

# TECHNICAL GUIDELINES FOR CUSTOMIZING THE WEATHER INFORMATION DISSEMINATION INFORMATION SYSTEM (WIDS)

## 1. Introduction

The Weather Information Dissemination System (WIDS) was initially designed to be used in Uganda. This document provides technical guidelines for fully customizing the system in order to incorporate the needs of South Sudan, Ghana and Nigeria. It is based on four features, which were documented in the customization requirements document. The features include;

- i. **Adoption of multilingual aspects:** to enable incorporation of languages.
- ii. **Multi-themes:** to enable switching of template or themes to suit the country colors.
- iii. **An installer:** to facilitate seamless installation of a customized copy of the system.
- iv. **Database design changes:** to incorporate the differences in administrative structures.
- v. **Maps:** to display maps for the concerned country

## 2. Guidelines for customization

### 2.1 Creating the installer

This task involves creating an installer to be used in deploying a customized system and as per the country needs. Below are the steps to be followed:

- i. When WIDS is loaded, it first checks for presence of a '**config file**', under the root directory of WIDS. This file is only created after going through step ii. If config file exists, the main WIDS system is loaded. Otherwise, the installer interfaces are loaded as indicated in the following section.
- ii. Below are the details of the installer;
  - a. Present the first window that presents a form to ask user for database name, database password, database username, system email/username, system password, and the country for which you are installing the system. When the information is saved it creates a config.txt file where the information is inserted.
  - b. After these, the system shall automatically load the home page of WIDS. The loaded theme or website colors should reflect the selected country colors.

- c. The home page should automatically load available languages from the database and put them in a drop down list. The seasons and admin structures should also automatically be loaded.

## 2.2 Creating themes and embedding them into code igniter

This task requires getting three sample themes and try to look at <https://github.com/arashdn/Codeigniter-Theme> and embed them in codeigniter. Below are the websites that show sample colors for the respective countries.

- (i). <https://nimet.gov.ng/> for Nigeria
- (ii). <http://www.meteo.gov.gh/website/> for Ghana

The task is to find out how to use multiple themes in codeigniter. Here are some discussions on the topic <https://forum.codeigniter.com/archive/index.php?thread-26627.html> and <https://www.sks.com.np/multiple-themes-in-codeigniter-like-wordpress/>

## 3. Data design

Below is the data design for the customized system. The database is able to incorporate the needs of all countries. Below are the tables and ERD

<b>Table Admin</b>		
<b>Data item</b>	<b>Datatype</b>	<b>Size</b>
Id	Bigint	100
Username	Varchar	100
Email	Varchar	100
Password	Varchar	100
Created	Timestamp	
Modified	Timestamp	
<b>Table advice</b>		
<b>Data item</b>	<b>Datatype</b>	<b>Size</b>
id_advice	Int	11
advice_name	Varchar	100
Advice_des	Varchar	100

<b>Table advisory</b>		
<b>Data item</b>	<b>Datatype</b>	<b>Size</b>
record_id	Int	11
forecast_id	Int	11
forecast_type	Int	11
advice_type	Varchar	30
Advice	Varchar	30
Message	Text	
message_summary	Text	
audio_url	Int	11
TS	Timestamp	
<b>Table alert</b>		
<b>Data item</b>	<b>Datatype</b>	<b>Size</b>
Id	Int	11
Name	Varchar	45
Description	Text	
Issuetime	Timestamp	
region_id	Int	11
<b>Table weather_category</b>		
<b>Data item</b>	<b>Datatype</b>	<b>Size</b>
Id	Int	11
cat_name	Varchar	255
Img	Varchar	100
Widget	Varchar	100
<b>Table contacts</b>		
<b>Data item</b>	<b>Datatype</b>	<b>Size</b>
contact_id	Int	5
contact_group_id	Int	5
contact_name	Varchar	250
contact_number	Varchar	50

contact_email	Varchar	50
contact_address	Varchar	500
contact_date	Timestamp	
contact_status	enum('0','1')	
<b>Table daily_forecast</b>		
<b>Data item</b>	<b>Datatype</b>	<b>Size</b>
Id	Double	
mean_temp	Double	
max_temp	Double	
min_temp	Double	
Sunrise	Varchar	45
Sunset	Vrchar	45
Wind	Int	11
wind_direction	Text	
wind_strength	Text	
Weather	Text	
Date	Date	
Time	Varchar	200
region_id	Int	10
weather_cat_id	Varchar	11
<b>Table decadal_forecast</b>		
<b>Data item</b>	<b>Datatype</b>	<b>Size</b>
decadal_id	Int	11
region_id	Int	11
date_from	Date	
date_to	Date	
Audio	Varchar	100
Issuetime	Timestamp	
<b>Table feedback</b>		
<b>Data item</b>	<b>Datatype</b>	<b>Size</b>

record_id	Int	11
forecast_type	Int	11
<b>Table seasonal_forecast</b>		
<b>Data item</b>	<b>Datatype</b>	<b>Size</b>
Id	Bigint	10
Description	Text	
Created	Timestamp	
season_id	Int	11
<b>Table season</b>		
<b>Data item</b>	<b>Datatype</b>	<b>Size</b>
Id	Int	11
season_name	Varchar	45
month_from	Varchar	45
month_to	Varchar	45
<b>Table weather_impact</b>		
<b>Data item</b>	<b>Datatype</b>	<b>Size</b>
Ps	Int	11
weather_type	Varchar	23
Impact	Text	
State	Varchar	100
<b>Table city</b>		
<b>Data item</b>	<b>Datatype</b>	<b>Size</b>
Id	Int	11
city_name	Varchar	45
division_id	Varchar	45
<b>Table division</b>		
<b>Data item</b>	<b>Datatype</b>	<b>Size</b>
Id	Int	11
division_name	Varchar	45
region_id	Int	11

Table region		
Data item	Datatype	Size
Id	Int	11
region_name	Varchar	45

## 4. Requirements for deploying the customized system

### 4.1 Installer requirements

The system should be downloaded from this link: [www.github.com/wimea-ict](http://www.github.com/wimea-ict) . Ensure that permissions are set to write to the following files

- i. Baseroor/system/core/Loader.php
- ii. Baseroor/application/config/database.php
- iii. Baseroor/application/config/config.php

You should have a MySQL database account, which has the permissions to create the database

The structures of the file should be as follows when installing

Function `_ci_autoloader()` in `/system/core/Loader.php`, a section of the code should be commented to avoid checking for database details and throwing exceptions before the database details are entered

```

        $this->>type($autoload[$type]);
    }
}

// Autoload drivers
if (isset($autoload['drivers']))
{
    foreach ($autoload['drivers'] as $item)
    {
        $this->driver($item);
    }
}

// Load libraries (edited by Mary Nsabagwa to match the Installer )
* database   if(isset($autoload['libraries']) && count($autoload['libraries']) > 0)
{
    // Load the database driver.
    if (in_array('database', $autoload['libraries']))
    {
        $this->database();
        $autoload['libraries'] = array_diff($autoload['libraries'], array('database'));
    }

    // Load all other libraries
    $this->library($autoload['libraries']);
}

database */

// Autoload models
if (isset($autoload['model']))
{
    $this->model($autoload['model']);
}

```

---

The database details (Username, database and password) in application/config/config.php should be null as below

```

| -----, -----, -----, -----, -----
| a lot of SQL queries ... disable this to
|
| The $active_group variable lets you choose which connec
| make active. By default there is only one group (the '
|
| The $query_builder variables lets you determine whether
| the query builder class.
*/
$active_group = 'default';
$query_builder = TRUE;

$db['default'] = array(
    'dsn' => '',
    'hostname' => 'localhost',
    'username' => '',
    'password' => '',
    'database' => '',
    'dbdriver' => 'mysql',
    'dbprefix' => '',
    'pconnect' => FALSE,
    'db_debug' => (ENVIRONMENT !== 'development'),
    'cache_on' => FALSE,
    'cachedir' => '',
    'char_set' => 'utf8',
    'dbcollat' => 'utf8_general_ci',
    'swap_pre' => '',
    'encrypt' => FALSE,
    'compress' => FALSE,
    'stricton' => FALSE,
    'failover' => array(),
    'save_queries' => TRUE
);

```

In the file /application/config/config.php, the configuration for country should not be there at the start of the installation process. For instance, \$config['country'] = "Nigeria"; should be removed at the start of the installation process, if it exists.



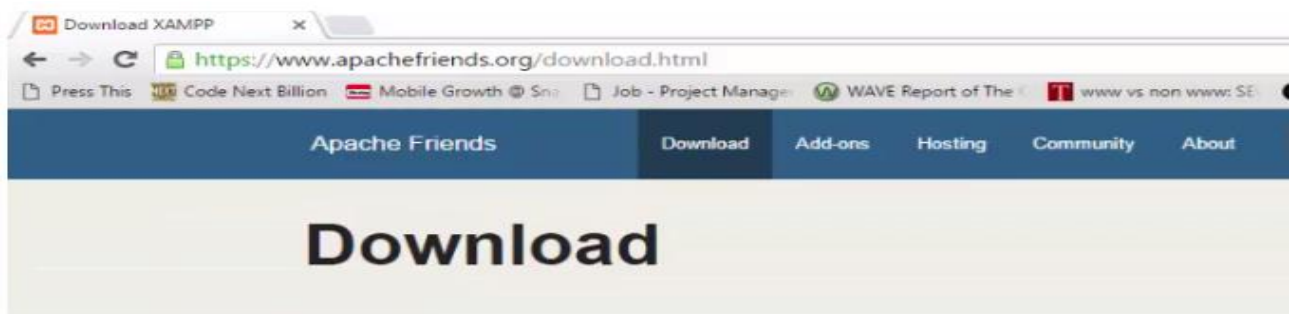
```
|  
| You can use both an array or a comma-separated list o  
| as well as specifying whole subnets. Here are a few e  
|  
| Comma-separated: '10.0.1.200,192.168.5.0/24'  
| Array:          array('10.0.1.200', '192.168.5.0/24')  
*/  
$config['proxy_ips'] = '';  
$config['country'] = "Nigeria";
```

## 4.2 Software requirements

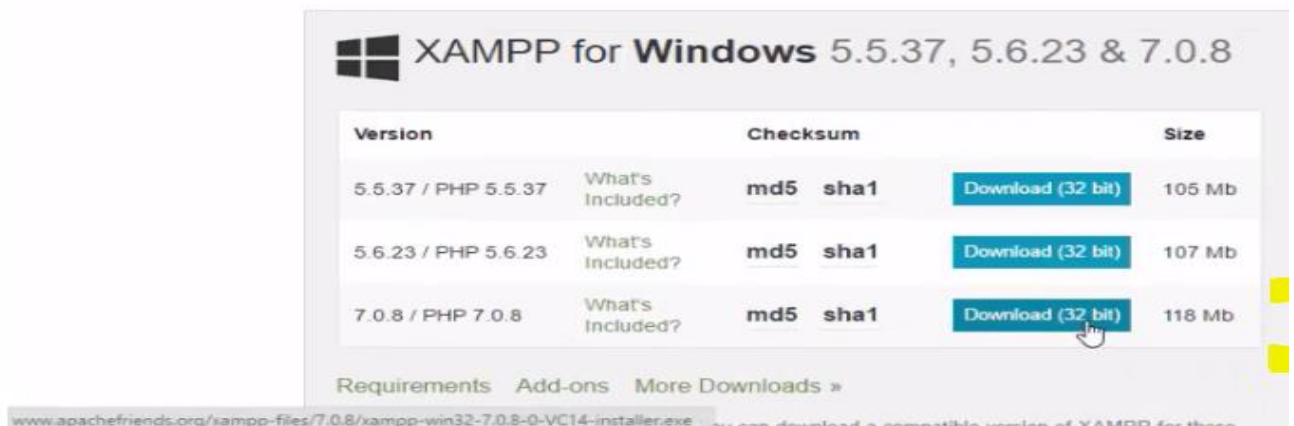
### 4.2.1 MySQL server (XAMP PACKAGE)

#### 4.2.1.1 Downloading and installing XAMP in Windows

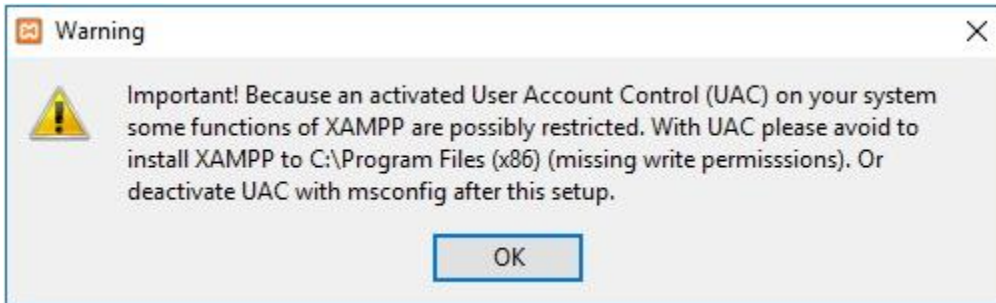
1. Go to the [following website](#) and download XAMPP Server, Click the XAMPP for Windows button to save the file on your desktop



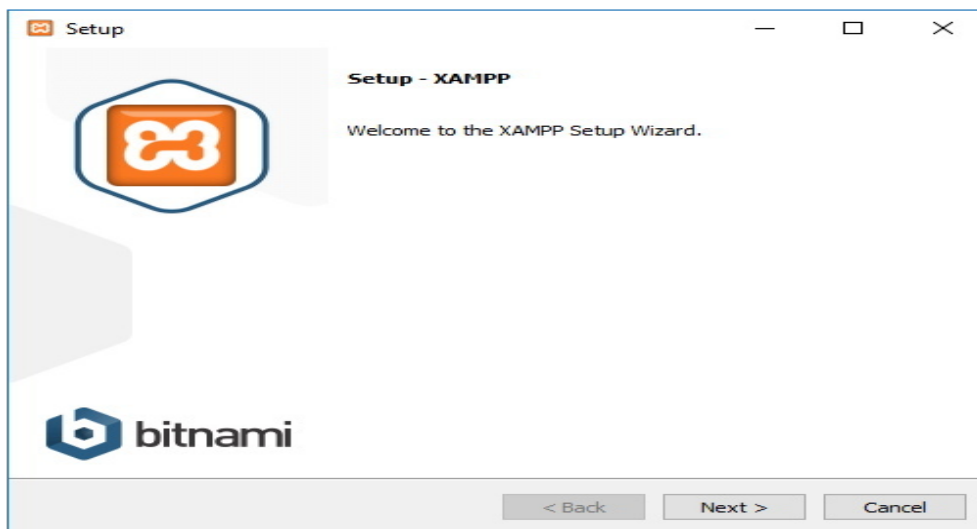
XAMPP is an easy to install Apache distribution containing MariaDB, PHP, and Perl. Just download and start the installer. It's that easy.



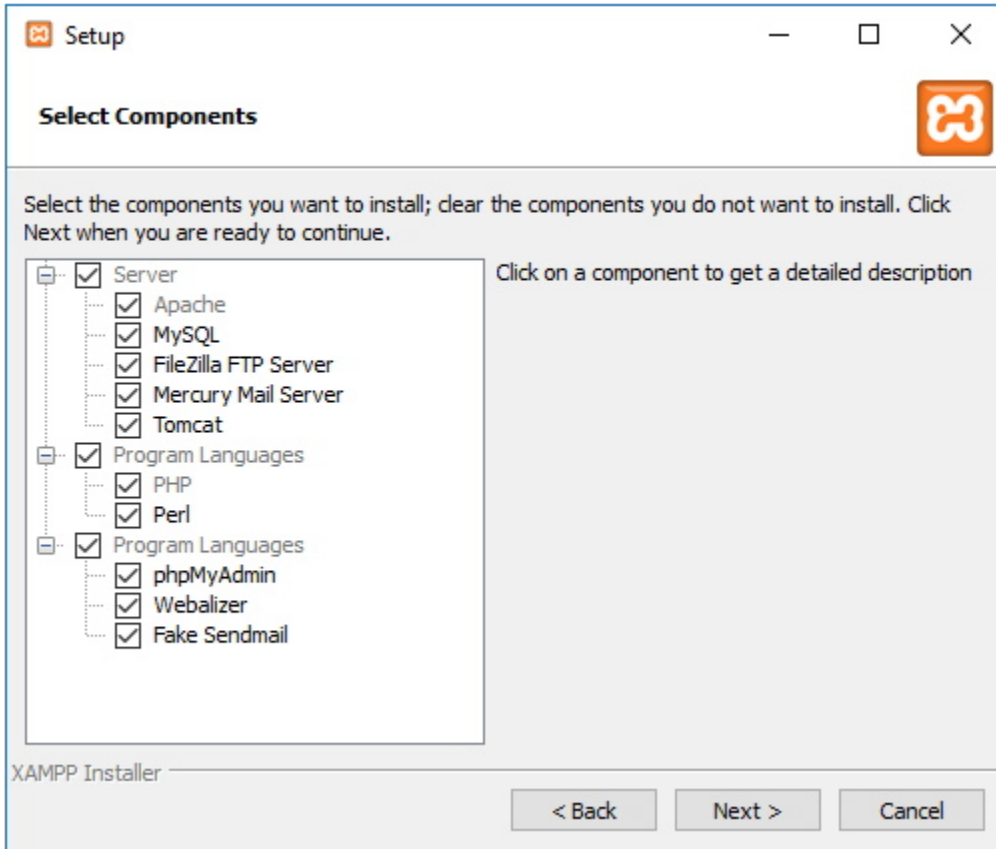
2. Double-click the downloaded file to launch the installer.
3. Click the OK button



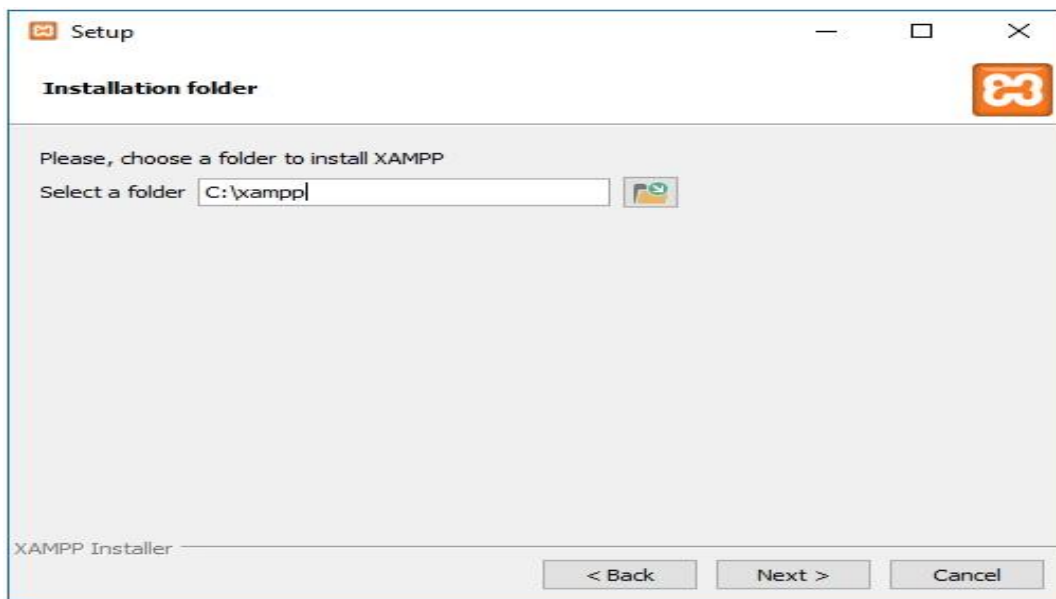
4. Click the Next button.



5. XAMPP offers a variety of components that you can install, such as MySQL, phpMyAdmin, PHP, Apache, and more. For the most part, you will be using most of these components in this WIDS Project, as such it's recommended to leave the default options.
6. Click the Next button

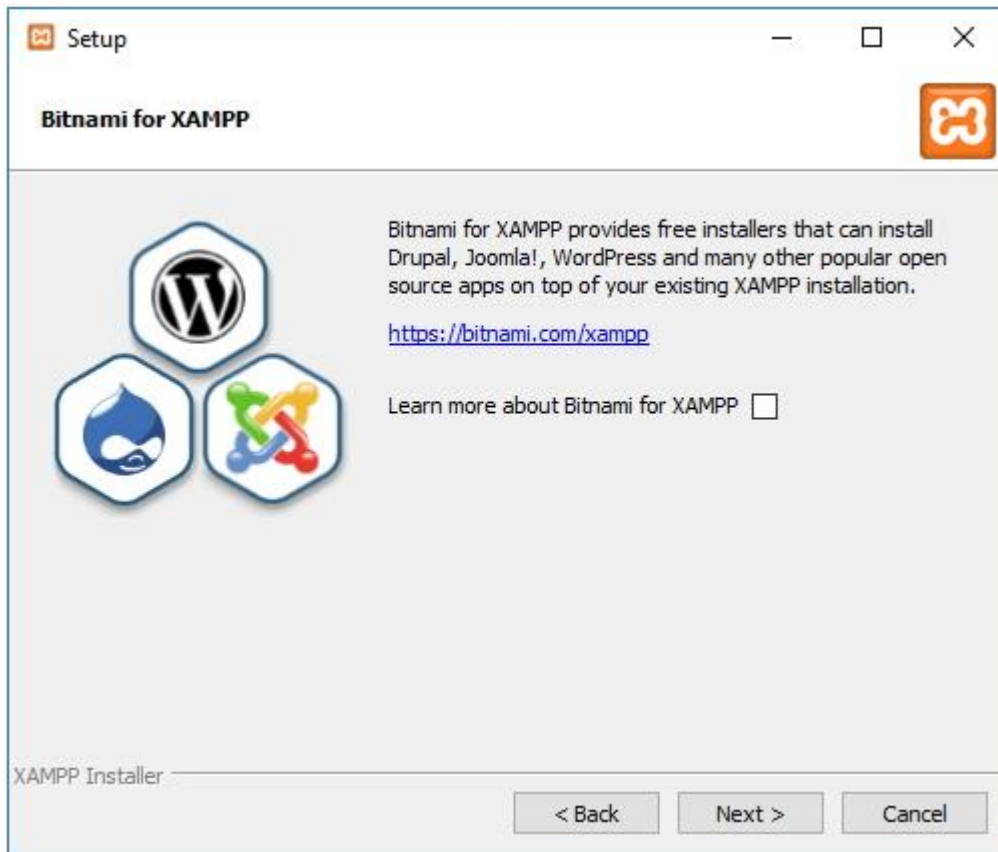


7. Use the default install location, or choose another folder to install the software in the “Select a folder” field.
8. Click the Next button.

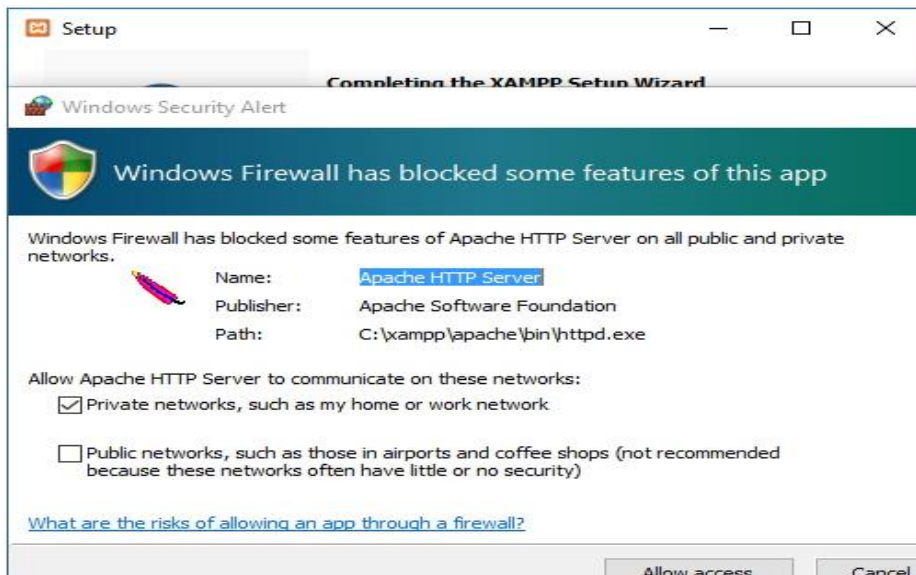


9. Clear the Learn more about Bitnami for XAMPP option

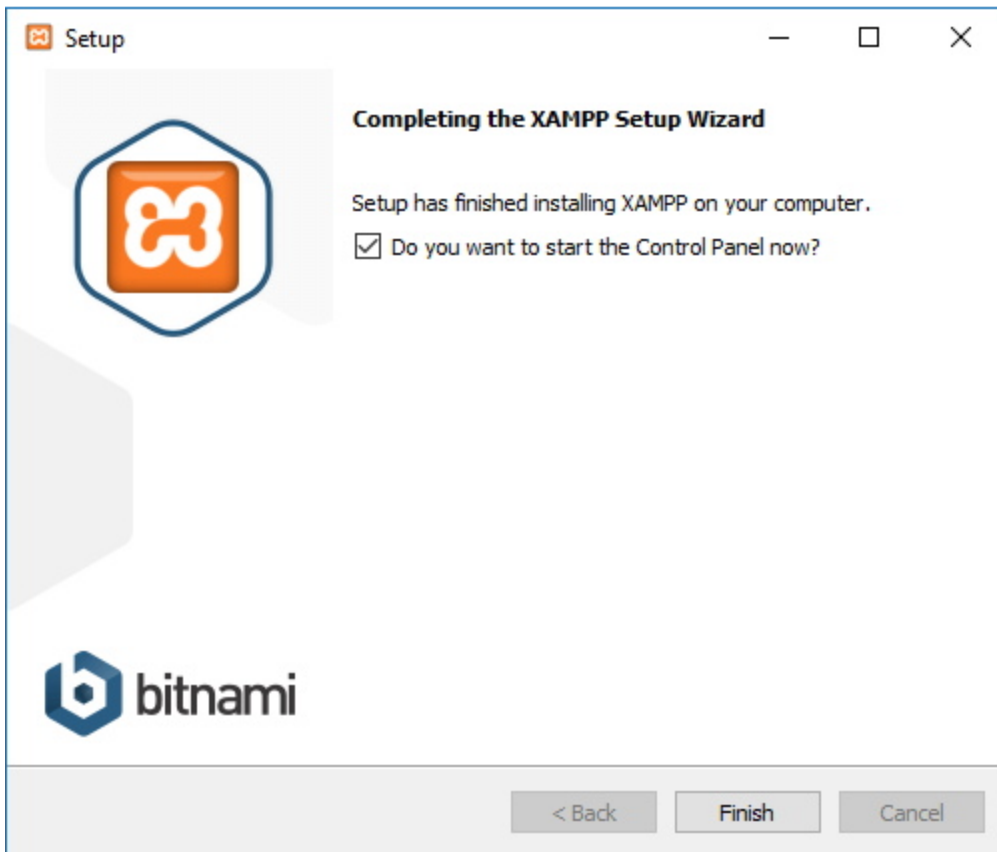
10. Click the Next button



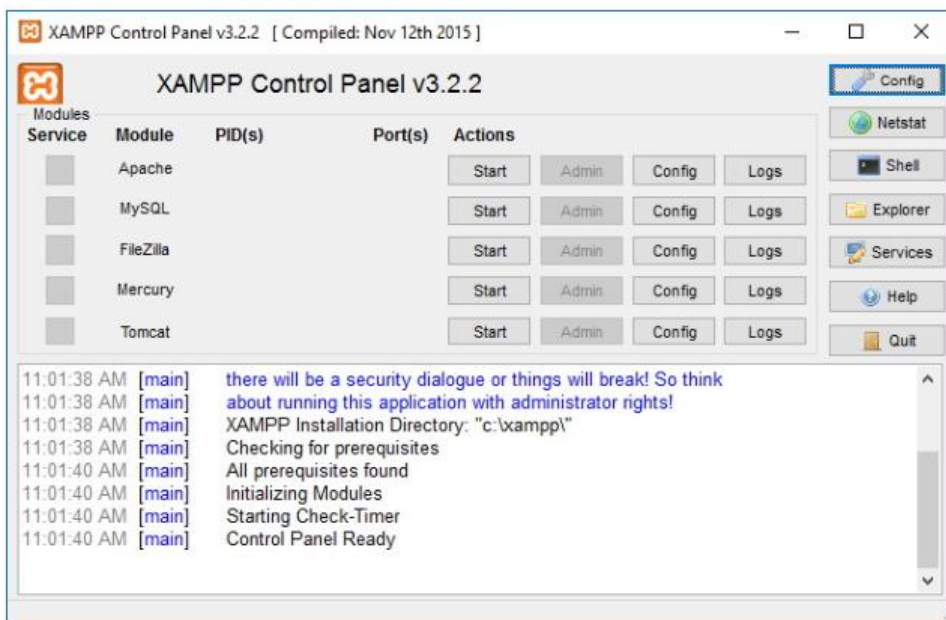
11. Click the Allow access button to allow the app through the firewall (if applicable).



12. Click the Finish button

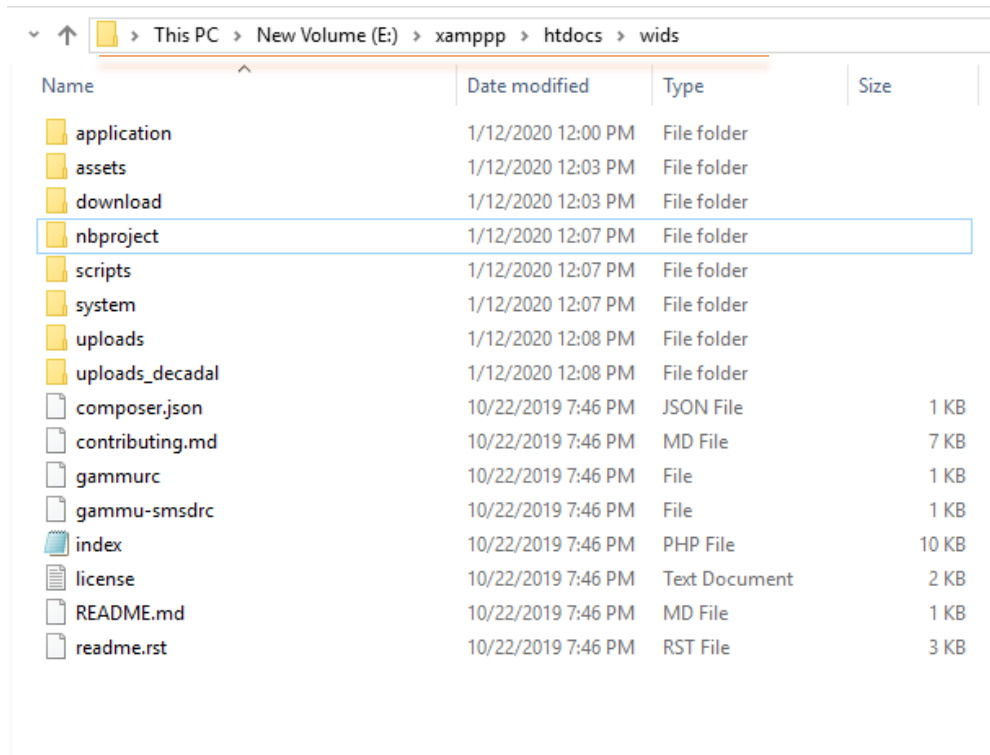


13. Choose your language (English or German)
14. Click the Save button.
15. Once you complete the steps, the XAMPP Control Panel will launch, and you can begin the web server environment configuration



## RUNNING THE WIDS PROJECT ON THE WEB BROWSER

Step 1: Once you have successfully installed the Xamp Server, go to “*htdocs*” folder in “*Xampp*” folder and create your project folder. Here in the screenshot, you can see, a folder “*wids*” has been created,



**Step 2:** Now, go to your browser and type, “**localhost/wids**” and press ENTER. On pressing ENTER, you will see the following WIDS installation page.

---

## Enter database and System Details

System username:  
Account UserName

System Email:  
Account UserName

System user password  
\*\*\*\*\*

Database Name  
Database name

Database shall be created

Database username:  
Database username

Database Password:  
Database password

Select Country for which you are installing the system:  
▼  
Nigeria  
Ghana  
South Sudan

### 4.2.1.2 DOWNLOADING AND INSTALLING XAMPP IN LINUX (Ubuntu):

Please follow the following steps in order to download, install and configure XAMPP on your system and then run WIDS

#### Step 1: Download the installation package

The first step is to download the XAMPP package for Linux from the official Apache Friends website: <https://www.apachefriends.org/index.html>

Click on the XAMPP for Linux option after which you will be prompted to Run the package or Save it to your system. We recommend downloading the package by clicking the Save File option. After which, your downloaded file will be saved to the Downloads folder by default.

## Step 2: Make the installation package executable

We will install the package through the Ubuntu command line, The Terminal. In order to open the Terminal, either use the Dash or the **Ctrl+Alt+T** shortcut. After the Terminal is open, you need to move to your Downloads folder to access the file.

Move to the Downloads folder by using the following command:

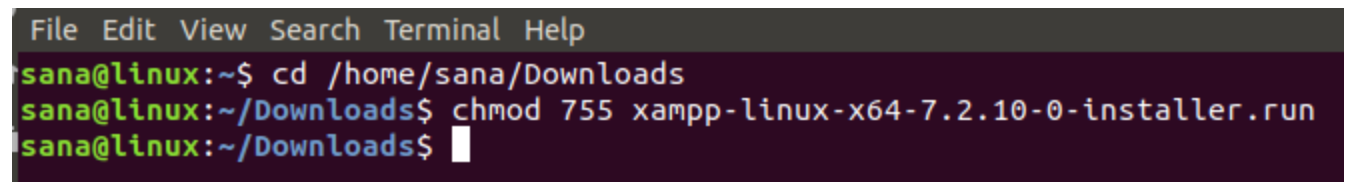
```
$ cd /home/[username]/Downloads
```

The installation package you downloaded needs to be made executable before it can be used further. Run the following command for this purpose:

```
$ chmod 755 [package name]
```

Example:

```
$ chmod 755 xampp-linux-x64-7.2.10-0-installer.run
```

A screenshot of a Linux terminal window with a dark background. The terminal shows the following commands and their outputs: 1. The user runs 'cd /home/sana/Downloads' and the prompt changes to '~/.Downloads'. 2. The user runs 'chmod 755 xampp-linux-x64-7.2.10-0-installer.run'. 3. The user runs 'ls -l' and the prompt returns to '~/.Downloads'. The terminal title bar shows 'File Edit View Search Terminal Help'.

Now the install package is in an executable form.

## Step 3: Confirm execute permission

It is important to verify if the package can be executed by the current user. The execute permission can be checked through the following command:

```
$ ls -l [package name]
```

Example:



```
$ ls -l xampp-linux-x64-7.2.10-0-installer.run
```

```
sana@linux:~/Downloads$ ls -l xampp-linux-x64-7.2.10-0-installer.run  
-rwxr-xr-x 1 sana sana 140842519 Oct  1 09:33 xampp-linux-x64-7.2.10-0-installer  
.run
```

The -rwxr output shows that the file can be executed by the user whose name is also mentioned in the output.

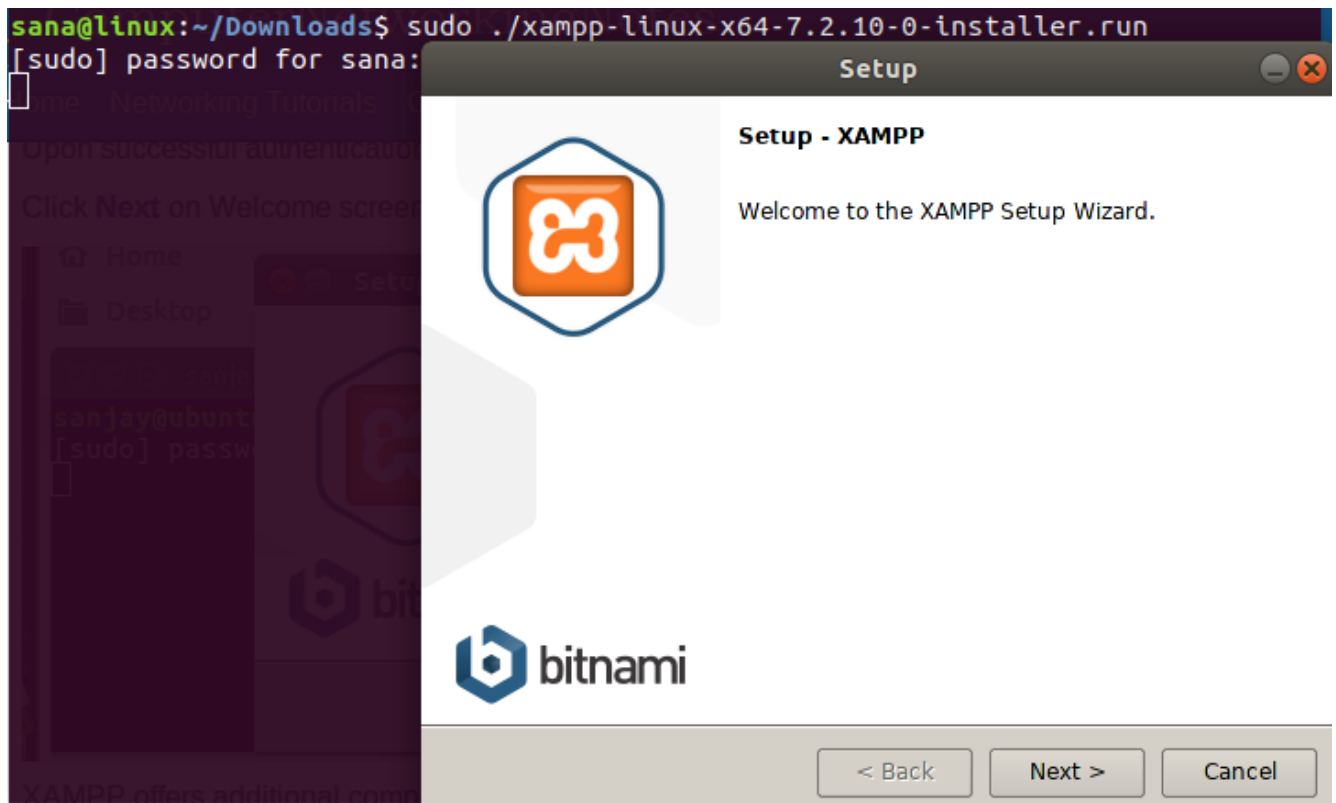
#### **Step 4: Launch the Setup Wizard**

As a privileged root user, run the following command in order to launch the graphical setup wizard.

```
$ sudo ./[package name]
```

Example:

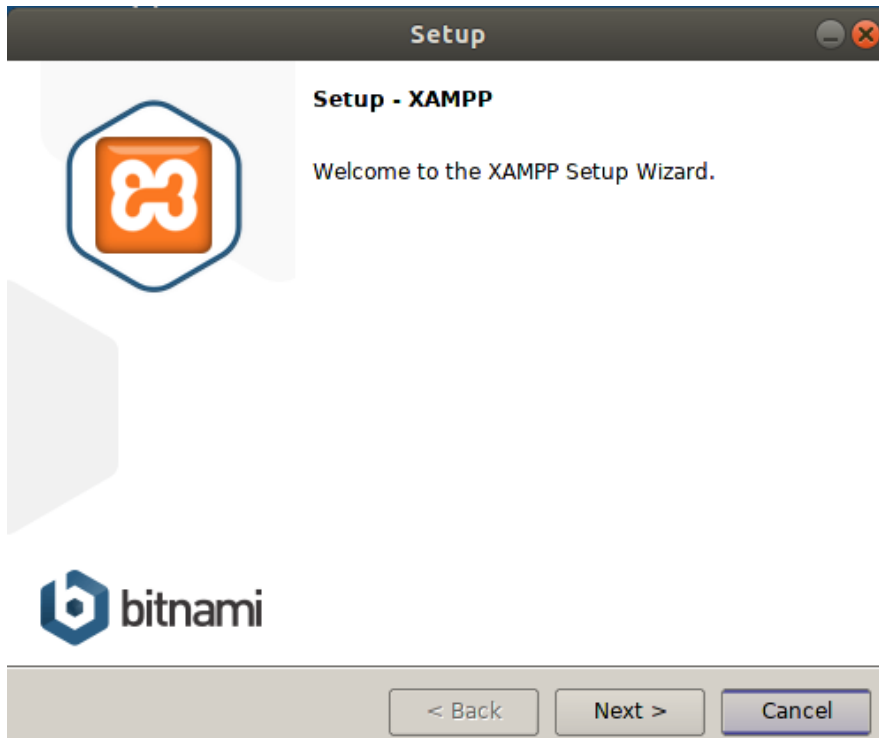
```
sudo ./xampp-linux-7.2.10-0-installer.run
```



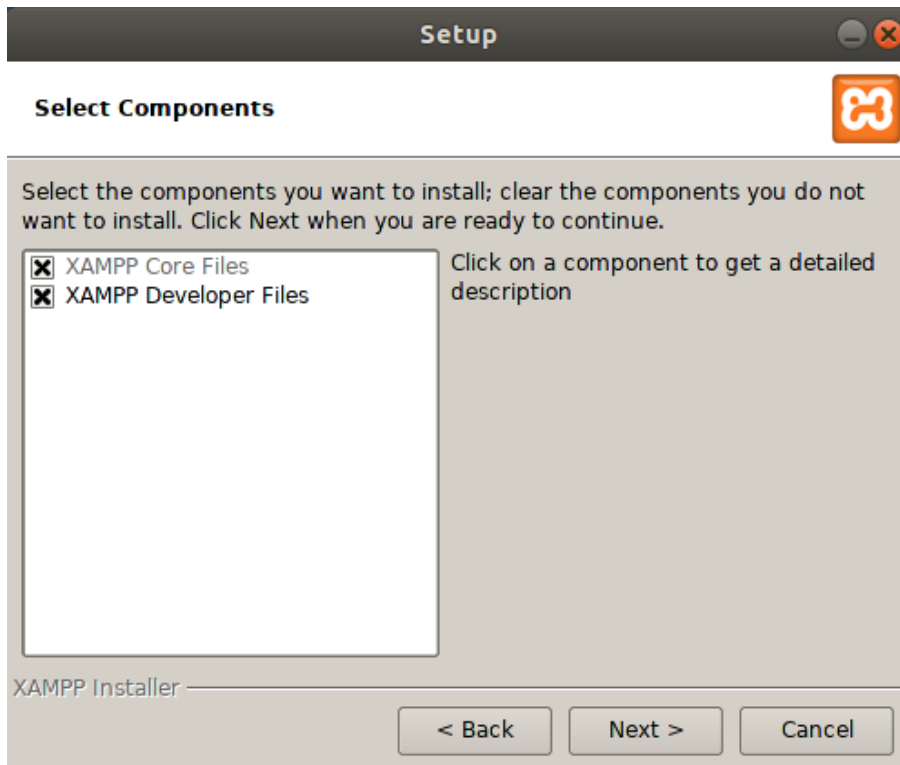
This will launch the Setup wizard that will direct you with the rest of the installation procedure.

## Step 5: Work through the graphical setup wizard

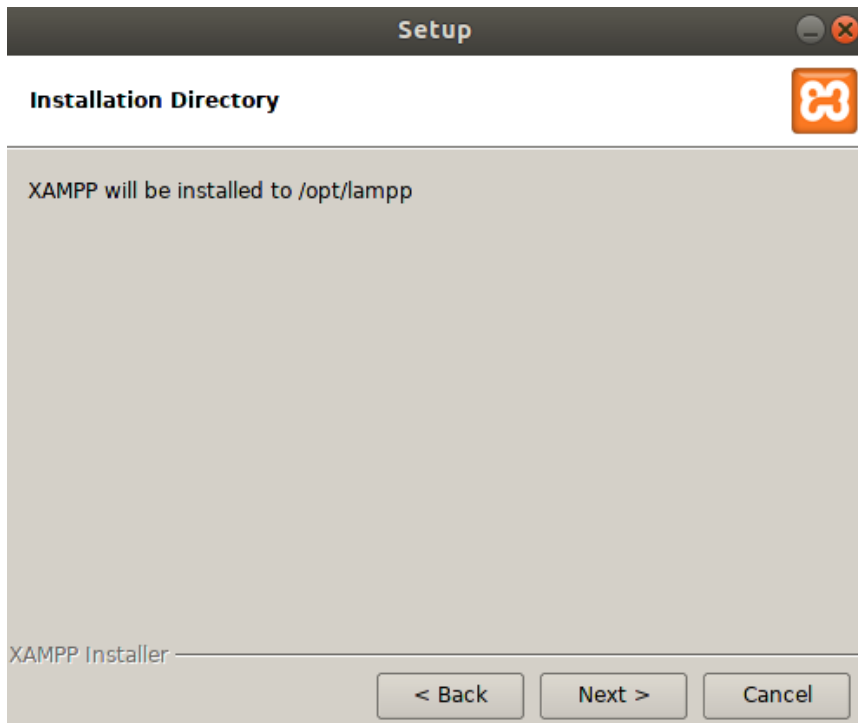
Now that the Setup Wizard for XAMPP by Bitnami is launched as follows, click the Next button to start the installation process:



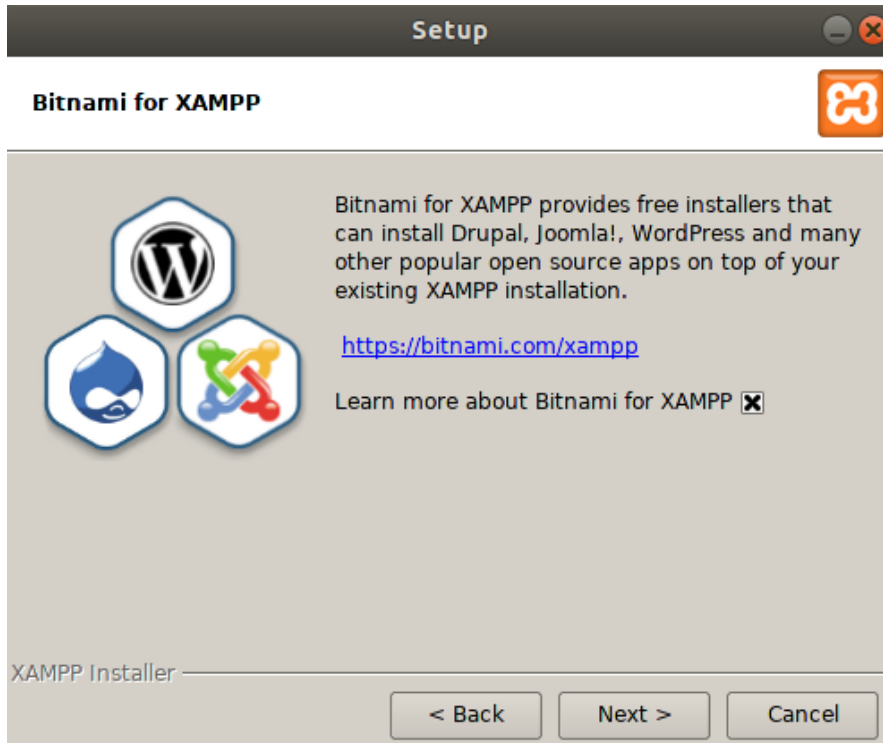
The following dialog lets you choose XAMPP components that you want to install.



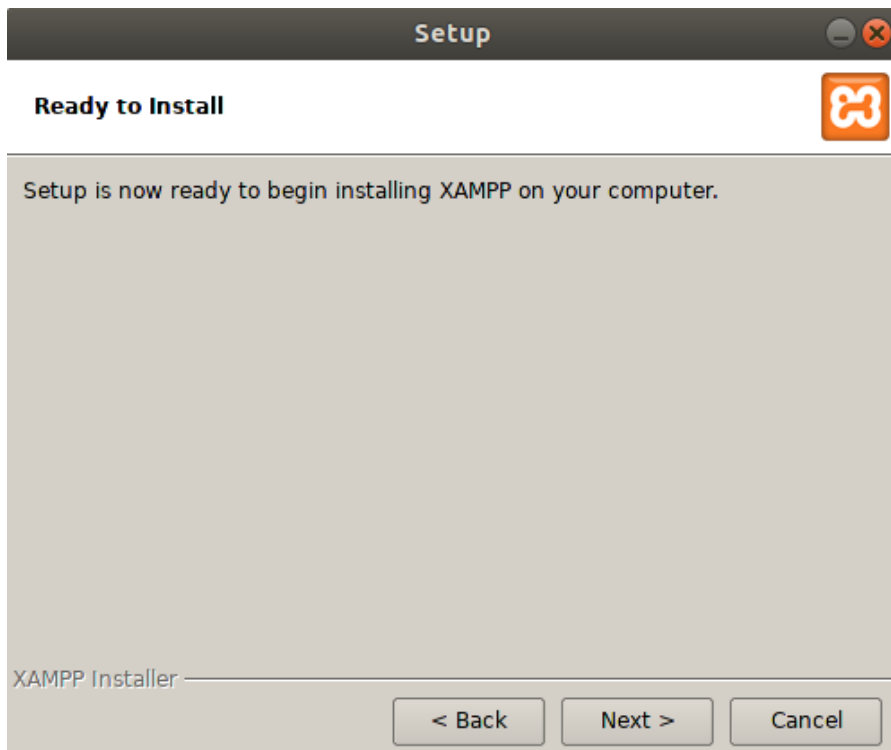
Keep the default settings intact and then click *Next*. The following dialog will inform you about the location where XAMPP will be installed.



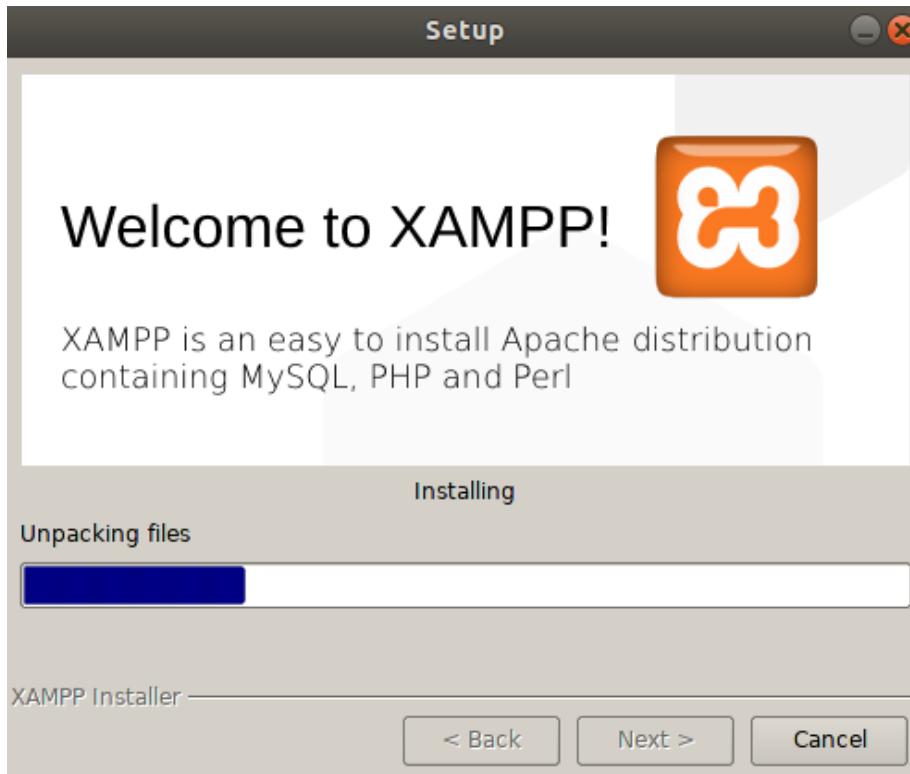
Click *Next* to continue. The following dialog gives you the option of installing sponsored applications such as Drupal, Joomla, and WordPress etc. You can avoid Bitnami to install these applications by unchecking the 'Learn more about Bitnami for XAMPP' checkbox.



Click the *Next* button after which the following dialog will appear:



Click Next to begin the installation process:



When the installation is complete, click the Next button. The following dialog indicates the completion of the installation process

If you do not want to Launch XAMPP at this moment, uncheck the Launch XAMPP option. Also, click Finish to close the Setup dialog.

### **Step 6: Launch XAMPP through the terminal**

In order to launch XAMPP through your Ubuntu Terminal, enter the following command as root:

```
$ sudo /opt/lampp/lampp start
```

```
File Edit View Search Terminal Help
sana@linux:~$ sudo /opt/lampp/lampp start
Starting XAMPP for Linux 7.2.10-0...
XAMPP: Starting Apache...already running.
XAMPP: Starting MySQL...already running.
XAMPP: Starting ProFTPD...already running.
```

This output shows that XAMPP is started and already running. Please note that you need to manually start XAMPP each time you restart your system. If you get the following output after

starting XAMPP, it means that Net Tools are not installed on your system:

```
sana@linux:~$ sudo /opt/lampp/lampp start
[sudo] password for sana:
Starting XAMPP for Linux 7.2.10-0...
XAMPP: Starting Apache...already running.
XAMPP: Starting MySQL.../opt/lampp/share/xampp/xampplib: line 22: netstat: command not found
ok.
XAMPP: Starting ProFTPD.../opt/lampp/share/xampp/xampplib: line 22: netstat: command not found
ok.
```

In order to install Net Tools, run the following command as root:

```
$ sudo apt install net-tools
```

```
sana@linux:~$ sudo apt install net-tools
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
 net-tools
0 upgraded, 1 newly installed, 0 to remove and 171 not installed.
Need to get 194 kB of archives.
After this operation, 803 kB of additional disk space will be used.
Get:1 http://pk.archive.ubuntu.com/ubuntu bionic/main amd64 net-tools amd64 1:20161116.90da8a0-1ubuntu1 [194 kB]
Fetched 194 kB in 1s (175 kB/s)
```

After the installation of Net Tools, you will be successfully able to launch and use XAMPP.

## Step 7: Verify Installation

After you have installed XAMPP on your Ubuntu system, it is good practice to verify the installation. To do so, enter the following URL in your Firefox browser:

```
http://localhost
```

The following webpage verifies that XAMPP is successfully installed and running on your system:

## Step 8: Set up a domain name

The server block that is enabled by default is capable of serving documents from /var/www/html.

Move the WIDS folder into the /var/www/html. directory

Then assign the ownership of the directory through the following commands:

```
sudo chown -R $USER:$USER /var/www/html/wids
```

```
sudo chmod -R 755 /var/www/html/wids
```

## Step 9: Run WIDS in a web browser

Apache server is now configured to serve WIDS. This can be verified by entering your browser the address <http://localhost/wids>