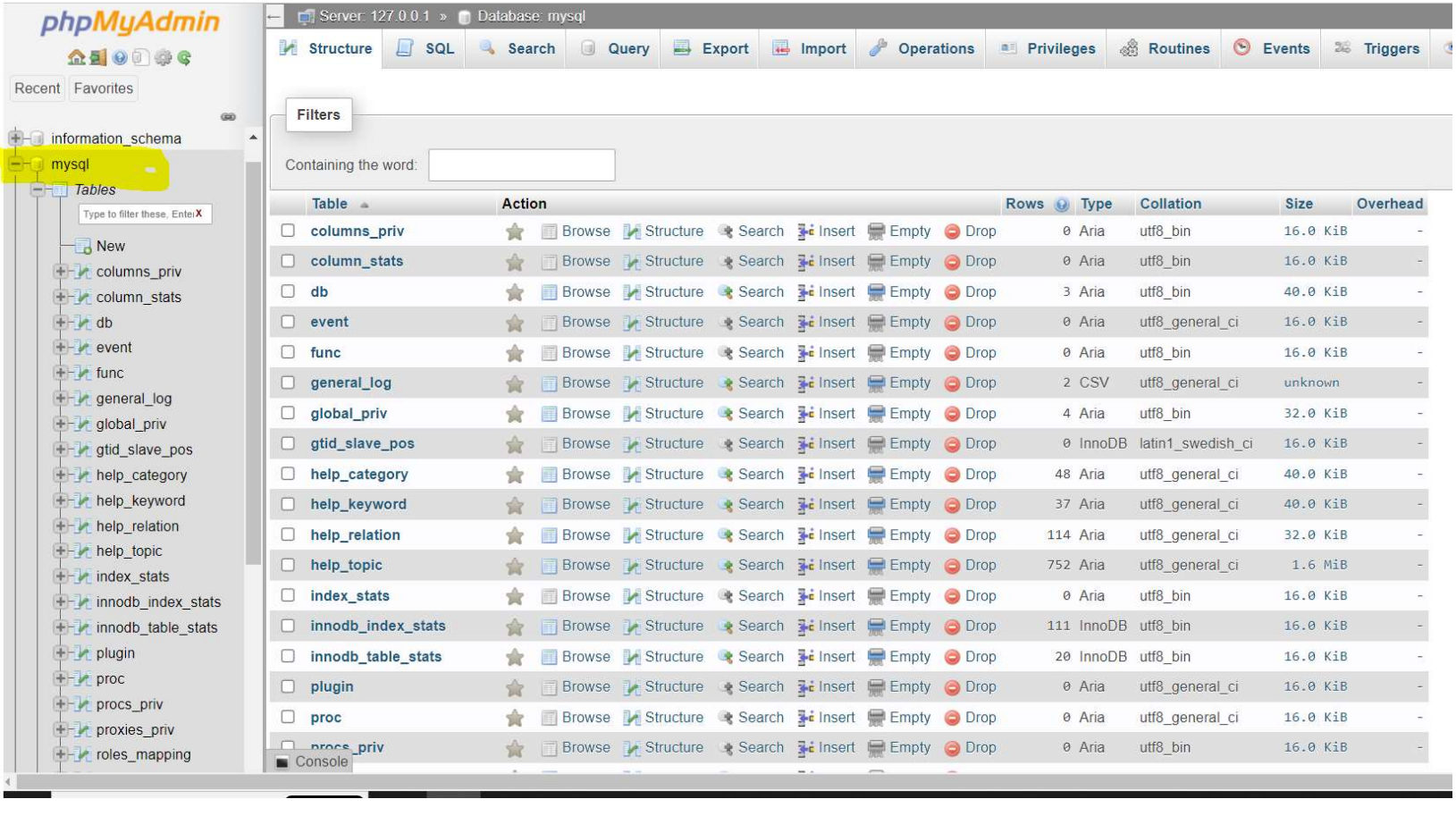
Once database created it will show in left panel windows.



Working with MYSQL (XAMPP phpMyAdmin)

Selecting Databases

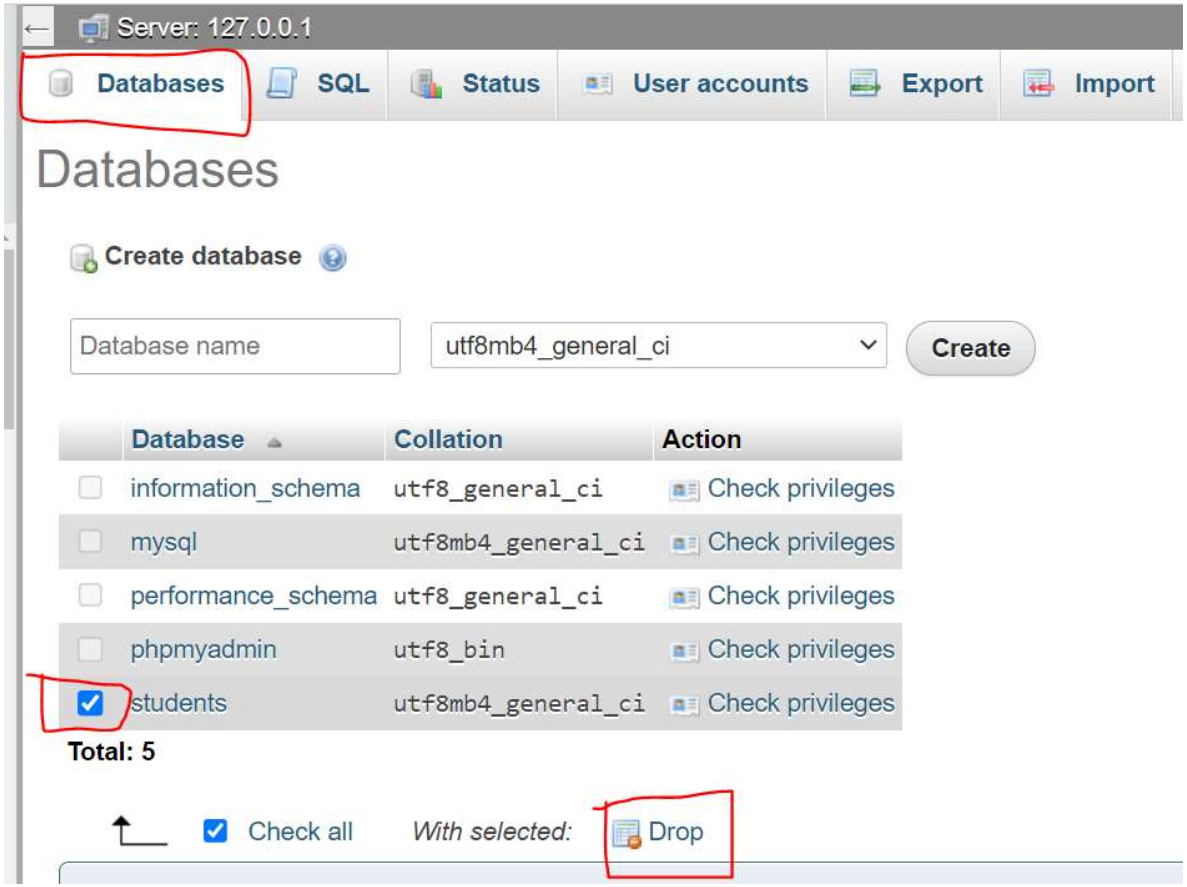
Clicking on database name it will get selected for data manipulation, and display lists of tables available in selected database.



Working with MYSQL (XAMPP phpMyAdmin)

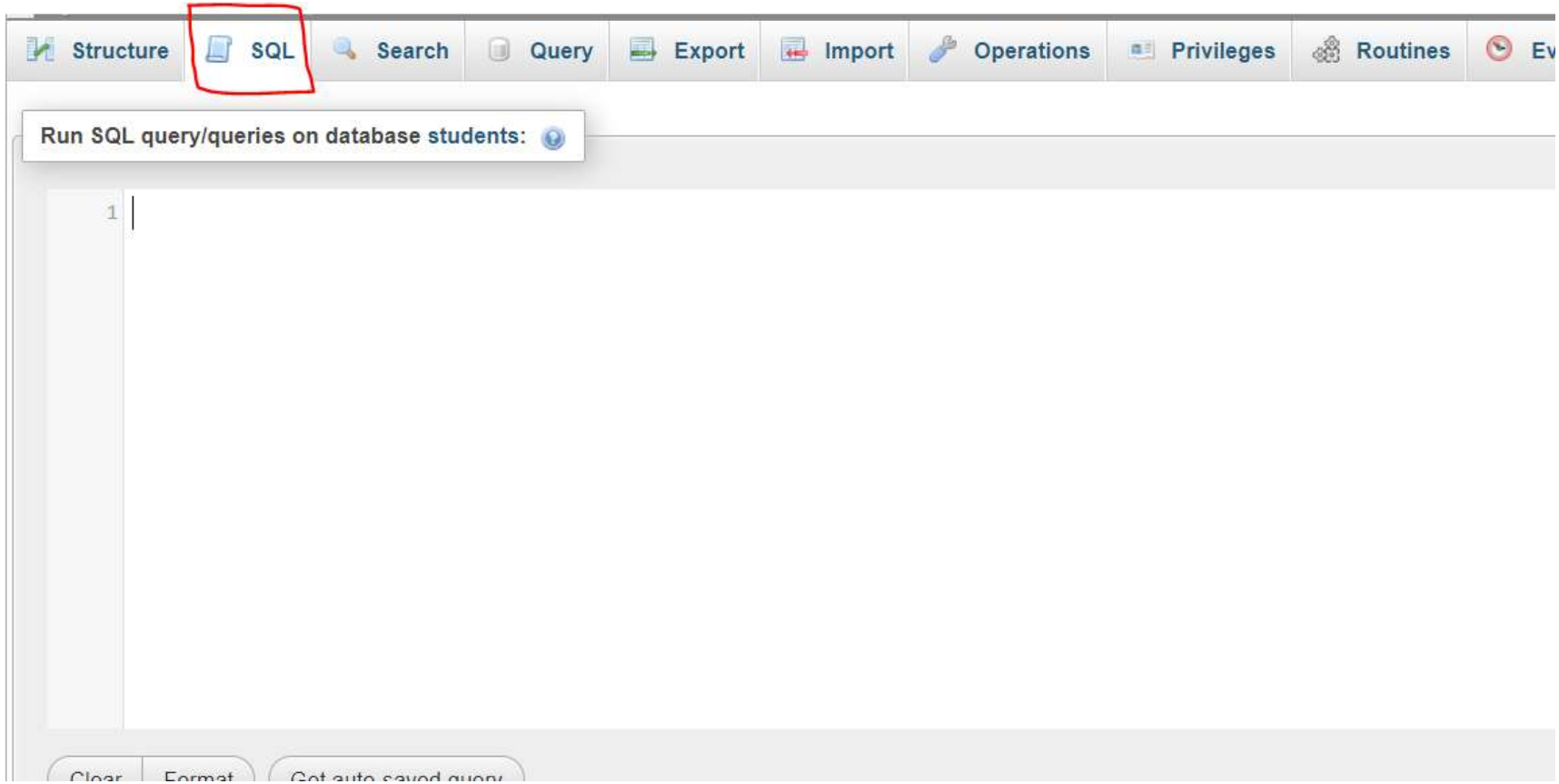
Drop Databases

Dropping database means deleting database from MySQL software.



XAMPP - SQL Window

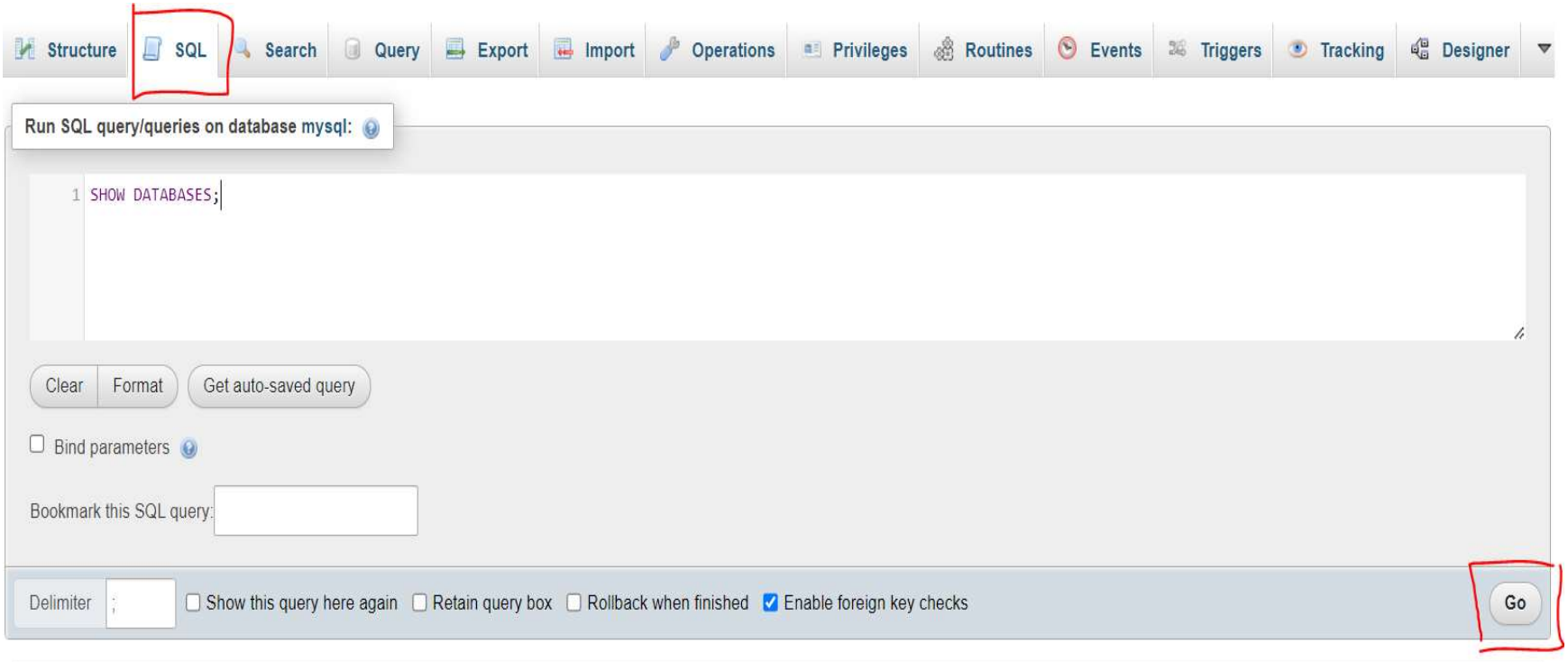
On top row of phpMyAdmin SQL button is available, click on SQL button gives SQL windows to write SQL commands / statements/ instructions.



XAMPP - SQL Window

SQL Statement execution

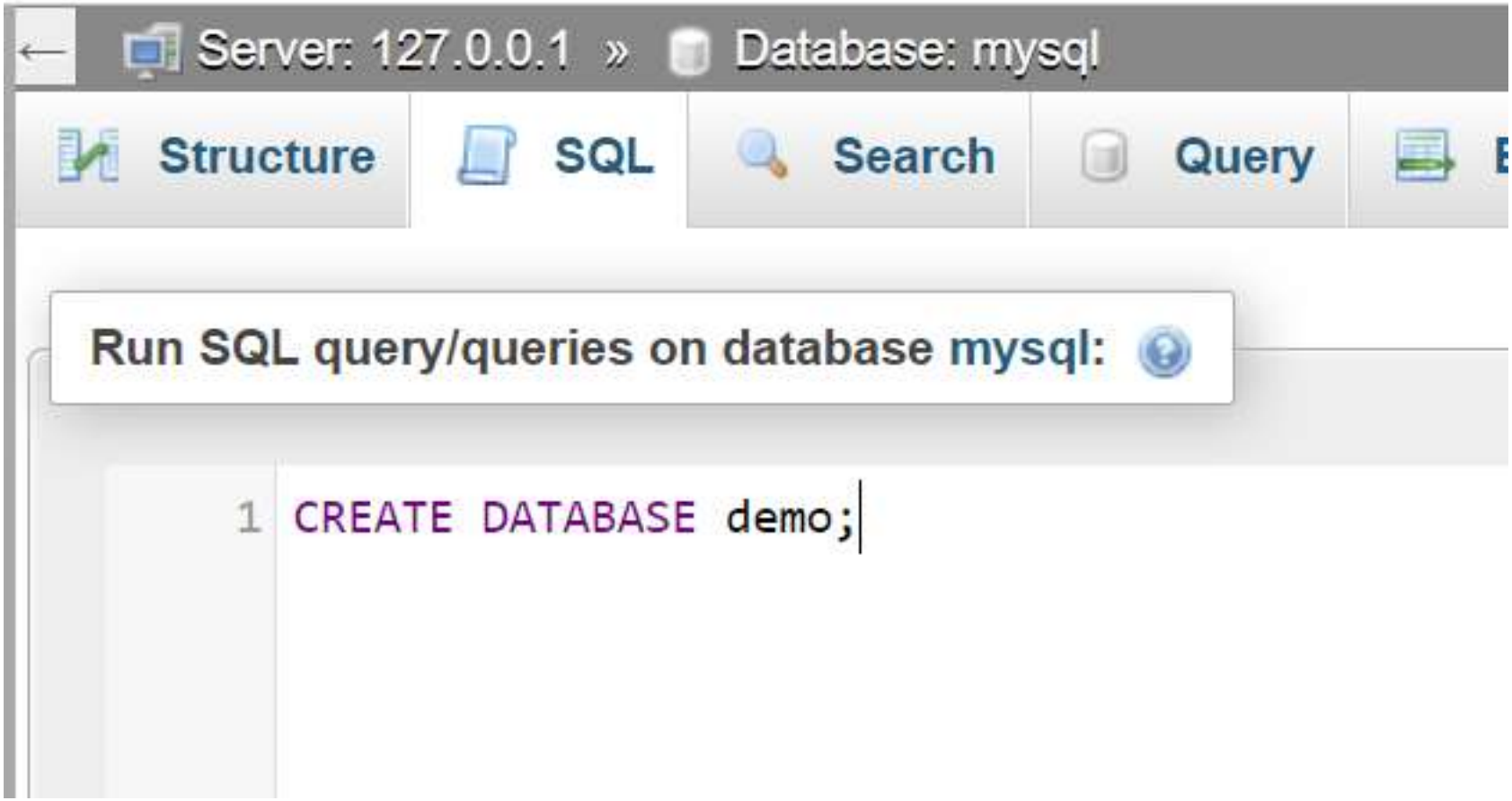
SHOW DATABASES;



XAMPP - SQL Window

SQL Statement – Create new database “demo” using SQL command/statement in MySQL

CREATE DATABASE demo;



XAMPP - SQL Window

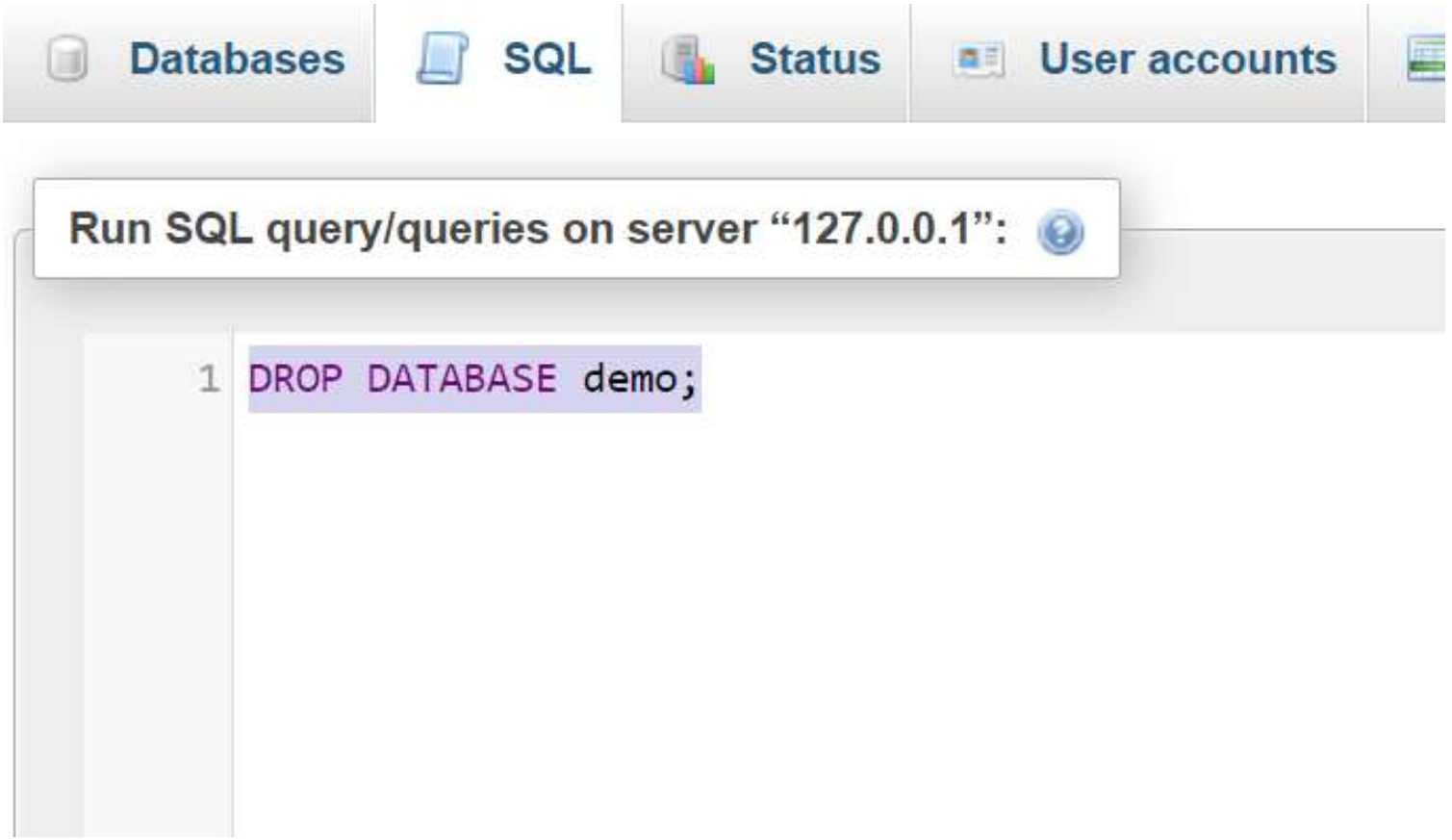
SQL Statement – Select “demo” database using SQL command/statement in MySQL

USE demo;

XAMPP - SQL Window

SQL Statement – Delete/Drop “demo” database using SQL command in MySQL

DROP DATABASE demo;



Recap

- Getting familiar with XAMPP → MySQL (Start & Stop services)

Recap

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- Getting familiar with phpMyAdmin(MySQL) windows.

Recap

- Getting familiar with XAMPP → MySQL (Start & Stop services)
- Getting familiar with phpMyAdmin(MySQL) windows.
- Creating/Selecting/Deleting database using Navigation as well as SQL statement.

Exercises

Create EMPLOYEE database using SQL Statements/Command, write all the commands in a notebook and then execute in SQL windows.

a. LIST ALL the Database available in MySQL
b. CREATE EMPLOYEE statement
c. LIST ALL Database available in MySQL
d. USE EMPLOYEE statement
e. LIST ALL TABLE present in EMPLOYEE database

Exercises

Create MOVIE database using phpMyAdmin Navigation bar, create document file and copy paste the screenshot for each point.

a. CREATE MOVIE database
b. SELECT MOVIE database
c. Check are there any tables for MOVIE database

Till now.....

Database

Till now.....

Database

Example:

- **EMPLOYEE**
- **MOVIE**
- **demo**
- **students**

Till now.....

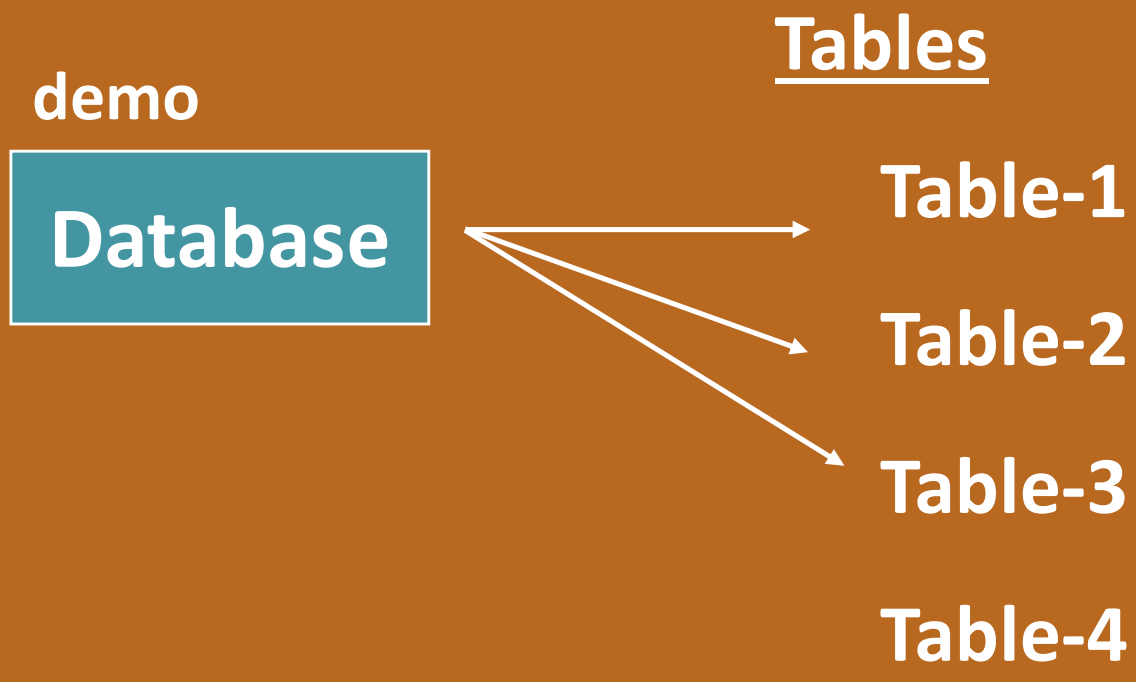
Database

Example:

- EMPLOYEE
- MOVIE
- demo
- students

What Next ?

What Next?



Working with Tables

Step-1 : Create EMPLOYEE database

CREATE DATABASE EMPLOYEE;

Step-2 : Select EMPLOYEE database

USE EMPLOYEE;

Working with Tables

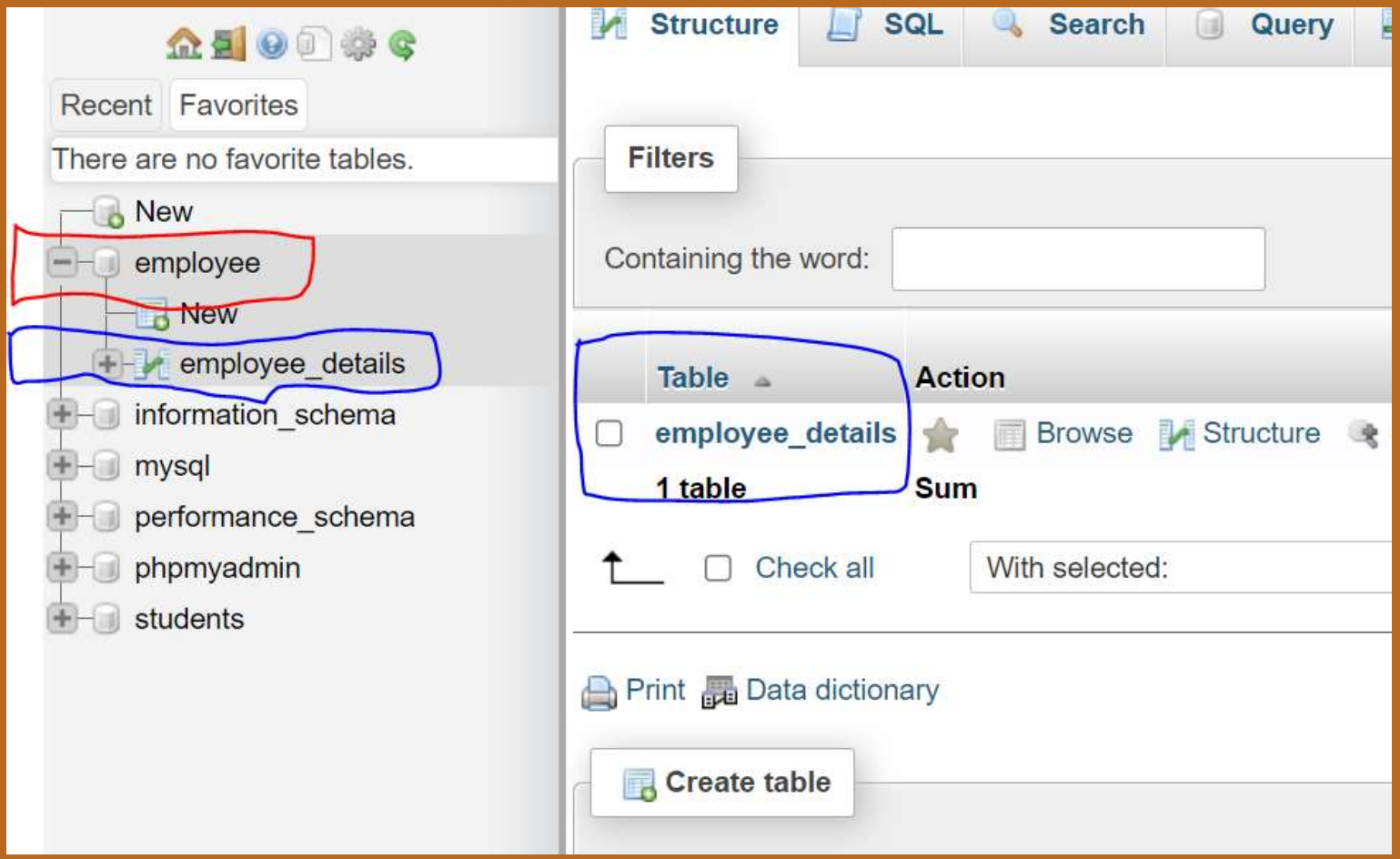
Step-3 : Create employee_details table in EMPLOYEE database.

```
USE EMPLOYEE;

CREATE   TABLE   employee_details
(
        ID              text ,
        NAME            text ,
        MOBILE          text ,
        CITY            text
);
```

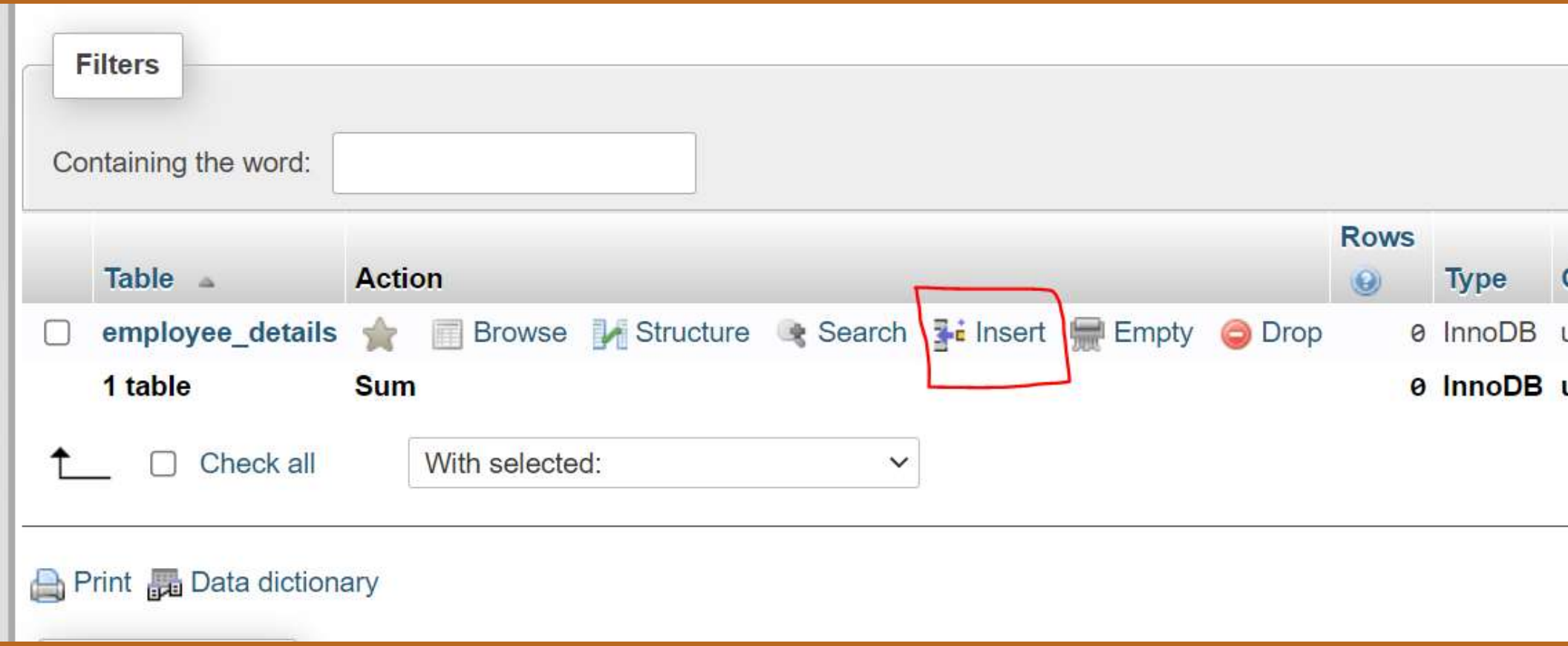
Working with Tables

Step-4 : Select **EMPLOYEE** database on left panel, **employee_details** table will be available



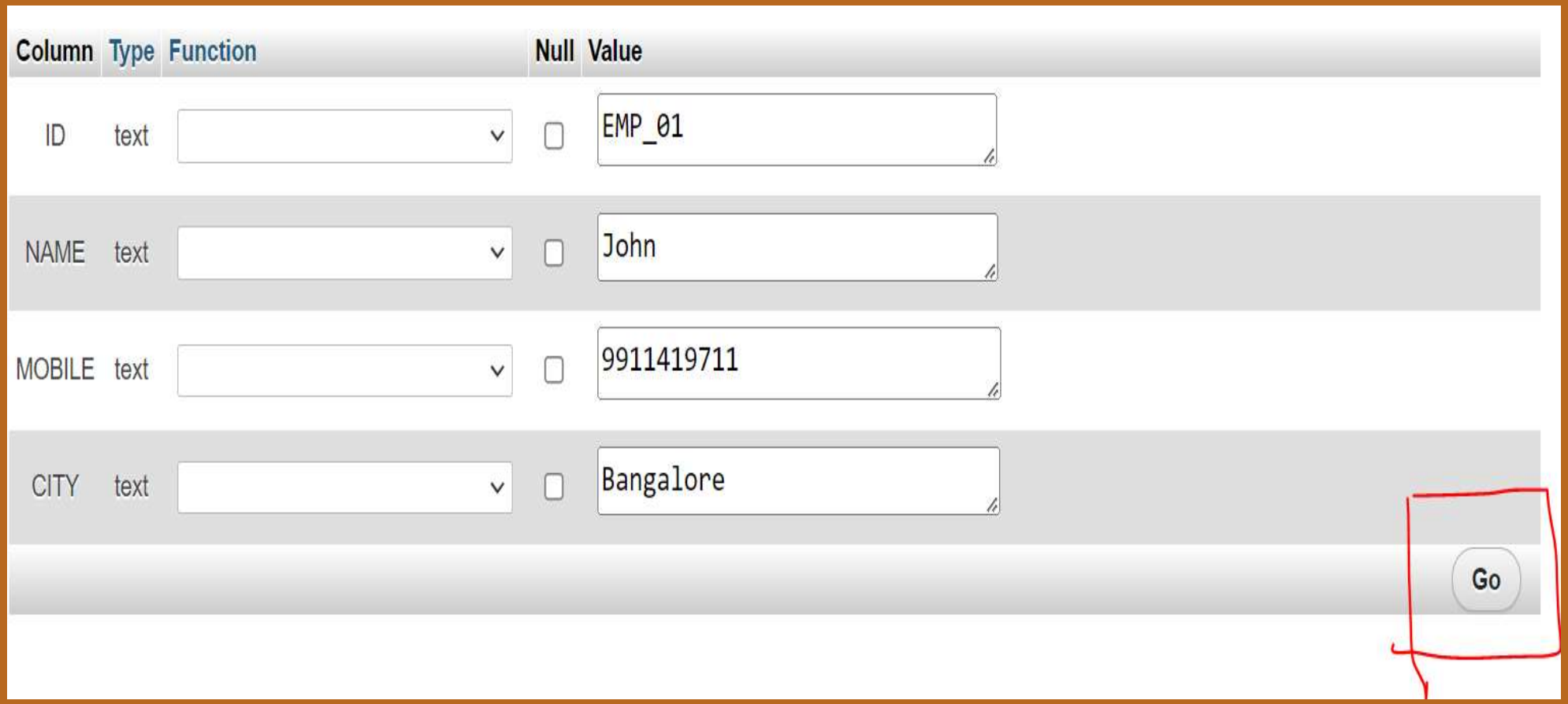
Working with Tables

Step-5 : Insert records in Table, select insert link on Table list.



Working with Tables

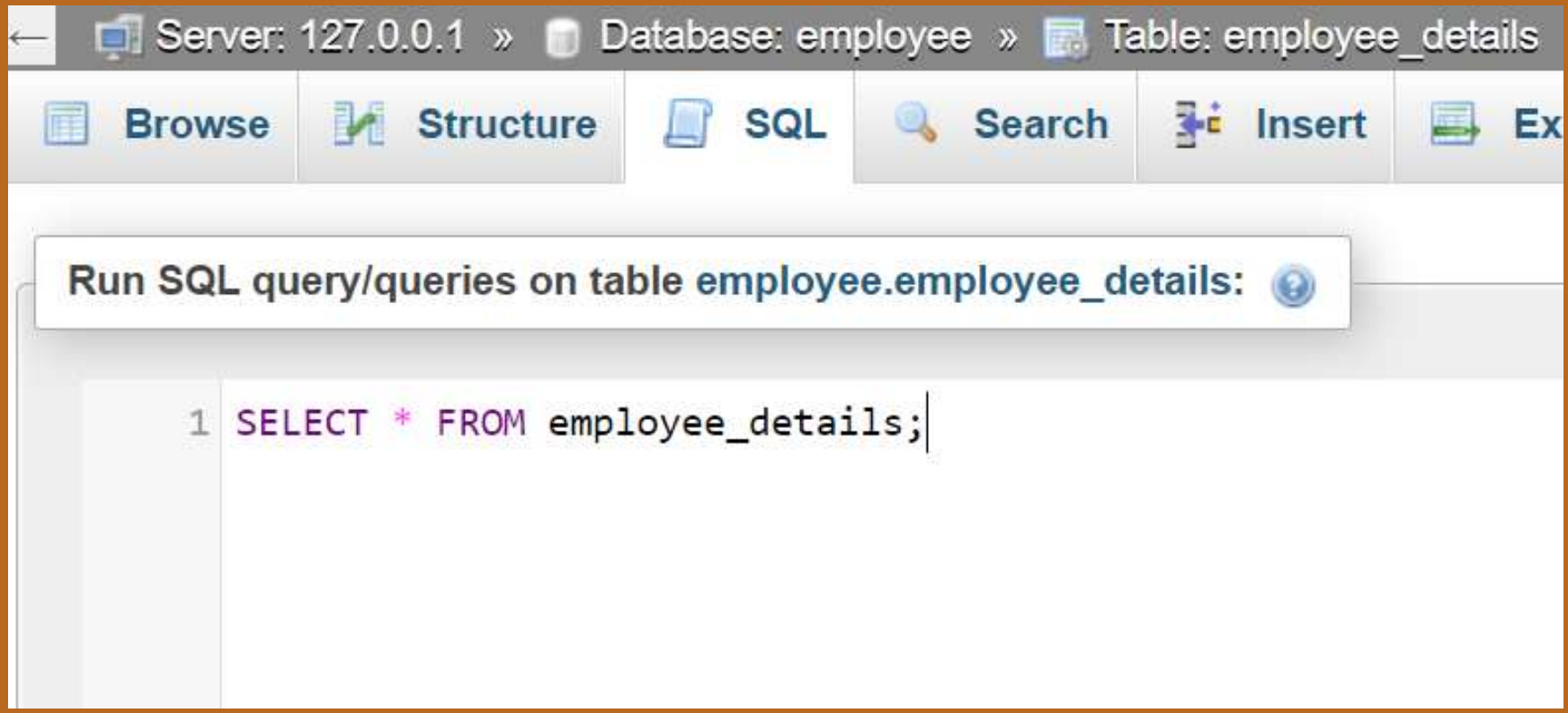
Step-6: Enter the data for Table, and click on Go button to insert data into Table



Working with Tables

Step-7:Display data from Table

SELECT * FROM employee_details;



Exercises

Create COLLEGE database using phpMyAdmin Navigation bar, create document file and copy paste the screenshot for each point.

a. CREATE COLLEGE database
b. CREATE student_details table in COLLEGE database
c. INSERT some records in student_details table
d. DISPLAY records from student_details table

Exercises

student_details table data

ROLL_NO	NAME	ADDRESS	PHONE	Age
1	Ram	Delhi	xxxxxxxxxx	18
2	RAMESH	GURGAON	xxxxxxxxxx	18
3	SUJIT	ROHTAK	xxxxxxxxxx	20
4	SURESH	Delhi	xxxxxxxxxx	18
3	SUJIT	ROHTAK	xxxxxxxxxx	20
2	RAMESH	GURGAON	xxxxxxxxxx	18