Detailed Instructions for Setting up own server with XAMPP for Data Logging with logIT.

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This document outlines several sequential steps required to set up the end-users own server for use with logIT.

The general overview of the required procedure is:

A. Successfully download and launch the required software.
B. Establishing your own database.
C. Creating PHP files on netbeans.
D. Making required changes in the Arduino code.
E. Checking the data updates in the database.
F. Exporting files and displaying data on graphs.

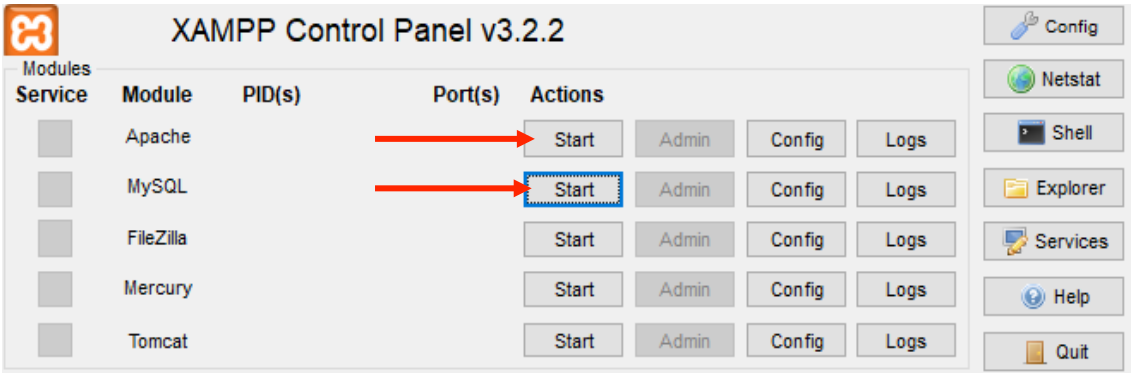
A. Successfully download and launch the required software.

1. Download the XAMPP and Netbeans IDE 8.0.2 software from the links provided below –

   Apache - https://www.apachefriends.org/download.html

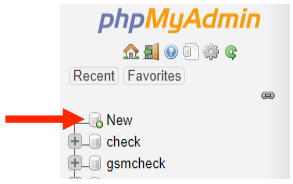
   Netbeans - https://netbeans.org/downloads/8.0.2/ - Download the software according to your requirement. For this project, HTML5 and PHP bundles works effectively with less use of space.

2. After downloading XAMPP software, Start the action for Apache and MySQL as shown by the red arrows in the figure.



B. Establishing your own database.

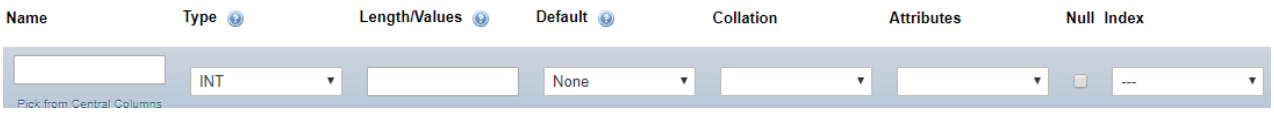
1. Write the mentioned URL on your browser (For this project, google chrome was used) - http://localhost/phpmyadmin/
2. Now to make a database for your sensor reading, click on new,



3. Give your database a relevant name and click on create.

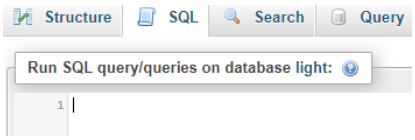
4. Now create a table in which sensor data must be stored.

5. Fill the appropriate information in the fields.
Choose the name of the fields – longitude, latitude, altitude, particle concentration etc. But remember to choose the datatype and length values according to your applications. Save the information.



OR

In place of steps 4 and 5, a direct query can be used. But if you are new to mySQL it is better to use the steps 4 and 5.



Query-

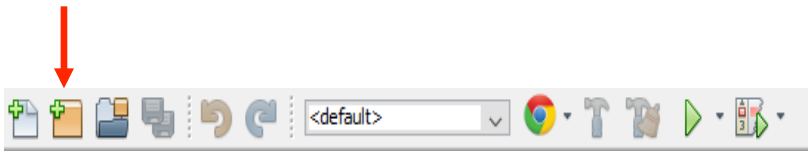
CREATE TABLE `light`.`LightIntensity` (`Time` TIMESTAMP NULL DEFAULTCURRENT_TIMESTAMP , `Longitude` FLOAT NOT N ULL , `Latitude` FLOAT NOT NULL , `Light Intensity` FLOAT NOT NULL) ENGINE = InnoDB;

RESULT – Database is created successfully.

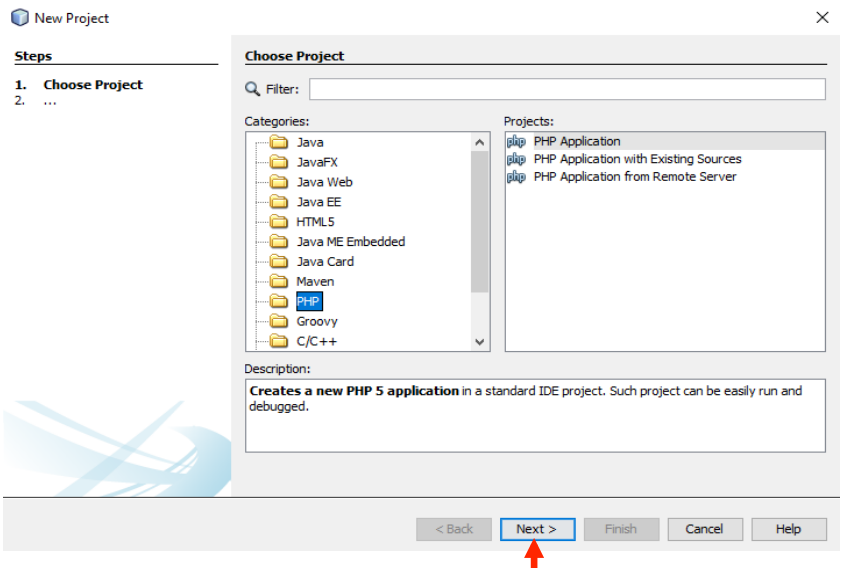
6. Search for XAMPP folder in Drive(C:) of your computer, go to htdocs (SOURCE LOCATION OF YOUR NETBEANS FILES) remove all the files. (Removing files are not mandatory).

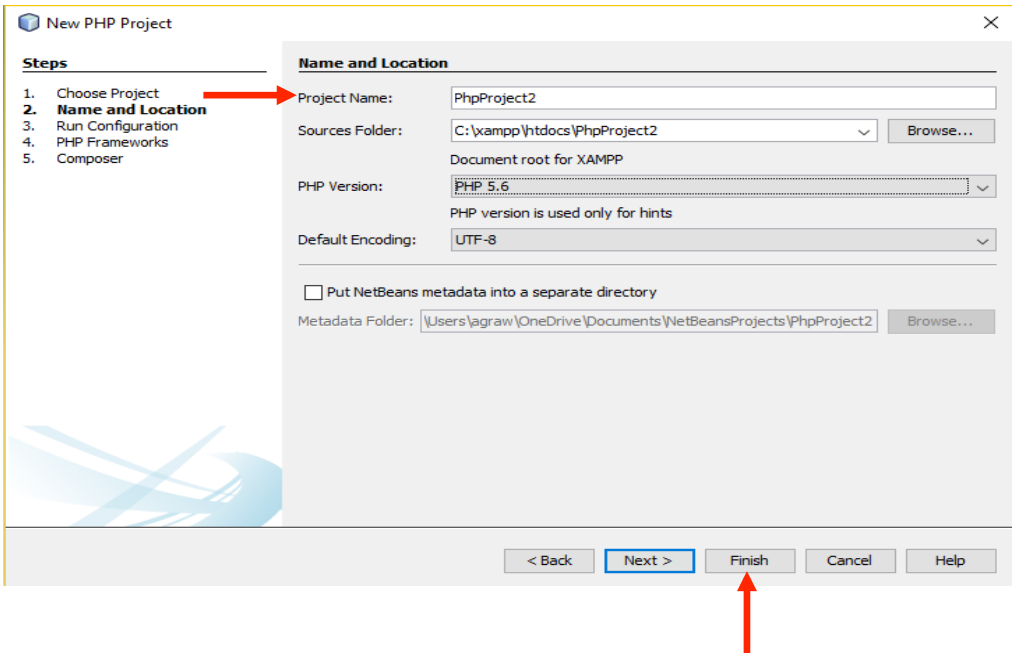
C. Creating PHP files on netbeans

1. Open the netbeans software. Click on new project. Choose PHP application, click on next, enter the name of your project. (File name – index.php).

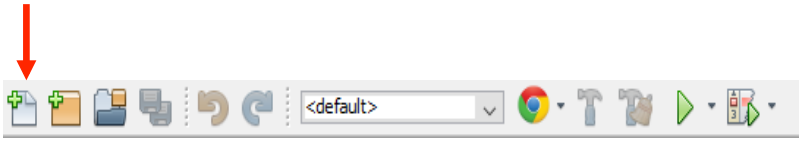


After clicking on new project, click on next as shown in the figure.





2. Make a new file by clicking on file menu. Choose PHP file. (Save the File with the name).



Note – You now have two files in the same project, connection and index.

3. Copy the code as mentioned in the *php code.pdf* file provided in the downloads. The code mentioned in the pdf file is for two different files. Then, make the following changes as required for your application.

   I. For file 1, (Connection.php)

   Possible Changes:

   Default server name for XAMPP – LocalHost
   Default Username for XAMPP – Root
   Change – Database name. (Change the name according to the section B.3 and B.4)

   II. For file 2, (Index.php)
   Possible Changes:

   1. Choose the appropriate name of the parameters you want to enter in the database. The number of fields in the index.php file should correspond to number of fields created in the section B.5.
   2. Enter your database name.

iii. For the index file, mention the correct parameter names. These parameters will be same as defined in section B.5.

```php
<?php

include("connection.php");


$long = filter_input(INPUT_GET,'Longitude');
$Lat = filter_input(INPUT_GET,'Latitude');
$Intensity = filter_input(INPUT_GET,'Intensity');

$sql="INSERT INTO `light intensity` (`Longitude`,`Latitude`, `Intensity`) VALUES ('$long','$Lat','$Intensity')";
$query= mysqli_query($connection,$sql);

if ($query)
{
 echo "Successful data entry";
}
else
{
 echo "Incoming data failed";
}
```

1 2 3 4

Some alternate examples for index.php

1. If only one value must be sent to the server.

```php
<?php

include("connection.php");

$Input = filter_input(INPUT_GET,'Value');

$sql="INSERT INTO sensor (Value) VALUES ('$Input')";
$query= mysqli_query($connection,$sql);

if ($query)
{
 echo "Successful data entry";
}
else
{
 echo "Incoming data failed";
}
```

2. If you want to add more fields to server.

```php
<?php
include("connection.php");
$long = filter_input(INPUT_GET,'longitude');
$lat = filter_input(INPUT_GET,'latitude');
$alt = filter_input(INPUT_GET,'altitude');
$particleconcentration = filter_input(INPUT_GET,'Concentration');
$sql="INSERT INTO `dustlubbocktable` (`longitude`,`latitude`,`altitude`,`Concentration`) VALUES('$long','$lat','$alt','$particleconcentration')";
$query= mysqli_query($connection,$sql);
if ($query)
{
echo "Successful data entry";
}
else
{
echo "Incoming data failed";
}
```

D. Download the Arduino code and make the following changes:

1. Serial.println(("AT+CSTT=\"**WHOLESALE**\"")); // Use the APN of service provider
   fonaSS.println(("AT+CSTT=\"**WHOLESALE**\"")); // APN for Ting is wholesale

2. Serial.println("AT+SAPBR=3,1,\"APN\",\"**wholesale**\""); // Make changes in APN
   fonaSS.println("AT+SAPBR=3,1,\"APN\",\"**wholesale**\""); // Make changes in APN

3. Serial.println(("AT+CIPSTART=\"TCP\",\"**Static Ip address**\",\"80\"")); // Fill in yours

   fonaSS.println(("AT+CIPSTART=\"TCP\",\" **Static Ip address** \",\"80\"")); // Fill in yours

   How to find your IP address.
   I. Type CMD in start menu.
   II. Give command – ipconfig/all
   III. Note the mentioned IPv4 Address.

4. Enter the database name.

   Serial.print("GET /**LIGHT**/index.php?Longitude=" + String(longitude,8) + "&Latitude=" + String(latitude,8));

   fonaSS.print("GET /**LIGHT**/index.php?Longitude=" + String(longitude,8) + "&Latitude=" + String(latitude,8));

   // here **LIGHT** IS THE PROJECT NAME FROM NETBEANS

5. Serial.print("Host: **Static Ip address** \r\n");
   fonaSS.print("Host: **Static Ip address** \r\n");

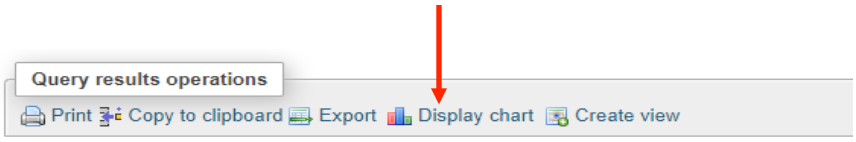
6. Make changes accordingly, under the void loop( ) section if you are using additional sensors for fields.

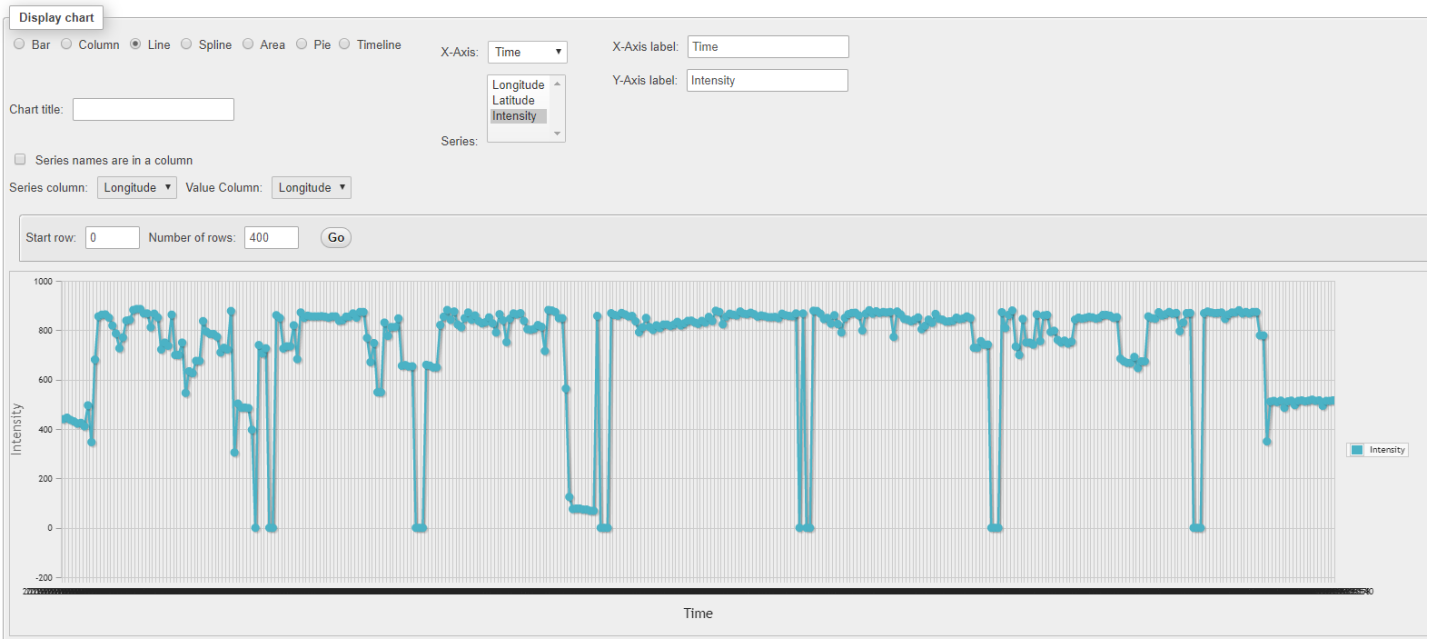
E. After completion of all the mentioned steps, you should be able to observe the updates in the database.

Time	Longitude	Latitude	Intensity
2019-05-29 14:45:47	-101.84527	33.555264	877
2019-05-29 14:46:29	-101.84563	33.548988	870
2019-05-29 14:47:11	-101.84563	33.548992	874
2019-05-29 14:47:52	-101.84129	33.548767	872
2019-05-29 14:48:34	-101.83555	33.548653	874
2019-05-29 14:49:16	-101.82884	33.548721	773
2019-05-29 14:49:58	-101.82175	33.548847	876
2019-05-29 14:50:40	-101.81846	33.548843	864
2019-05-29 14:51:22	-101.8183	33.553265	846
2019-05-29 14:52:03	-101.8183	33.557865	843
2019-05-29 14:52:45	-101.81829	33.562775	836
2019-05-29 14:53:27	-101.81829	33.568295	843
2019-05-29 14:54:09	-101.81833	33.573475	852
2019-05-29 14:54:50	-101.81832	33.579319	804
2019-05-29 14:55:32	-101.81831	33.579414	818
2019-05-29 14:56:14	-101.81828	33.58292	843
2019-05-29 14:56:56	-101.81828	33.587608	830
2019-05-29 14:57:38	-101.81795	33.592274	866
2019-05-29 14:58:19	-101.81802	33.592533	846
2019-05-29 14:59:01	-101.81833	33.59388	843

F. Exporting files and displaying data on graphs.

1. Displaying the data on the graph by choosing different X and Y axis.





2. Exporting the raw data in CSV format for google maps. After choosing the file type. Click on GO.