

XAMPP for Web Development

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Preface

بِسْمِ اللّٰهِ الرَّحْمٰنِ الرَّحِيْمِ

The steps in this e-book is the processes for installing the XAMPP on a local machine. The stack includes Apache HTTP Server, MariaDB, Database Server, Perl, and the PHP Interpreter. The “X” in XAMPP is used to signify the cross-platform compatibility of the stack. The Apache HTTP Server and PHP are required to run phpMyAdmin which is a PHP application that is used for database administration tasks such as creating databases and tables, adding users, etc. The XAMPP application is being used in module STM 20233 Web Development Technology for Certificate of Information Technology at Community College, Malaysia.

Mohd Saharudin Abuludin
2024

Web Development Process

Step 1. Gathering Information: Purpose, Main Goals, and Target Audience

Step 2. Planning: Sitemap and Wireframe Creation

Step 3. Design: Page Layouts, Review, and Approval Cycle

Step 4. Content Writing and Assembly

Step 5. Coding

Step 6. Testing, Review, and Launch

Step 7. Maintenance: Opinion Monitoring and Regular Updating

Read more:-

Website Development Process: Full Guide in 7 Steps

Web Development Requirement

1. Basic Knowledge of HTML

HTML is one of the most used platforms for web development nowadays. Hyper Text Markup Language (HTML) allows web developers to structure the basic design and layout of the website.

2. CSS Fundamentals

The knowledge of CSS fundamentals is a must for young web developers as it allows developers to build websites across all major browsers.

3. Understanding of JavaScript

JavaScript is a great tool for web development and provides the best results when effectively used with HTML and CSS to build and design dynamic and responsive web pages.

4. Familiarity with Git and GitHub

Git and GitHub are self-contained repositories, and someone who has a copy of the repository can access the entire code history and codebase.

5. Web Development Tools

Most web development tools provide various designs and layouts for web designers so that they do not have to put in more effort for web designing.

Read more:-

Web Development Requirement

Good Web Design

1. Don’t Make Users Think

2. Don’t Squander Users’ Patience

3. Manage To Focus Users’ Attention

4. Strive For Feature Exposure

5. Make Use Of Effective Writing

6. Strive For Simplicity

7. Don’t Be Afraid Of The White Space

8. Communicate Effectively With A “Visible Language”

9. Conventions Are Our Friends

10. Test Early, Test Often

Read more:-
10 Principles Of Good Web Design

Sample Code for Database Connection

MySQLi and PDO

Both MySQLi and PDO have their advantages. PDO will work on 12 different database systems, whereas MySQLi will only work with MySQL databases. Both are object-oriented, but MySQLi also offers a procedural API. Both support Prepared Statements. Prepared Statements protect from SQL injection, and are very important for web application security.

Example (MySQLi Object-Oriented)

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

// Create connection
$conn = new mysqli($servername, $username, $password);

// Check connection
if ($conn->connect_error) {
  die("Connection failed: " . $conn->connect_error);
}
echo "Connected successfully";
?>
```

Example (PDO)

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

try {
  $conn = new PDO("mysql:host=$servername;dbname=myDB", $username, $password);
  // set the PDO error mode to exception
  $conn->setAttribute(PDO::ATTR_ERRMODE, PDO::ERRMODE_EXCEPTION);
  echo "Connected successfully";
} catch(PDOException $e) {
  echo "Connection failed: " . $e->getMessage();
}
?>
```

A great benefit of PDO is that it has an exception class to handle any problems that may occur in our database queries. If an exception is thrown within the try{ } block, the script stops executing and flows directly to the first catch(){ } block.

The connection will be closed automatically when the script ends. To close the connection before, use the following:

MySQLi Object-Oriented:

```php
$conn->close();
```

PDO:

```php
$conn = null;
```

Software for Web Design

Wix

An amazing yet affordable all-rounder with tons of attractive templates

Adobe Dreamweaver

A complex, full-featured website design app

WordPress

Get your own WordPress blog, free for life

Figma

Prototyping made easy with this advanced design tool

Weebly

Build your own website, blog or web store in minutes

Webflow

Hundreds of templates that you can easily browse by category

Bluefish

Text-only interface ideal for novices

Microsoft Visual Studio Code

Free, extensible coding editor with version control built in

Canva

A free online graphic design app with simple, accessible tools

Web Design Trends (2024)

01. Continuation of the Y2K Bug

The pandemic was a time machine... and we just emerged back in Y2K.

02. Designs with texture

We want to feel more (and not just emotion)

03. More is more is more... again

Maximalism is back, baby!

04. Anti-design web design

Chaos. It's a state of mind, and we like it.

05. Dopamine-inspired colors

2024 is the year to get high on color

06. Rounded corners

If Apple's doing it, we're doing it

07. AI-driven content

It's time to experiment

08. Real, unfiltered imagery

Filters are out, reality is in

09. Scroll and trigger-based animations

Your mouse is going to have a field day

Read more:-

The 9 Biggest Web Design Trends of 2024

XAMPP Overview

The steps below outline the processes for installing the XAMPP stack on a local machine. The XAMPP (pronounced Zamp) stack includes the following: Apache HTTP Server, MariaDB (essentially MySQL), Database Server, Perl, and the PHP Interpreter. The “X” in XAMPP is used to signify the cross-platform compatibility of the stack. The Apache HTTP Server and PHP are required to run phpMyAdmin which is a PHP application that is used for database administration tasks such as creating databases and tables, adding users, etc.



Alternative to XAMPP

If you have experience with MySQL Workbench, you may prefer to install MySQL Server and MySQL Workbench via the MySQL Installer. MySQL Workbench performs the same functions as phpMyAdmin. However, unlike phpMyAdmin which is a web-based application, MySQL Workbench is a locally installed application and therefore does not require an HTTP Server (e.g. Apache) to run.



Installing XAMPP

Many of the steps listed have several alternatives (such as changing MySQL passwords via a command line) and students are welcomed and encouraged to explore alternatives.

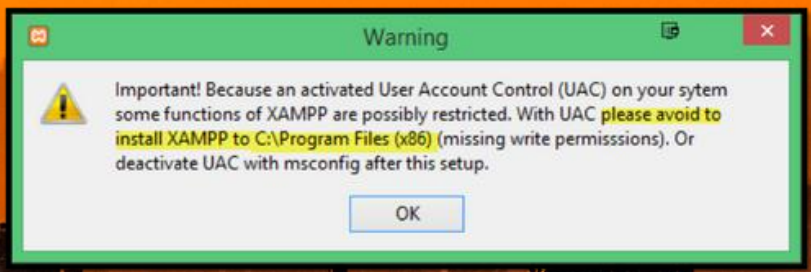
1. Download XAMPP from the URL below and place the installer (.exe) in the location where you want to install XAMPP. Placing the installer (.exe) in the same location as the intended installation is not required but preferred.

http://www.apachefriends.org

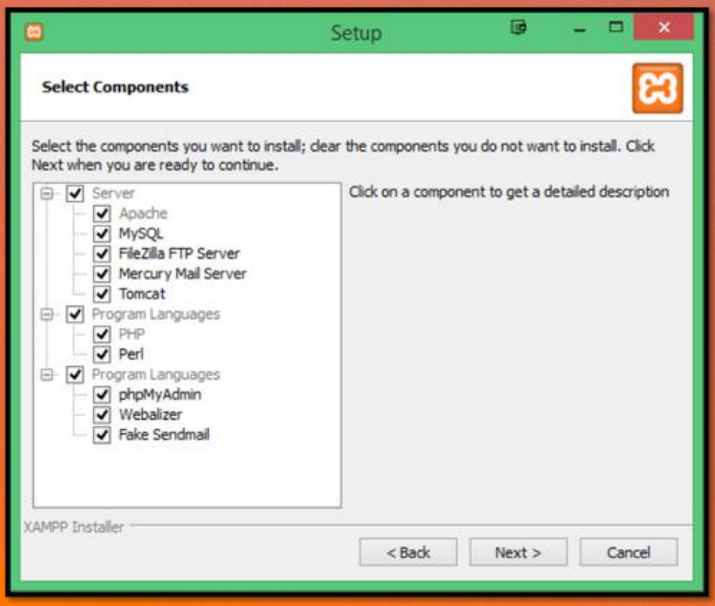


2. See the warning which recommends not installing to C:\Program Files (x86) which can be restricted by UAC (User Account Control). In the steps below XAMPP is installed to a USB flash drive for portability. However, I recommend your primary development environment be installed in a local directory such as C:\xampp. It is a best practice to install all development tools to the primary local drive.

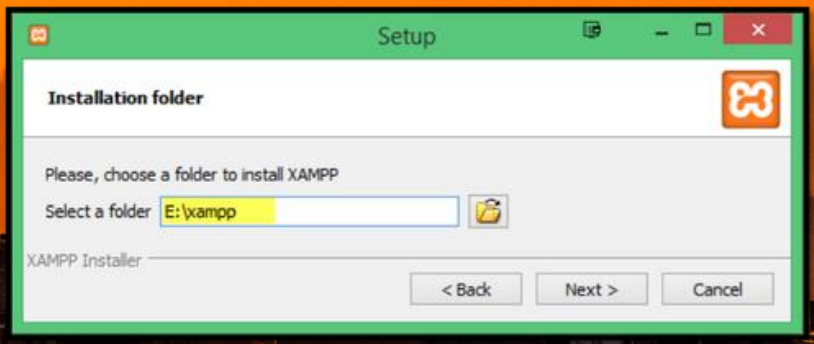
Since the installation steps are not complex or time-consuming, reinstallation for practice can be performed. Before reinstallation, be sure to back up the project and database work. Also, uninstall existing versions of XAMPP via Control Panel | Programs and Features to perform a clean removal.



3. Install all:



4. Install to your local drive location. Again, the steps below show a flash drive installation but you should replace E: with C: where shown to reduce the likelihood of future configuration issues:



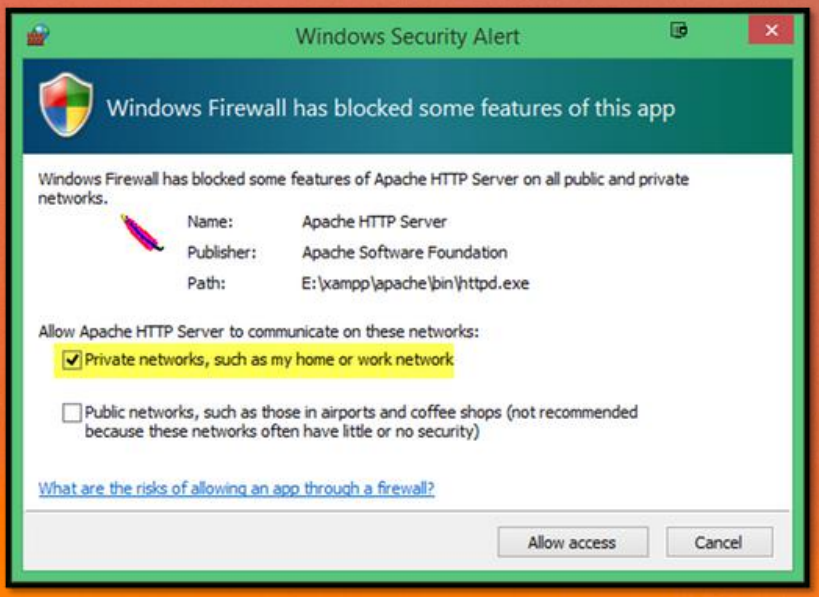
5. No need for Bitnami at this point:



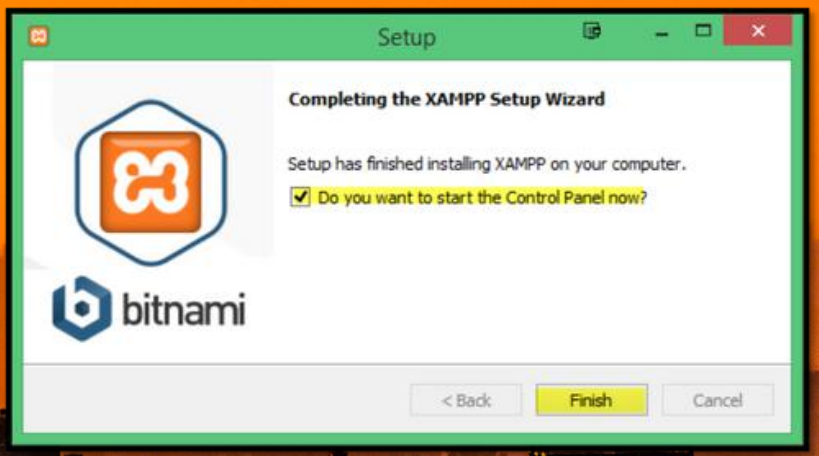
6. Installing XAMPP:



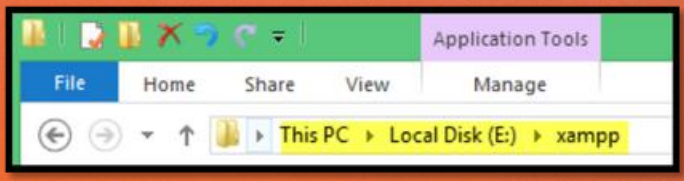
7. Restrict Apache HTTP Server to Private Networks:

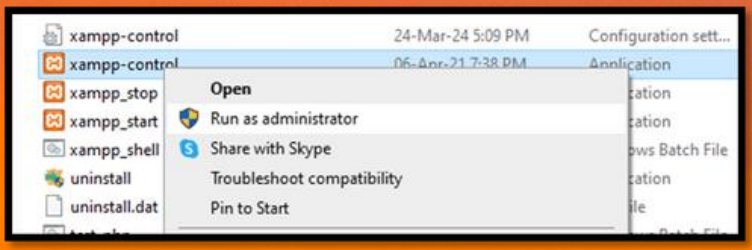


8. Check Start Control Panel and click Finish:

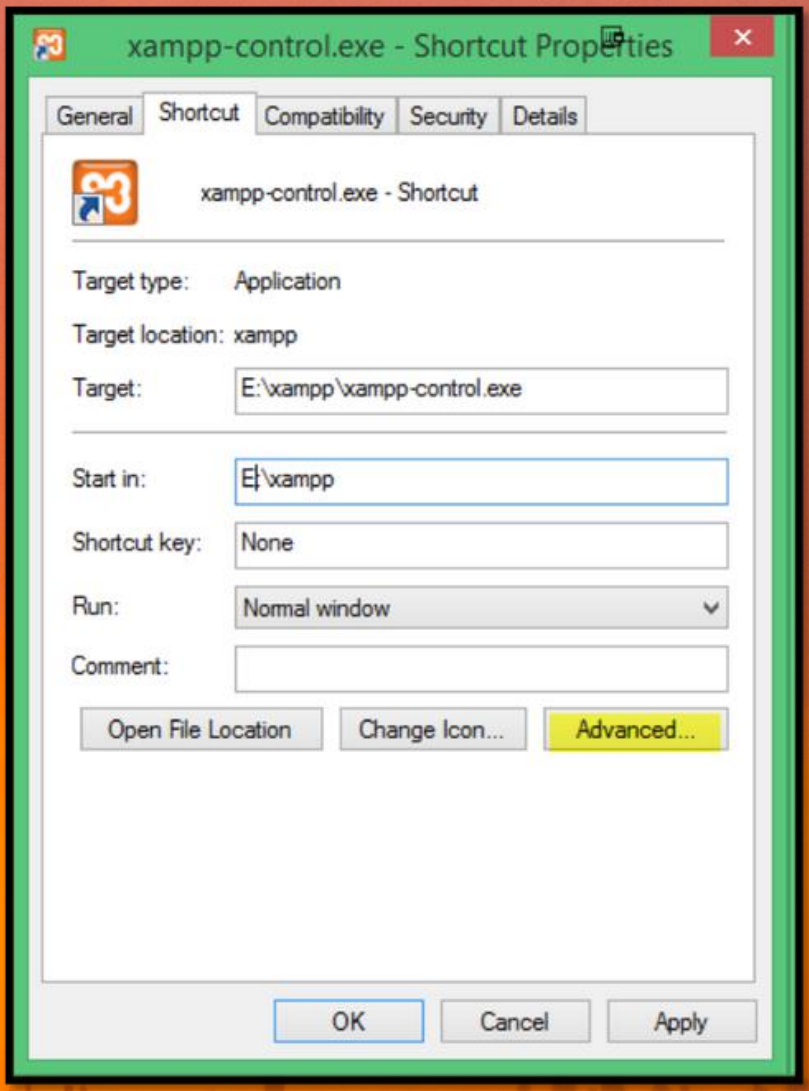


9. Navigate to the xampp folder (where you installed xampp). R-click xampp-control.exe and select Run as Adminstrator (stop – before you run from here, see the next step for a more lasting approach. If you started the Control Panel already, just close it.):





10. As an alternative to step 9 which requires navigating to that folder and R-clicking each time, I recommend creating a shortcut. Create a shortcut by R-clicking on xampp-control.exe and selecting Create shortcut. Move the shortcut just created to the Desktop or another favorite location. R-click on the moved shortcut and select Properties | Advanced.


xampp-control.exe - Shortcut Properties
General
Shortcut
Compatibility
Security
Details
xampp-control.exe - Shortcut
Target type: Application
Target location: xampp
Target: E:\xampp\xampp-control.exe
Start in: E:\xampp
Shortcut key: None
Run: Normal window
Comment:
Open File Location
Change Icon...
Advanced...
OK
Cancel
Apply

11. In the Advanced Properties dialog box, select Run as administrator | OK. Now double-click the shortcut to run the XAMPP Control Panel.



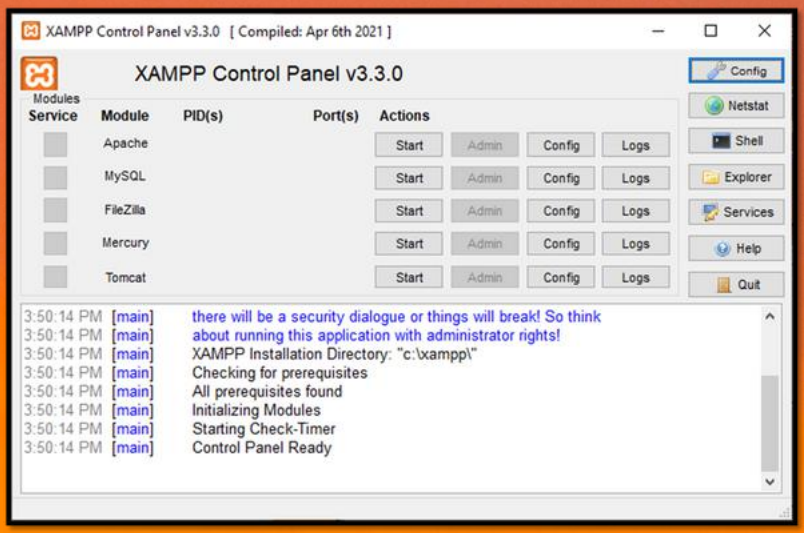




12. **NOTE**:
Tomcat, a Java web server, can be administered from within the XAMPP Control Panel. However, I strongly recommend that you administer your Java web server from within NetBeans which is covered in another tutorial. Even when Tomcat, GlassFish, or WildFly is run from NetBeans, the XAMPP Control Panel will recognize that a Java web server is running and the PID(s) and Port(s) will be displayed. Do not be tempted to start/stop Tomcat with XAMPP Control Panel because it will likely become out of sync with the NetBeans server admin component. Ignore the Tomcat line in the XAMPP Control Panel for the purposes of this course.



13. If Apache is not already running, select Start to start the Apache HTTP Server. Notice the other tools/servers included with XAMPP. Of those others listed, we will also use MySQL and we will be ready to start that shortly.



14. Apache should start in ~5 seconds and display ports that are being used. Select Stop when ready to stop (later).



15. Select Admin and then your language of choice:





16. The Home Page of XAMMP appears and this confirms that Apache HTTP Server has been installed successfully since the home page is PHP and requires Apache to run. Select phpMyAdmin from the menu on the left. phpMyAdmin is a tool used to administer MySQL. phpMyAdmin can also be started from within the XAMPP Control Panel by selecting Admin on the MySQL line:



17. You should receive the error below. Look at the error message. Stop and think a bit... why is the error occurring?



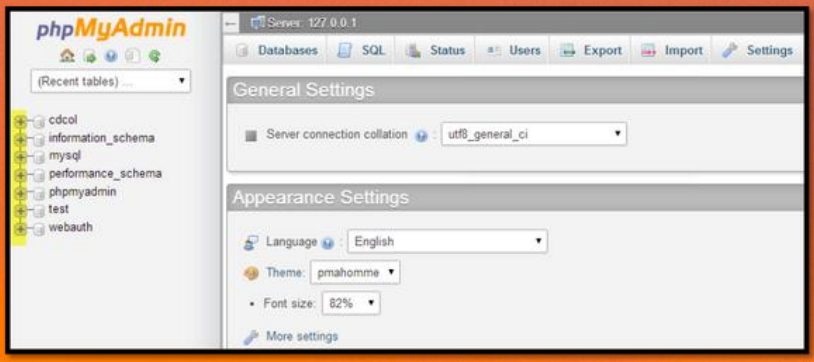
18. Select the back button on the browser to return to the XAMPP Home Page. Have you determined the cause of the error? The error appears because the MySQL Server is not running. In the XAMPP Control Panel, select start for MySQL.



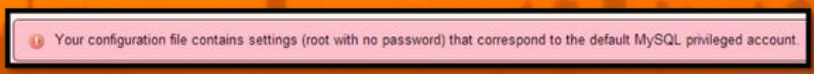




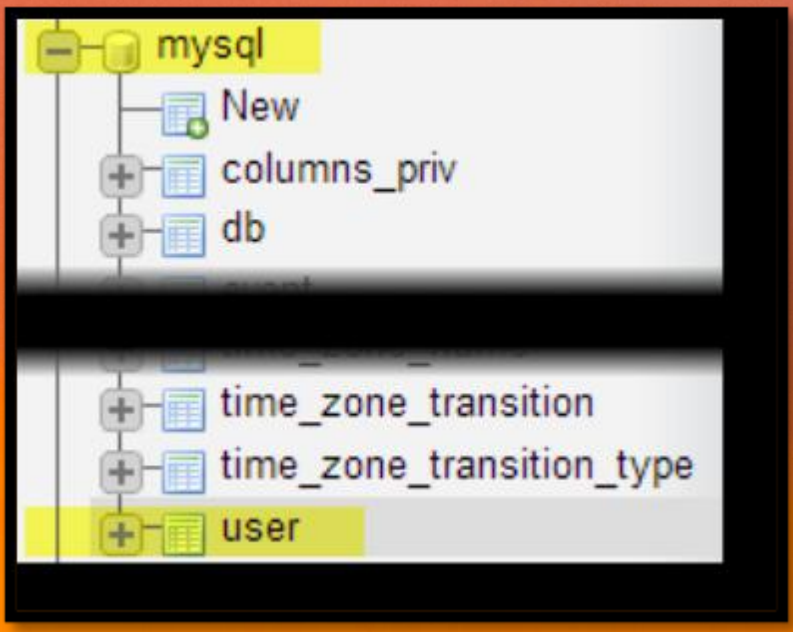
19. Go back to the XAMPP Home Page and reselect phpMyAdmin and the phpMyAdmin tool will open. Default databases are shown on the left. DO NOT ALTER THE INITIAL DATABASES. Doing so may require reinstallation of MySQL.



20. Notice the error message at the bottom of the page that states MySQL has been installed without a password. We need to correct this immediately due to the security vulnerability it exposes.



21. It is very important to follow these next steps in the order shown. Select the + sign next to the mySQL database on the left to open the listing of tables.

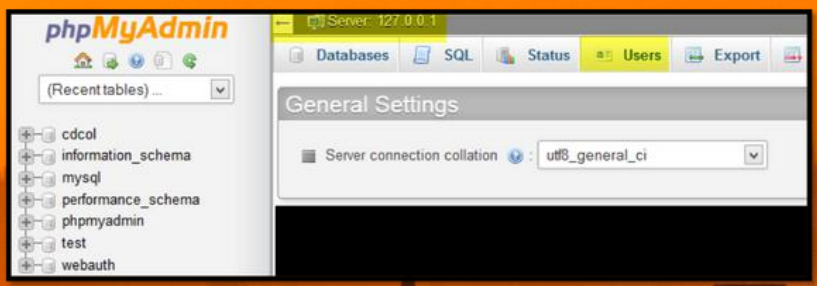




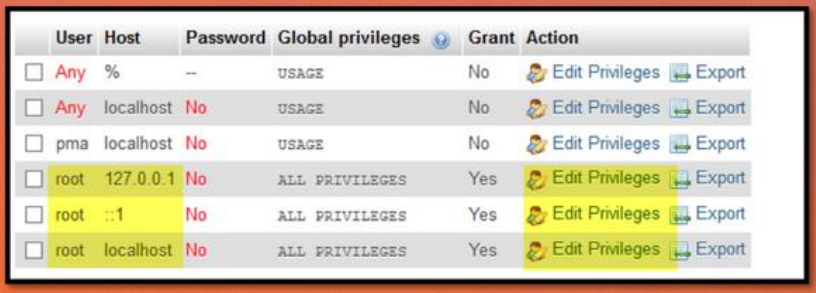
22. Click the user table to show rows in the user table. We need to change settings on the root accounts shown. Notice that a password has not been set for these 3 accounts. That is the reason for the error message phpMyAdmin displayed.



23. Navigate back to the top level of phpMyAdmin. Be sure you are at the top level of phpMyAdmin by selecting Server: 127.0.0.1 at the top of the application. Then select the Users tab as highlighted.

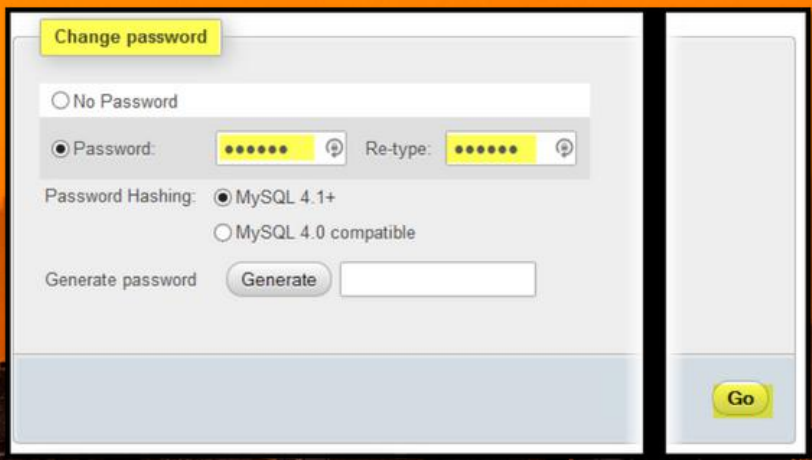


24. We will need to edit the password for the 3 root accounts listed below.



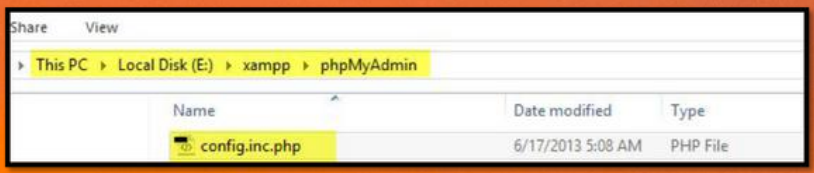
	User	Host	Password	Global privileges	Grant	Action
☐	Any	%	--	USAGE	No	Edit Privileges Export
☐	Any	localhost	No	USAGE	No	Edit Privileges Export
☐	pma	localhost	No	USAGE	No	Edit Privileges Export
☐	root	127.0.0.1	No	ALL PRIVILEGES	Yes	Edit Privileges Export
☐	root	::1	No	ALL PRIVILEGES	Yes	Edit Privileges Export
☐	root	localhost	No	ALL PRIVILEGES	Yes	Edit Privileges Export

25. Select Edit Privileges for each account and enter the same password for all 3. Be sure to enter the password in the “Change password” section and not any other area where password modifications are accepted. I used password abc123 (use your own). Select Go at the far right of the screen.



26. Close the browser you were using to access the XAMPP Home Page and phpMyAdmin.

27. Navigate to the directory below and R-click config.inc.php and select with your editor of choice (I use Notepad++ for quick changes like this).



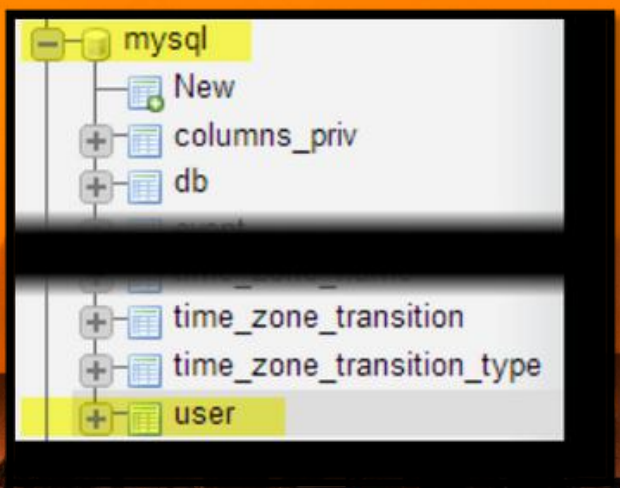
28. Make the following changes. Use the password you set for the root accounts in phpMyAdmin. This is the account and password that phpMyAdmin uses to open the local instance of MySQL. By making the changes here, phpMyAdmin will be able to access the local instance of MySQL. Save and close the file.

```
/* Authentication type and info */
$cfg['Servers'][$i]['auth_type'] = 'config';
$cfg['Servers'][$i]['user'] = 'root';
$cfg['Servers'][$i]['password'] = 'abc123';
$cfg['Servers'][$i]['extension'] = 'mysqli';
$cfg['Servers'][$i]['AllowNoPassword'] = false;
$cfg['Lang'] = '';
```

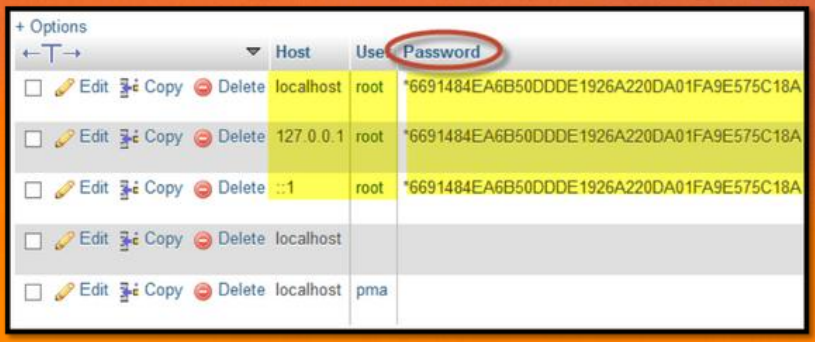
29. Open a browser to access the XAMPP Home Page by typing local host in the address box. Note that xampp is added after pressing enter. The admin page reopens.



30. Open phpMyAdmin and expand mysql by clicking the + sign. Click on user to see the contents of the user table.



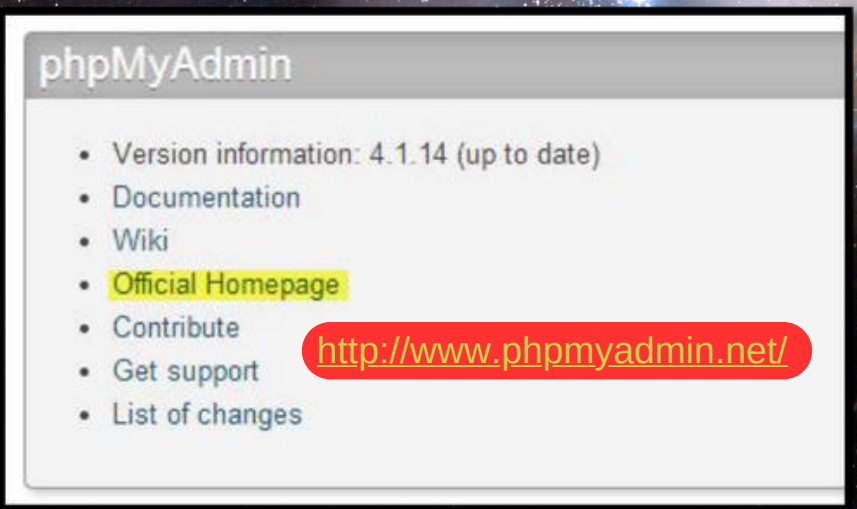
31. Notice the passwords for the root users have been encrypted for security purposes. Password abc123 produces the same long encryption string for each account. The encryption string cannot be decrypted to reproduce or re-access the original passwords. That is why most organizations or websites allow a reset of a password but are unable to supply the original.



32. Note: phpMyAdmin is updated frequently by the team and community who support the application. You will likely receive a notice that a newer version exists after you first install XAMPP. Fortunately, updating the application is simple.

First, make a note of your phpMyAdmin version number which can be located on the application home page. Then, make a copy of your current config.inc.php (see above) and move the copy to your desktop for safe keeping. Rename your xampp/phpmyadmin directory to xampp/phpmyadmin-X.X.X where the X's are your current version number. This creates a backup in case the update does not work.

33. Download the latest version of phpMyAdmin from the link shown. You can also get to that location by selecting the Official Home Page link on the home page of the phpMyAdmin application.



34. When the download is complete, unzip the directory, change the name of the directory to phpmyadmin and move it to the xampp folder where your old version still exists (which is now renamed to phpmyadmin-X.X.X).

35. Now move your copy of config.inc.php from the desktop to the phpmyadmin folder and you are ready to use the new version. Test to ensure access and proper operation.

After you have successfully installed XAMPP, you are ready to begin web database development and testing on your local machine. Be sure to start the XAMPP Control Panel, Apache, and then MySQL before beginning your database work. Enjoy the world of database development.





References:-

https://www.apachefriends.org/

https://www.austincc.edu/

https://www.w3schools.com/

https://www.techradar.com/news/best-web-design-software

https://xbsoftware.com/blog/website-development-process-full-guide/

https://www.knowledgehut.com/blog/web-development/prerequisites-for-web-development

https://www.smashingmagazine.com/2008/01/10-principles-of-effective-web-design/

https://www.wix.com/blog/web-design-trends

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