Web Lab 1 (WSL + LAMP Setup and PHP-MySQL Integration)

1. Introduction

The objective of this lab was to set up a complete LAMP (Linux, Apache, MySQL, PHP) environment using Windows Subsystem for Linux (WSL).
After setting up Ubuntu inside WSL2, Apache, PHP, and MySQL were installed and configured.
Finally, multiple PHP pages were created to test database connection, insertion, listing, and deletion of data.

2. Installing WSL and Ubuntu

Step 1 – Install WSL

Opened PowerShell as Administrator and ran:

wsl --install

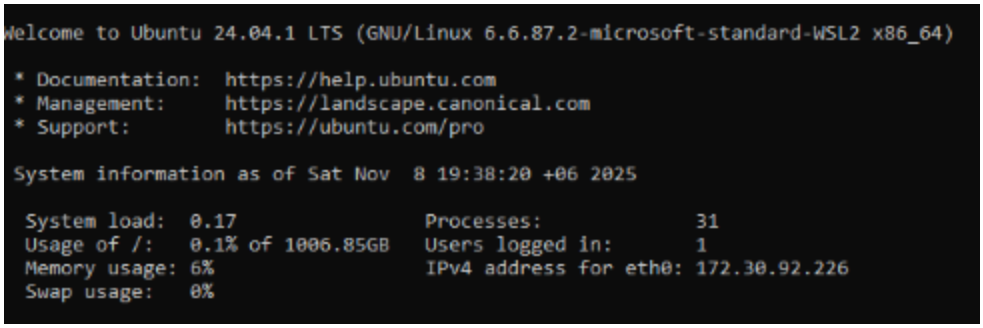
After installation was completed, the system was **restarted** as instructed.

Step 2 – Fixing WSL Startup Errors

Initially, Ubuntu showed these errors:

WslRegisterDistribution failed with error: 0x80370102
WslRegisterDistribution failed with error: 0x80080005

Fix:
Entered BIOS (by pressing **F10** at startup) → Enabled **Virtualization (Intel VT-x / AMD-V)**.
Then rebooted Windows and WSL started successfully.



3. Creating a User in Ubuntu

Once Ubuntu opened, created a new user and added it to sudo group:

adduser towhid
usermod -aG sudo towhid
su - towhid

Confirmed working directory:

pwd

Output:

`/home/zahid`

Then updated packages:

```
sudo apt update && sudo apt upgrade -y
```

---

4. Installing Apache and Testing

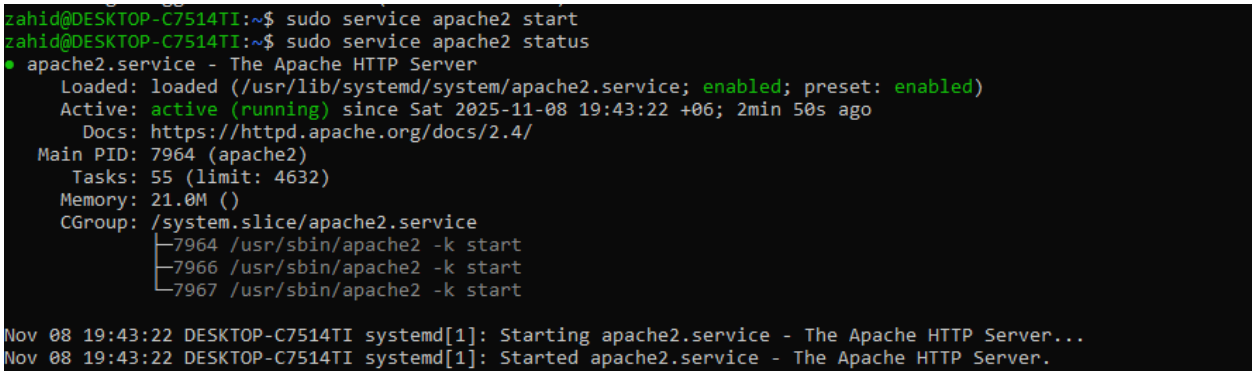
Step 1 – Install Apache

```
sudo apt install apache2 -y
```

Step 2 – Start and Check Apache Status

```
sudo systemctl start apache2
sudo systemctl status apache2
```

If Active (running) shows in green, Apache is working.



Step 3 – Test Apache Default Page

Go to:

```
http://localhost/
```

To create own test page:

```
cd /var/www/html
echo "Hello from Zahid" | sudo tee index.html
```

5. Installing PHP and Testing PHP Functionality

Step 1 – Install PHP

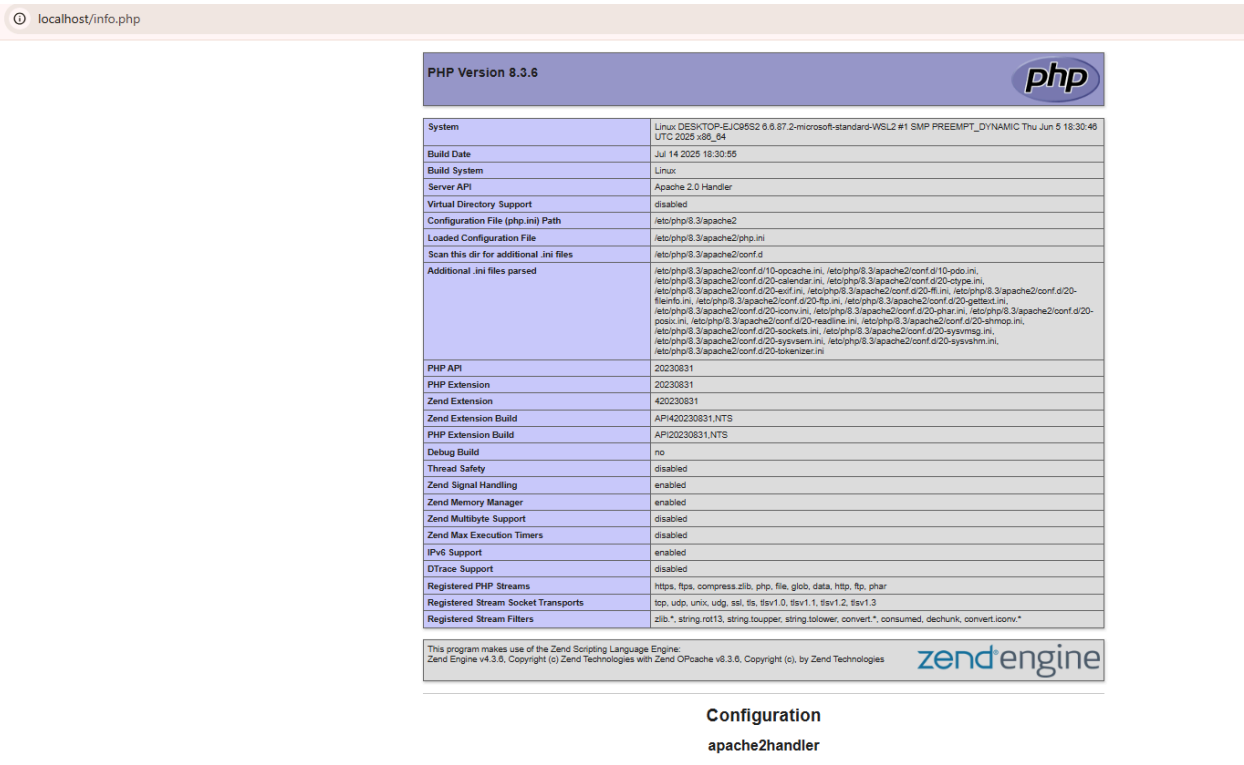
```
sudo apt install php libapache2-mod-php -y
sudo systemctl restart apache2
```

Step 2 – Create a phpinfo() Test Page

```
echo "<?php phpinfo(); ?>" | sudo tee /var/www/html/info.php
```

Now open in browser:

`http://localhost/info.php`



need to enable error display for debugging, open the PHP configuration file:

```
sudo nano /etc/php/8.3/apache2/php.ini
```

Uncomment and set:

```
display_errors = On
```

Then save and exit (Ctrl + O → Enter → Ctrl + X).

---

6. Installing MySQL and Setting Up Database

Step 1 – Install MySQL Server

```
sudo apt install mysql-server -y
```

Step 2 – Start and Check MySQL

```
sudo systemctl start mysql
sudo systemctl status mysql
```

Step 3 – Log into MySQL

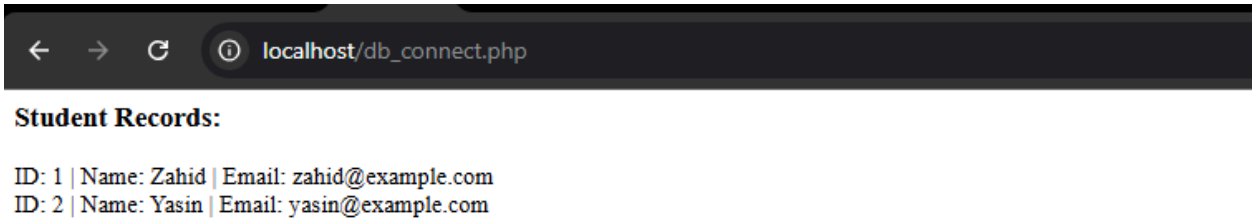
```
sudo mysql
```

Step 4 – Create Database and Table

```
CREATE DATABASE web_lab;
USE web_lab;

CREATE TABLE students (
  id INT AUTO_INCREMENT PRIMARY KEY,
  name VARCHAR(50),
  email VARCHAR(50)
);

INSERT INTO students (name, email)
VALUES ('Zahid', 'zahid@example.com'),
       ('Yasin', 'yasin@example.com');
```



7. Enabling PHP-MySQL Integration

If see an error like `Class 'mysqli' not found`, install the PHP MySQL module:

```
sudo apt install php8.3-mysql -y
sudo systemctl restart apache2
```

Step 2 – Create a New MySQL User

Since the root account can cause permission issues, create a new user:

```
CREATE USER 'towhid'@'localhost' IDENTIFIED BY '12345';
GRANT ALL PRIVILEGES ON web_lab.* TO 'towhid'@'localhost';
FLUSH PRIVILEGES;
EXIT;
```

---

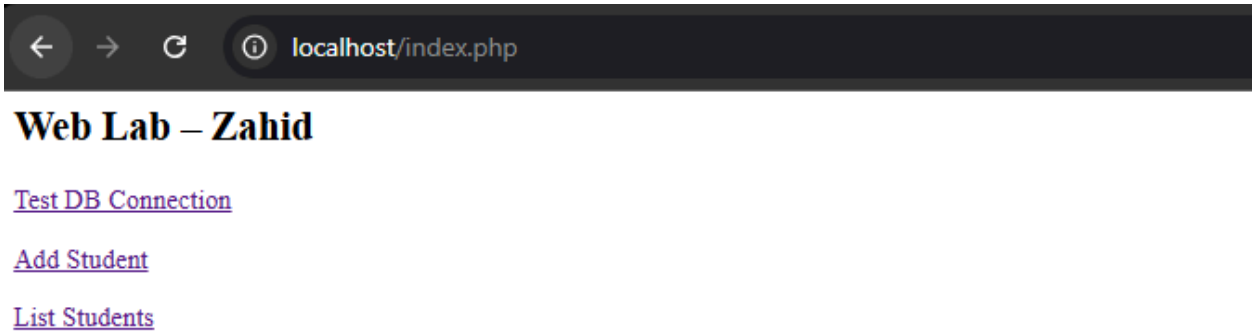
8. Creating PHP Pages

All pages are stored in `/var/www/html`.

a) index.php

Main homepage linking to all other files.

```php
<?php
echo "<h2>Web Lab – Towhid</h2>";
echo "<p><a href='db_connect.php'>Test DB Connection</a></p>";
echo "<p><a href='add_student.php'>Add Student</a></p>";
echo "<p><a href='list_students.php'>List Students</a></p>";
?>
```



b) db_connect.php

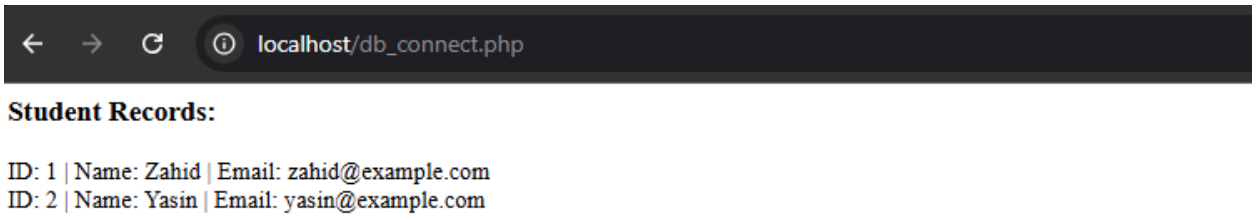
Displays database connection and student list.

```php
<?php
$servername = "localhost";
$username   = "webuser";
$password   = “MyStrongPass123!”;
$database   = "web_lab";

$conn = new mysqli($servername, $username, $password, $database);
if ($conn->connect_error) {
    die("Connection failed: " . $conn->connect_error);
}
echo "<h2>Connected successfully to MySQL database!</h2>";
$sql = "SELECT * FROM students";
```

```
$result = $conn->query($sql);

if ($result && $result->num_rows > 0) {
    echo "<h3>Student Records</h3>";
    echo "<table border='1'
cellpadding='6'><tr><th>ID</th><th>Name</th><th>Email</th></tr>";
    while ($row = $result->fetch_assoc()) {
        echo
"<tr><td>".$row['id']."</td><td>".$row['name']."</td><td>".$row['email
']."</td></tr>";
    }
    echo "</table>";
} else {
    echo "No data found!";
}
$conn->close();
?>
```



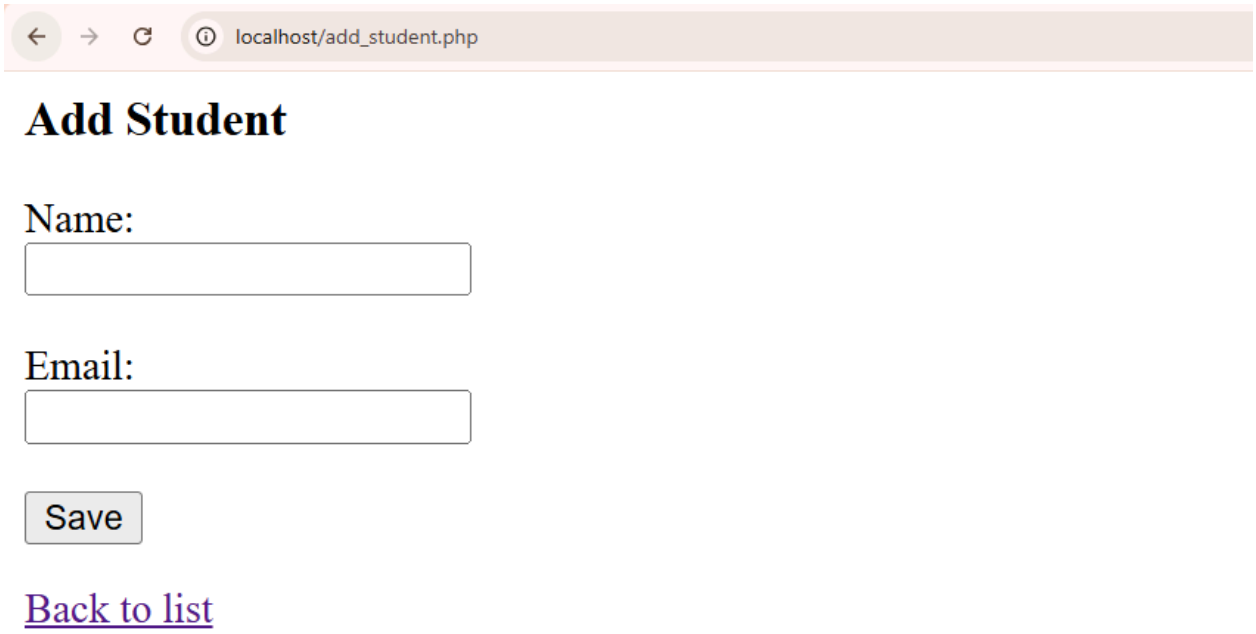
c) add_student.php

Form to add new students.

```
<?php
$servername = "localhost";
$username   = "webuser";
$password   = "MyStrongPass123!";
```

```
$database   = "web_lab";
$conn = new mysqli($servername, $username, $password, $database);
if ($conn->connect_error) { die("Connection failed: " .
$conn->connect_error); }

if ($_SERVER['REQUEST_METHOD'] === 'POST') {
    $name  = trim($_POST['name'] ?? '');
    $email = trim($_POST['email'] ?? '');
    if ($name !== '' && $email !== '') {
        $stmt = $conn->prepare("INSERT INTO students (name, email)
VALUES (?, ?)");
        $stmt->bind_param("ss", $name, $email);
        $stmt->execute();
        echo "Student added successfully! <a
href='list_students.php'>View list</a>";
        $stmt->close();
        $conn->close();
        exit;
    } else {
        echo "Name and Email required!";
    }
}
?>
<h2>Add Student</h2>
<form method="post">
  <label>Name: <input type="text" name="name"></label><br><br>
  <label>Email: <input type="email" name="email"></label><br><br>
  <button type="submit">Save</button>
</form>
```



d) list_students.php

Displays and allows deletion of students.

```
<?php
$servername = "localhost";
$username   = "webuser";
$password   = “MyStrongPass123!”;
$database   = "web_lab";
$conn = new mysqli($servername, $username, $password, $database);
if ($conn->connect_error) { die("Connection failed: " .
$conn->connect_error); }

if (isset($_GET['delete'])) {
    $id = (int) $_GET['delete'];
    $conn->query("DELETE FROM students WHERE id=$id");
    header("Location: list_students.php");
    exit;
}

$result = $conn->query("SELECT * FROM students ORDER BY id");
```

```
?>
<h2>Student List</h2>
<table border="1" cellpadding="6">
<tr><th>ID</th><th>Name</th><th>Email</th><th>Action</th></tr>
<?php
if ($result && $result->num_rows > 0) {
  while ($row = $result->fetch_assoc()) {
    echo "<tr>";
    echo "<td>".$row['id']."</td>";
    echo "<td>".$row['name']."</td>";
    echo "<td>".$row['email']."</td>";
    echo "<td><a href='list_students.php?delete=".$row['id']."'
onclick='return confirm(\"Delete?\");'>Delete</a></td>";
    echo "</tr>";
  }
} else {
  echo "<tr><td colspan='4'>No data</td></tr>";
}
?>
</table>
<p><a href="add_student.php">Add new</a></p>
<?php $conn->close(); ?>
```

9. Restarting Services

Whenever configuration changes are made:

```
sudo systemctl restart apache2
sudo systemctl restart mysql
```

Student Records

Add New | Home

ID	Name	Email	Action
1	Towhid	towhid@example.com	Delete
2	Rafi	rafi@example.com	Delete
3	zahid	zahid@gmail.com	Delete
4	tamjid	tamjid@gmail.com	Delete
5	yasin	yasin@gmial.com	Delete
6	mridul	mridul@gmail.com	Delete