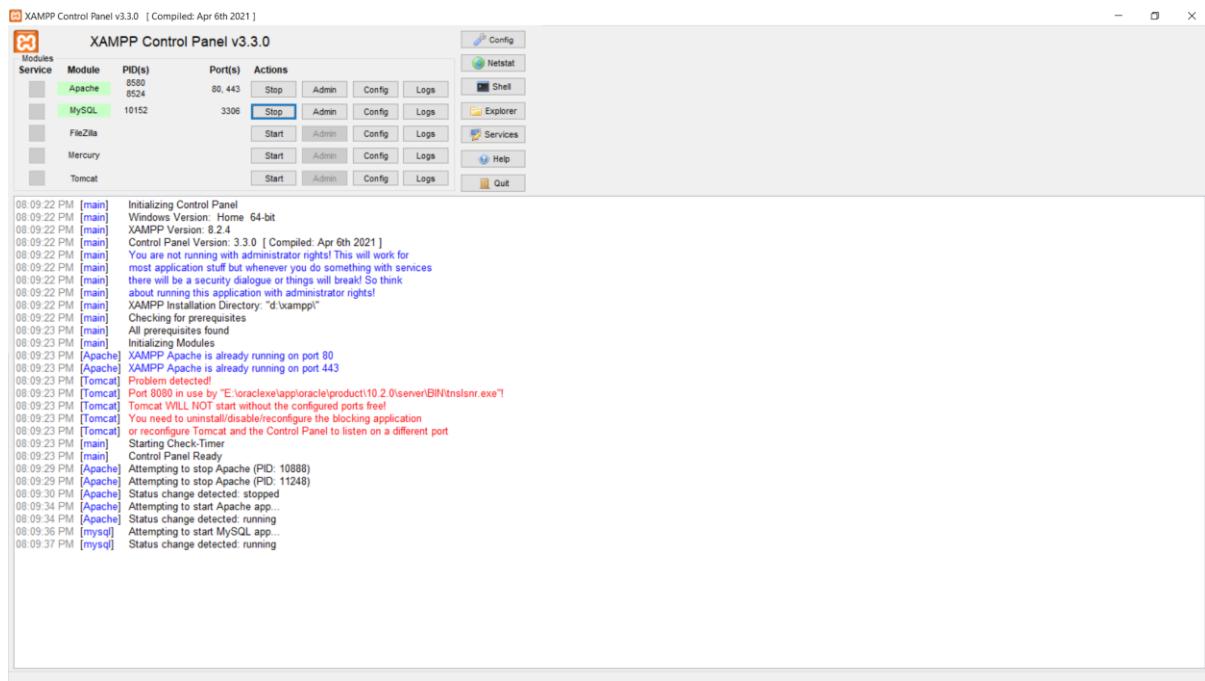


# 11. Handling SQL Databases from NodeJS

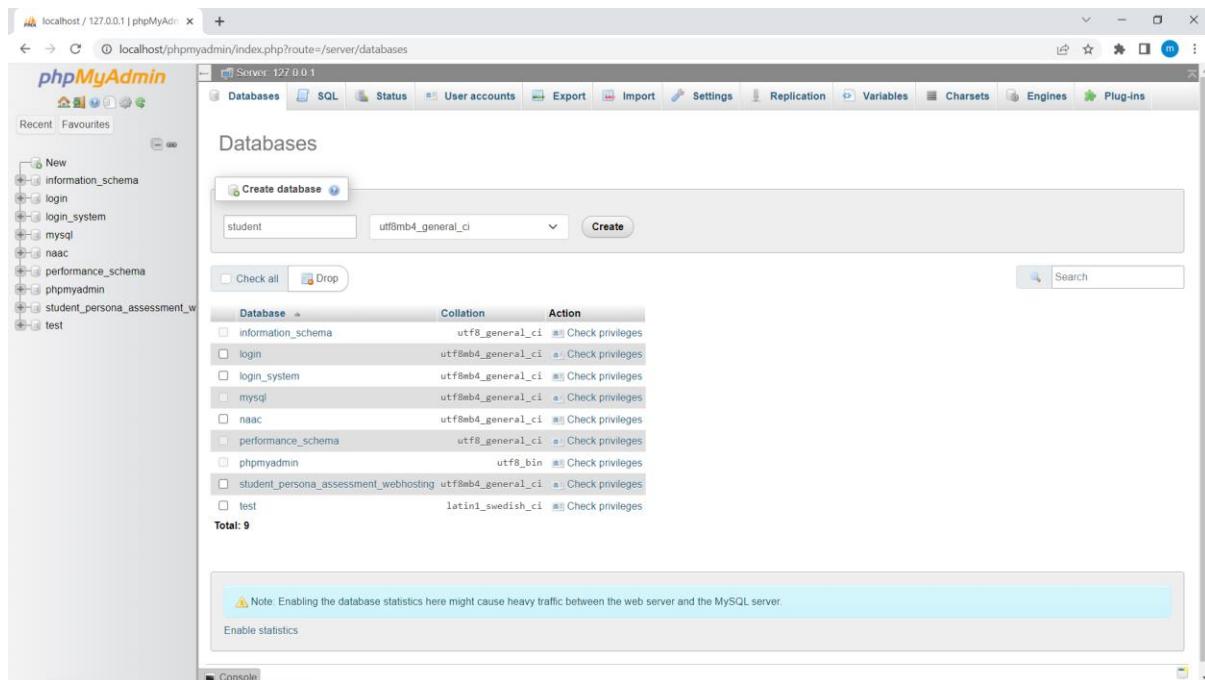
## Procedure:

### Step 1: Create Database

Open XAMPP Control Panel and start Apache and MySQL.



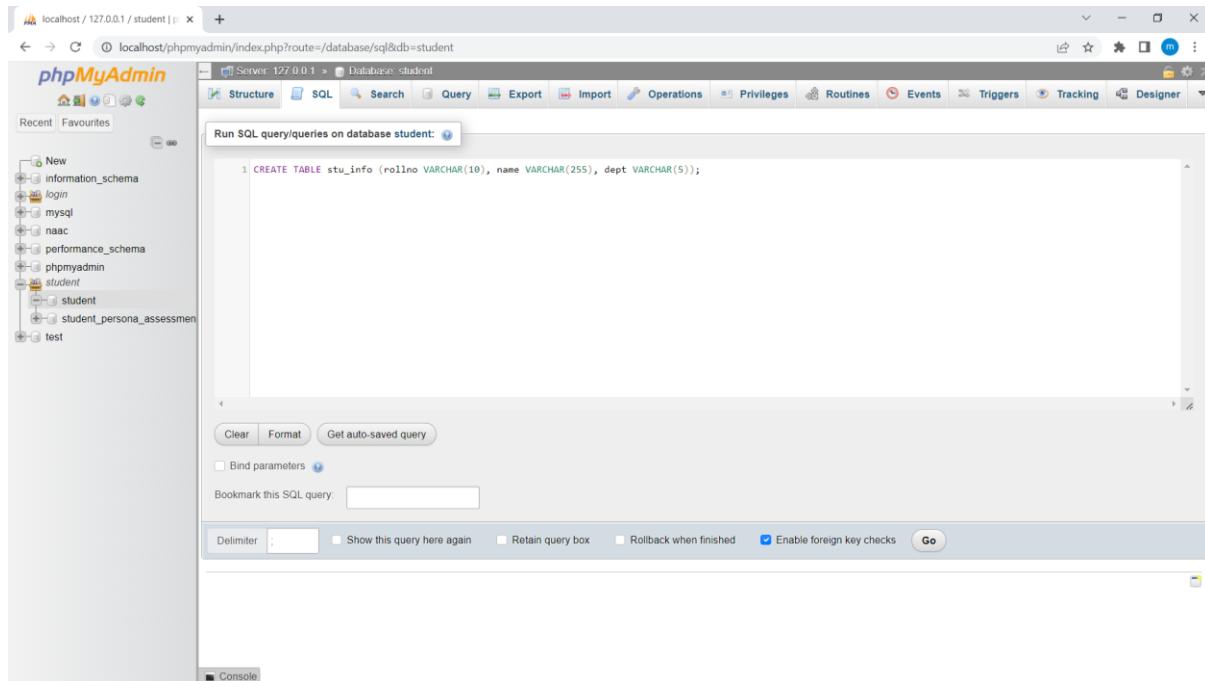
Then Click Admin corresponding to the MySQL Module.



## Step 2: Create Table

Type the following query in SQL tab to create MySQL table.

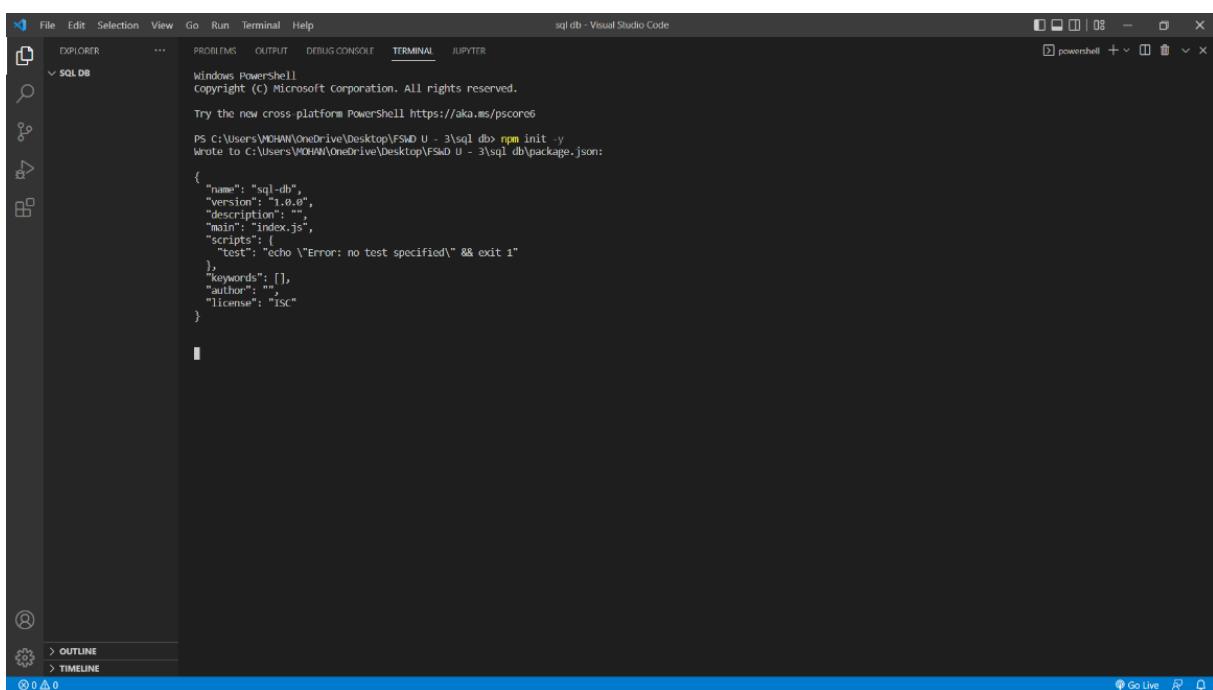
**CREATE TABLE stu\_info (rollno VARCHAR(10), name VARCHAR(255), dept VARCHAR(5));**



## Step 3: Setup Project

Create new folder and open in visual studio code, then create NodeJS Project by typing the following command in terminal.

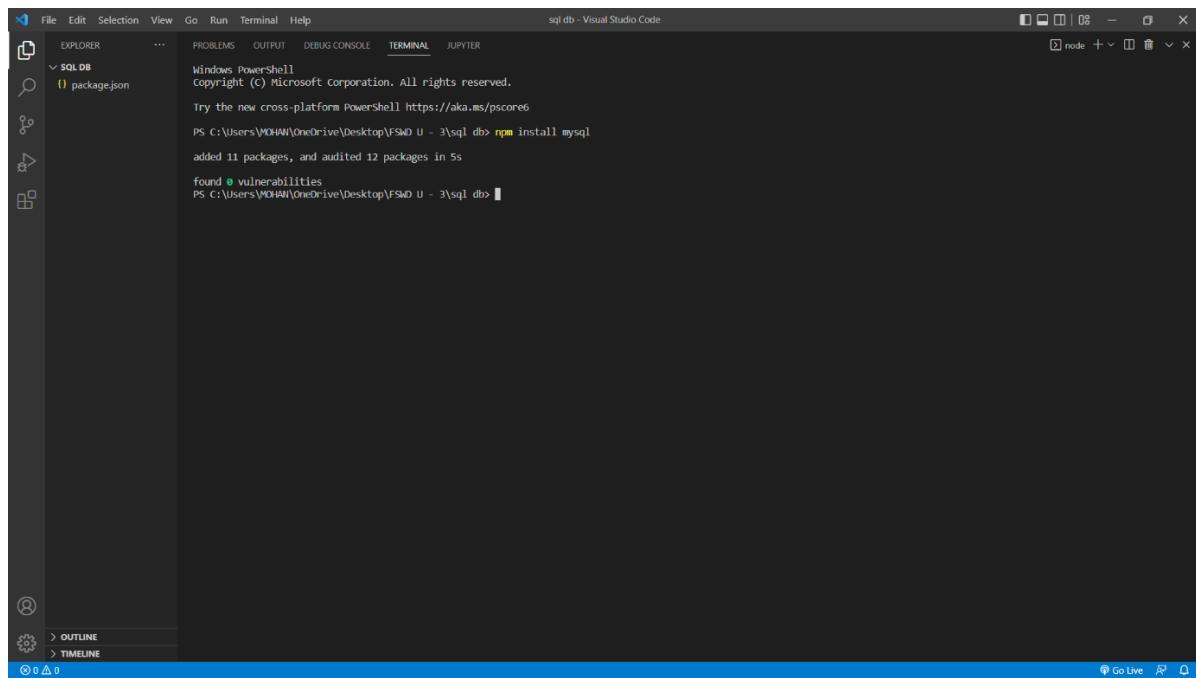
**npm init -y**



## Step 4: Download MySQL Driver

To access a MySQL database with Node.js, you need a MySQL driver. To download and install the "mysql" module, open the Command Terminal and execute the following command.

```
npm install mysql
```

A screenshot of the Visual Studio Code interface. The title bar says "sql db - Visual Studio Code". The left sidebar shows an "EXPLORER" view with a "SQL DB" folder containing a "package.json" file. The main area is a terminal window titled "TERMINAL". It displays the following text:

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\MOHAWI\OneDrive\Desktop\FSND U - 3\sql db> npm install mysql
added 11 packages, and audited 12 packages in 5s

  found 0 vulnerabilities

PS C:\Users\MOHAWI\OneDrive\Desktop\FSND U - 3\sql db>
```

The bottom status bar shows "Go Live" and other icons.

## Step 5: Insert Data

Create new file named as insert.js and type the following code to insert data in MySQL Database.

```
var mysql = require('mysql');

var con = mysql.createConnection({
  host: "localhost",
  user: "root",
  password: "",
  database: "student"
});

con.connect(function(err) {
  if (err) throw err;
  var sql = "INSERT INTO stu_info (rollno, name, dept) VALUES
('22MCA002', 'AJAY V', 'MCA')";
  con.query(sql, function (err, result) {
    if (err) throw err;
    console.log("Record inserted...!");
  });
});
```

```
});  
});
```

Type the following command in terminal to run the code.

```
node insert.js
```

## Output:

The screenshot shows the Visual Studio Code interface with the terminal tab active. The terminal window displays the command `node insert.js` being run, followed by the output "Record inserted!".

```
insertjs - sql db - Visual Studio Code  
File Edit Selection View Go Run Terminal Help  
EXPLORER SQL DB node_modules createdb.js createtable.js dbconnection.js insert.js package-lock.json package.json  
insertjs > con.connect() callback > [SQL] sql  
1 var mysql = require('mysql');  
2  
3 var con = mysql.createConnection({  
4   host: "localhost",  
5   user: "root",  
6   password: "",  
7   database: "student"  
8 });  
9  
10 con.connect(function(err) {  
11   if (err) throw err;  
12   var sql = "INSERT INTO stu_info (rollno, name, dept) VALUES ('22MCA003', 'MOHAN K', 'MCA')";  
13   con.query(sql, function (err, result) {  
14     if (err) throw err;  
15     console.log("Record inserted!");  
16   });  
17 });  
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL JUPYTER  
Windows PowerShell  
Copyright (C) Microsoft Corporation. All rights reserved.  
Try the new cross-platform PowerShell https://aka.ms/pscore6  
PS C:\Users\MOHAN\Desktop\FSD U - 3\sql db> node insert.js  
Record inserted!
```

The screenshot shows the phpMyAdmin interface connected to a MySQL database named "student". The "stu\_info" table is selected, displaying two rows of data: "22MCA002 AJAY V MCA" and "22MCA003 MOHAN K MCA".

rollno	name	dept
22MCA002	AJAY V	MCA
22MCA003	MOHAN K	MCA

## Step 6: Retrieve data

Create new file named as find.js and type the following code to retrieve data from MySQL Database.

```
var mysql = require('mysql');

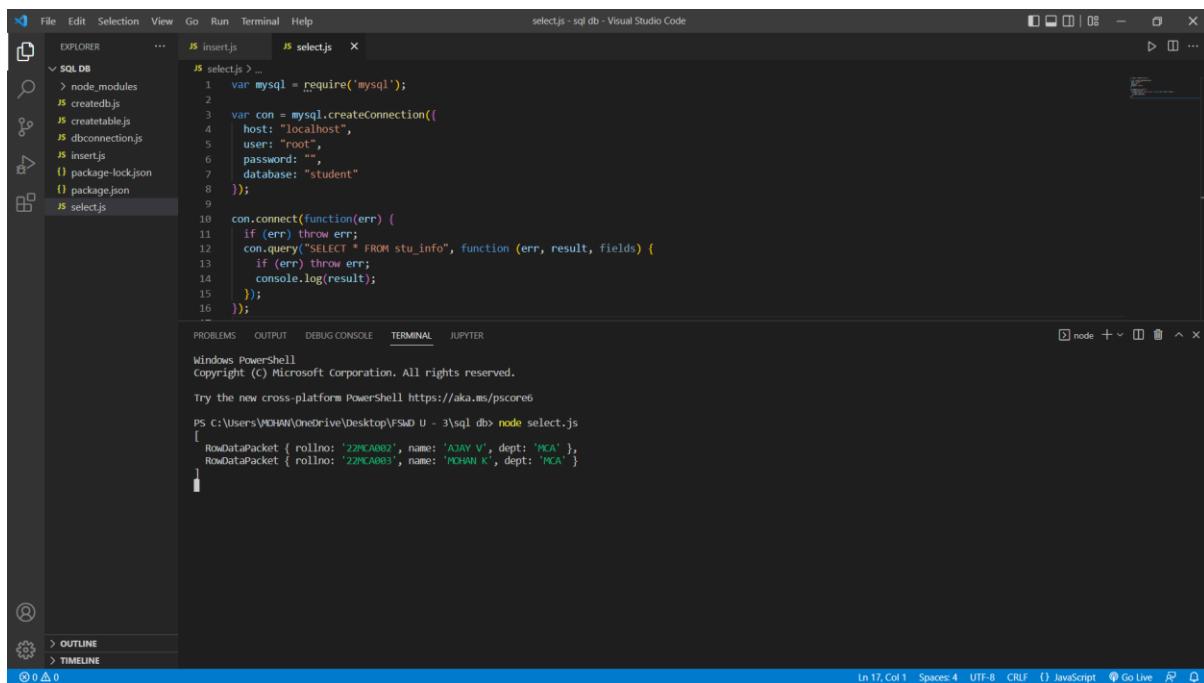
var con = mysql.createConnection({
  host: "localhost",
  user: "root",
  password: "",
  database: "student"
});

con.connect(function(err) {
  if (err) throw err;
  con.query("SELECT * FROM stu_info", function (err, result,
fields) {
    if (err) throw err;
    console.log(result);
  });
});
```

Type the following command in terminal to run the code.

```
node find.js
```

### Output:



The screenshot shows the Visual Studio Code interface. The left sidebar displays the 'EXPLORER' view with files like 'insert.js', 'select.js', 'createdb.js', 'createtable.js', 'dbconnection.js', and 'insert.js'. The main editor area shows the 'select.js' file content. The bottom right terminal window shows the execution of the script and its output:

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\MOHAN\Desktop\FSD\U - 3\sql db> node select.js
[
  RowDataPacket { rollno: '22MCA002', name: 'AJAY V', dept: 'MCA' },
  RowDataPacket { rollno: '22MCA003', name: 'MOHAN K', dept: 'MCA' }
]
```

```
[  
  RowDataPacket { rollno: '22MCA002', name: 'AJAY V', dept: 'MCA' },  
  RowDataPacket { rollno: '22MCA003', name: 'MOHAN K', dept: 'MCA' }  
]
```

## Step 7: Update Data

Create new file named as update.js and type the following code to update data in MySQL Database.

```
var mysql = require('mysql');  
  
var con = mysql.createConnection({  
  host: "localhost",  
  user: "root",  
  password: "",  
  database: "student"  
});  
  
con.connect(function(err) {  
  if (err) throw err;  
  var sql = "UPDATE stu_info SET name = 'AJAY' WHERE rollno =  
  '22MCA002';  
  con.query(sql, function (err, result) {  
    if (err) throw err;  
    console.log(result.affectedRows + " record(s) updated");  
  });  
});
```

Type the following command in terminal to run the code.

```
node update.js
```

## Output:

The screenshot shows the Visual Studio Code interface. In the Explorer panel on the left, there is a folder named 'SQL DB' containing several files: created.js, dbconnection.js, insert.js, package-lock.json, package.json, select.js, and update.js. The 'update.js' file is currently selected. In the Terminal panel at the bottom, the command 'node update.js' is being run. The output shows the connection to MySQL, the execution of an UPDATE query to change the name of student 'AJAY' to 'AJAY', and the confirmation that 1 record was updated.

```
File Edit Selection View Go Run Terminal Help update.js - sqj db - Visual Studio Code
EXPLORER   JS update.js X
SQL DB
  > node_modules
  & created.js
  & dbconnection.js
  & insert.js
  & package-lock.json
  & package.json
  & select.js
  & update.js
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL JUPYTER
Windows PowerShell
copyright (c) Microsoft Corporation. All rights reserved.
Try the new cross-platform PowerShell https://aka.ms/pscore6
PS C:\Users\VIJAYAN\OneDrive\Desktop\VSMD U - 3\sql db> node update.js
1 record(s) updated
Ln 13, Col 72  Spaces: 4  UTF-8  CR LF  {} JavaScript  Go Live  ⚡
```

## Step 8: Delete Data

Create new file named as delete.js and type the following code to delete data in MySQL Database.

```
var mysql = require('mysql');

var con = mysql.createConnection({
  host: "localhost",
  user: "root",
  password: "",
  database: "student"
});

con.connect(function(err) {
  if (err) throw err;
  var sql = "DELETE FROM stu_info WHERE rollno = '22MCA003'";
  con.query(sql, function (err, result) {
    if (err) throw err;
    console.log("Number of records deleted: " +
result.affectedRows);
  });
});
```

Type the following command in terminal to run the code.

```
node delete.js
```

## Output:

The screenshot shows a Visual Studio Code interface with the following details:

- File Explorer:** Shows a folder named "SQL DB" containing files: node\_modules, createdb.js, createtable.js, dbconnection.js, delete.js (selected), insert.js, package-lock.json, package.json, select.js, and update.js.
- Terminal:** The active tab is "TERMINAL". It displays the following command and output:

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\MOHAM\OneDrive\Desktop\FSND U - 3\sql db> node delete.js
Number of records deleted: 1
```
- Status Bar:** Shows "Ln 18, Col 1" and other status indicators like "Spaces: 4", "UTF-8", "CRLF", "JavaScript", "Go Live", and "Run" (indicated by a play icon).