# Development and Testing Environment

# Documentation

## Development Environment

The PHP based Hospital Management System application was developed using the following software tools and libraries:

**1. Database System:**

MariaDB Server: Version 10.4.14

**2. Web Server:**

Apache: Version 2.4.46

**3. Serverside Scripting:**

PHP: Version 7.4.14

4. **Frontend Libraries and Frameworks:**

HTML5 and CSS

Bootstrap: Version 4.6

jQuery: Version 3.2.1

## Setup Instructions

**Database , Web Server and PHP**

The following set up instructions show how to set up the Lampp stack which comprises of

Apache web server, Mysql database , PHP and Perl.

### Installing XAMPP on Linux:

**1. Downloading XAMPP:**

Visit the official XAMPP website [lampp download website](https://sourceforge.net/projects/xampp/files/XAMPP Linux/7.4.14/)

[https://sourceforge.net/projects/xampp/files/XAMPP%20Linux/7.4.14/](https://sourceforge.net/projects/xampp/files/XAMPP Linux/7.4.14/) and download the Linux version of XAMPP.

**2. Make the Installer Executable:**

Once the download is complete, navigate to the directory where the xampp-linux-x64-7.4.14-0-installer.run file is located, lets say the Downloads folder , open a new terminal window and run the following command:.

cd /opt

Make the installer executable by running the following command on the terminal window

sudo chmod +x xampp-linux-x64-7.4.14-0-installer.run

**3. Run the Installer:**

Start the XAMPP installation process by running:

sudo ./xampp-linux-x64-7.4.14-0-installer.run

**4. Follow the Installation Wizard:**

The XAMPP setup wizard will launch. Follow the on-screen instructions and choose components Apache, MySQL and PHP to install and proceed with the installation .

**5. Start Apache and MySQL database:**

Once the installation is complete, you can start XAMPP using the following command:

cd /opt/lampp/ && ./manager-linux-x64.run

start apache web server and MySQL database.

**6. Test Your Installation:**

Open a web browser and visit [http://localhost](http://localhost/). You should see the XAMPP welcome page, which means Apache is working.

Click on the phpMyAdmin link on the top right to ensure that the MySQL database is working.

This will have installed PHP 7.4.14 Apache Apache: Version 2.4.46 and MariaDB Server: Version 10.4.14

After a successful installation of the lampp stack, we have to move our application to the /opt/lampp/htdocs folder to make it accessible on the browser.

In this case the application is accessible at <http://localhost/hospital/>

### Frontend Setup:

**Downloading jQuery and Bootstrap:**

1. Visit the official [jQuery Website : https://jquery.com/](https://jquery.com/) and download the compressed production version of jQuery 3.2.1.

2. Visit the official bootstrap 4.6 website <https://cdn.jsdelivr.net/npm/bootstrap@4.6.2/dist/js/bootstrap.min.js> and download the Bootstrap compiled and minified CSS and JS.

2. Organizing Files in Our Project:

we have a folder named vendor in our project root: /hospital/hms/vendor/ .We will move the jquery and bootstrap files as shown below.

*/hospital/hms/*

*│*

*├── vendor/*

*│ ├── jquery/*

*│ │ └── jquery.min.js*

*│ │*

*│ └── bootstrap/*

*│ ├── css/*

*│ │ └── bootstrap.min.css*

*│ │*

*│ └── js/*

*│ └── bootstrap.min.js*

*│*

*├── index.html (or your main HTML file)*

*│*

*└── other folders: admin,doctor,master,include and assets.*

3. Linking to the Local Files in our HTML:

In the HTML file, we linked to these local resources as follows:

*<!DOCTYPE html>*

*<html lang="en">*

*<head>*

*<!--linking Bootstrap CSS to the project -->*

*<link rel="stylesheet" href="vendor/bootstrap/css/bootstrap.min.css">*

*</head>*

*<body>*

*<!--Page Contents-->*

*<!-- jQuery linking-->*

*<script src="vendor/jquery/jquery.min.js"></script>*

*<!-- Bootstrap linking -->*

*<script src="vendor/bootstrap/js/bootstrap.min.js"></script>*

*</body>*

*</html>*

## 2. Unit Testing Setup:

After development ,the software units were tested using PHPUnit 10.4.2. This allowed us to isolate and verify individual units, ensuring each component functioned as intended. The tests were carried out on these conditions and software tools:

**1. Operating System:**

Kali GNU/Linux: Version 2023.1

**2. Testing Framework:**

PHPUnit: Version 10.4.2

PHP : Version 8.25 –Kali linux default

## Setup Instructions

**Installing PHPUnit version 10.4.2 on Kali GNU/Linux 2023.1.**

**Downloading PHPUnit PHAR:**

1.Open a terminal window and navigate to the /opt directory.

*cd /opt*

2. Download the phpunit.phar file to the /opt directory:

*wget https://phar.phpunit.de/phpunit-10.4.2.phar*

3. Making the PHAR Executable:

Open a terminal window in the /opt directory and run the commands:

*sudo chmod +x phpunit-10.4.2.phar*

To use PHPUnit globally we will rename it to phpunit and move it to a directory in our PATH.

*sudo mv phpunit-10.4.2.phar /usr/local/bin/phpunit*

4. Verifying the Installation:

run the command below on the command line

*phpunit --version*

5. Running Tests:

To test all our files we navigate to the directory containing all our files and open a terminal. In this case

*cd /opt/lampp.htdocs/hospital/test-cases/unit-testing*

and run the command

*phpunit*

This will execute all the tests defined in the directory and the test case results printed on the terminal window.