

**Evaluating the Acceptance of Digital Health Tools for Blood Pressure
Monitoring in Jamaican Hypertension Patients with Family and Healthcare
Support.**

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PRJ4020 - Major Project

Associate Professor Susan Muir

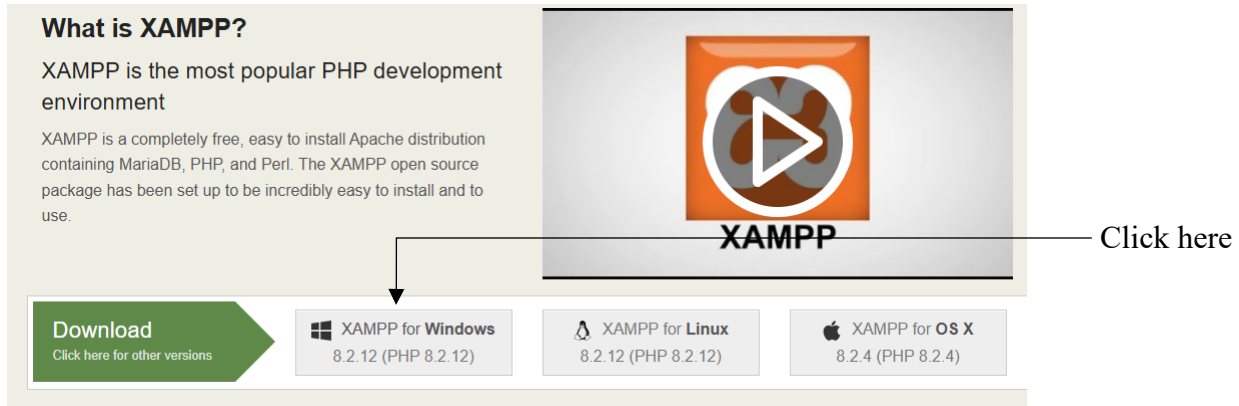
June 16, 2025

Prototype Documentation

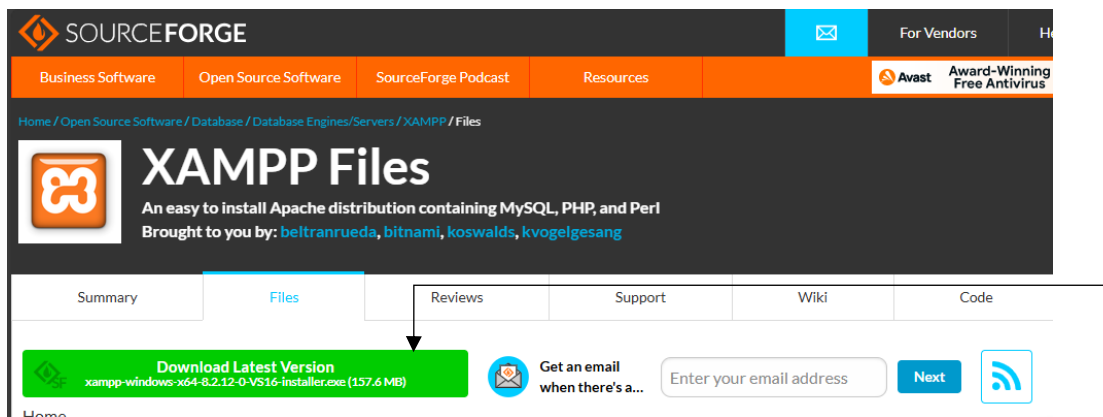
Web Prototype Installation and Execution Guide

1. Installing Xampp

Go to the website and download xampp for windows <https://www.apachefriends.org/>

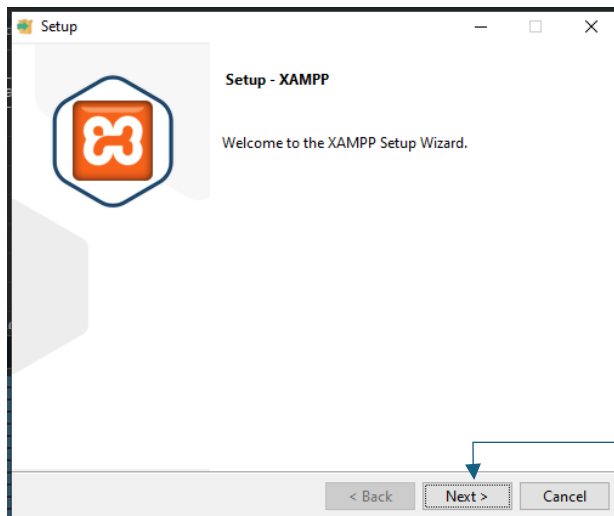


You will be redirected to this site where the app should start downloading automatically

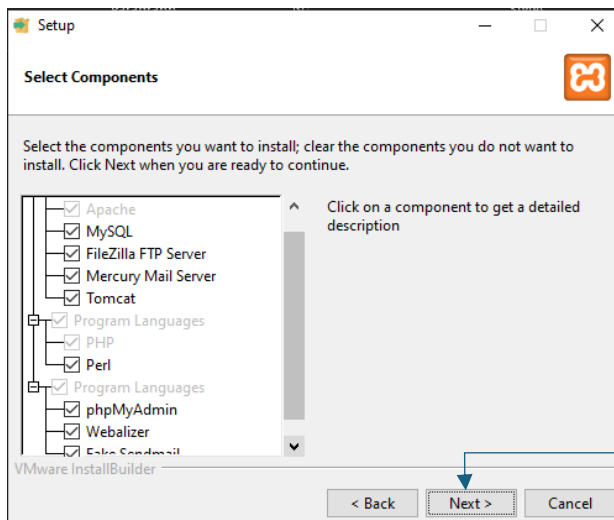


If download did not start automatically click the button

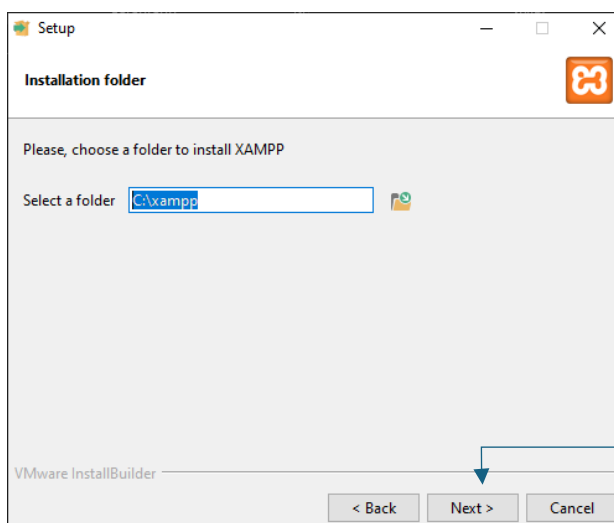
Once downloaded go to the location of the file and double click it.
The installation window will popup and you will proceed as followed



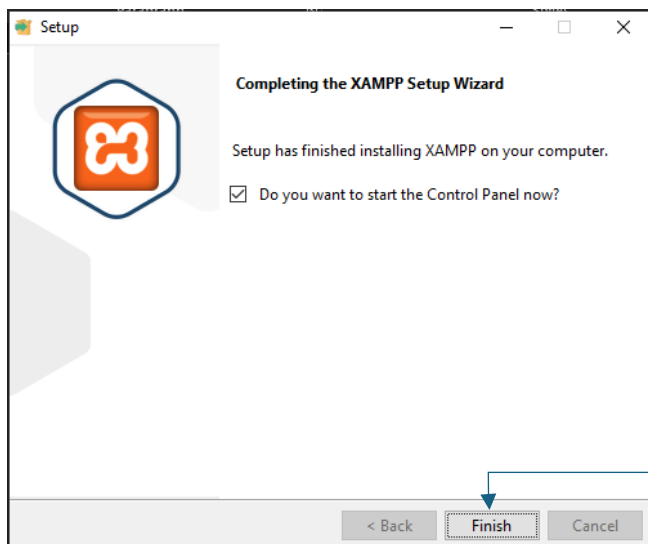
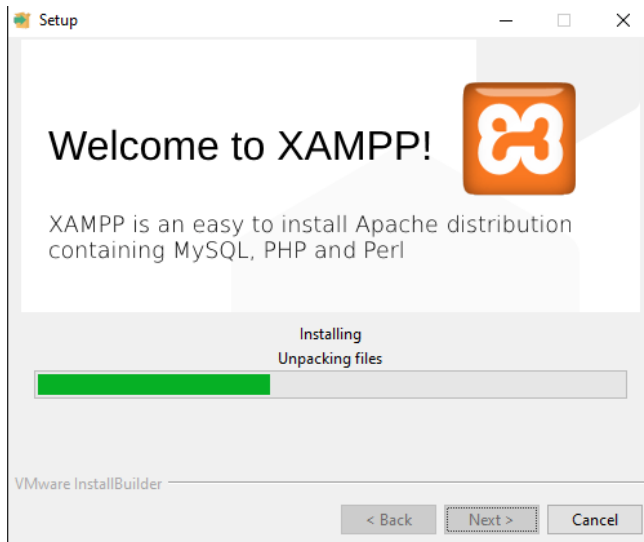
Click next



Click next

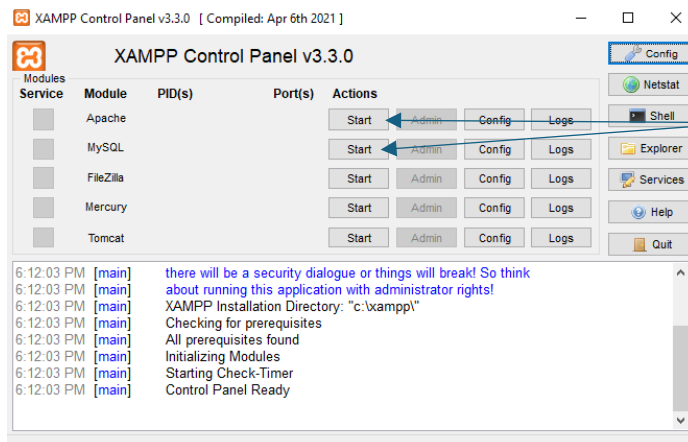


Click next



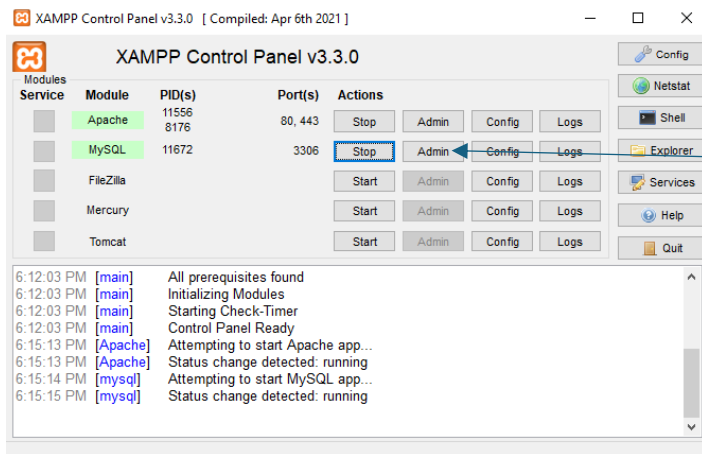
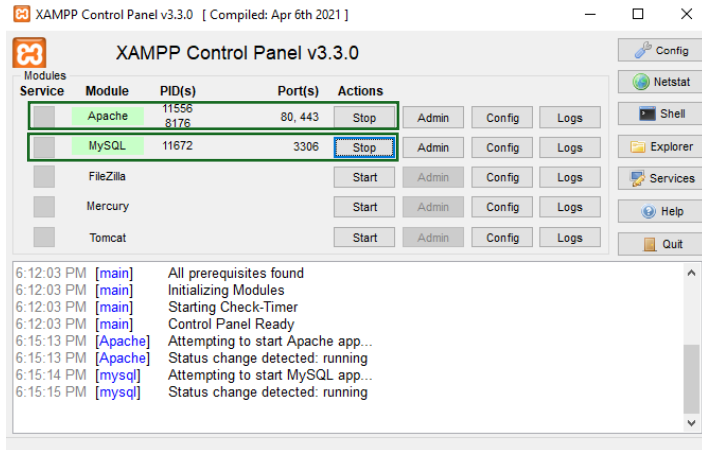
Click Finish

2. Import database into PhpmyAdmin

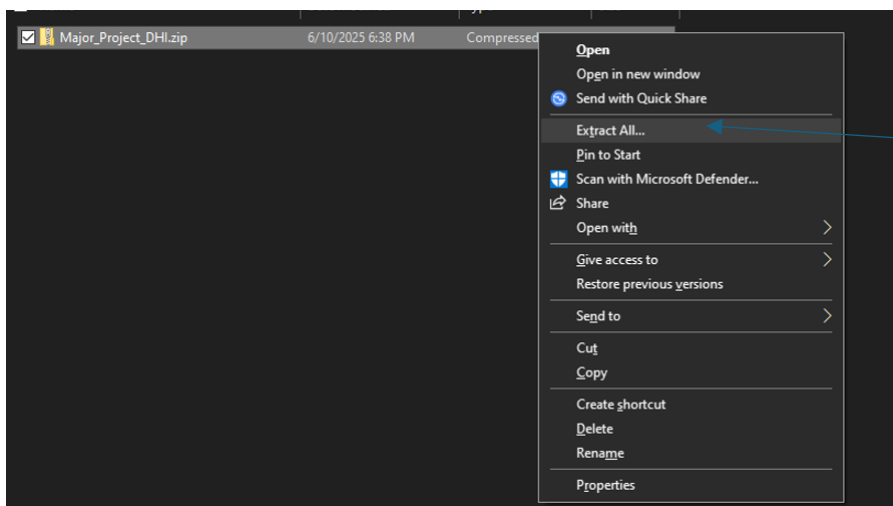


Start the Apache and MySQL module

Both modules are running

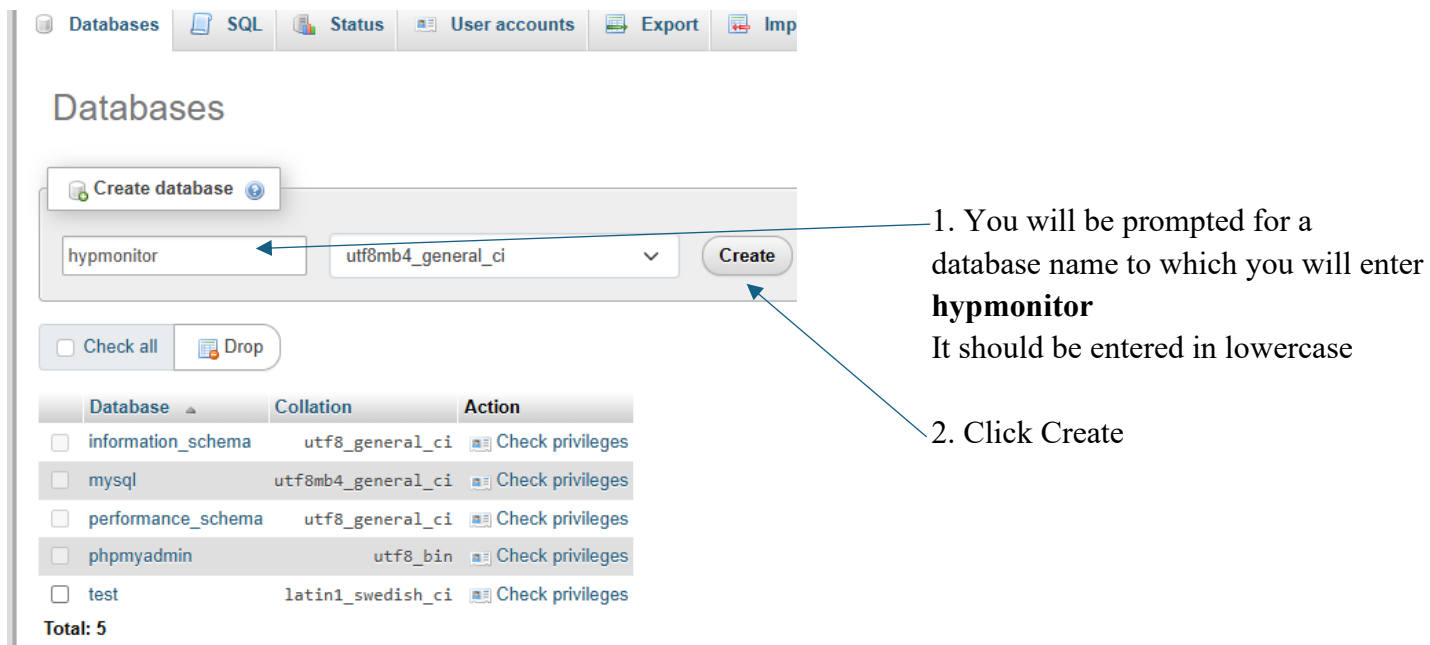
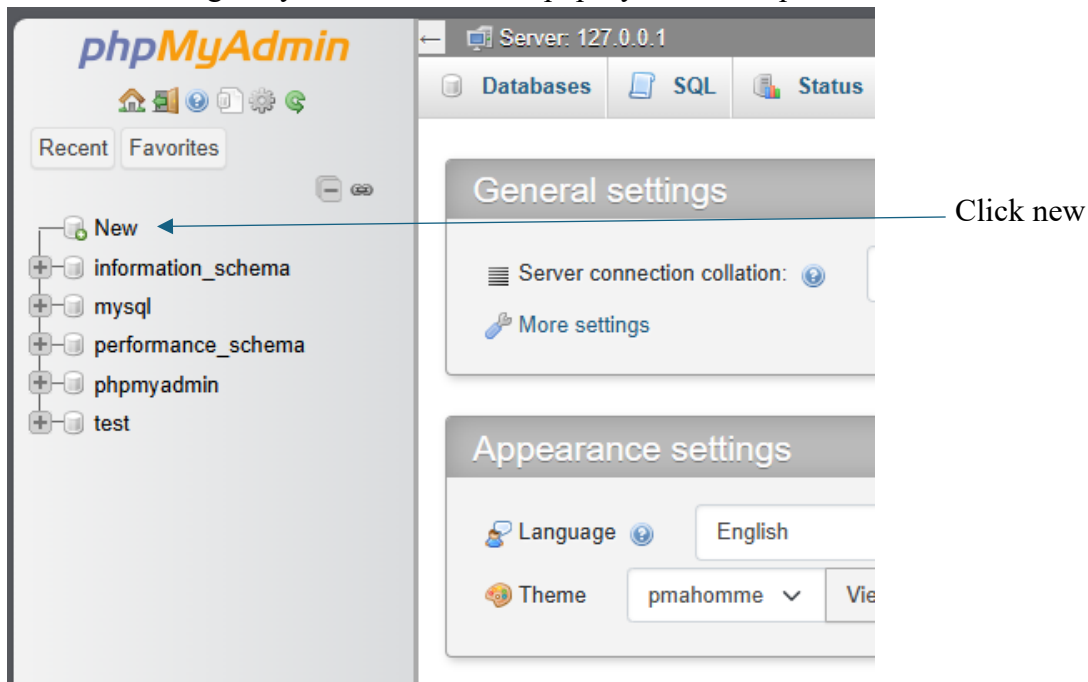


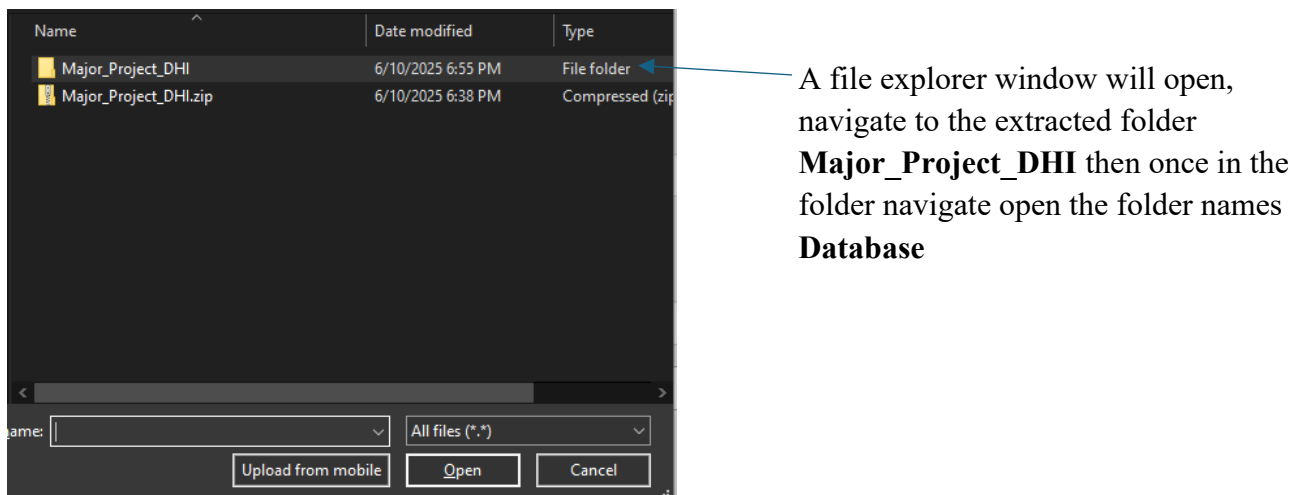
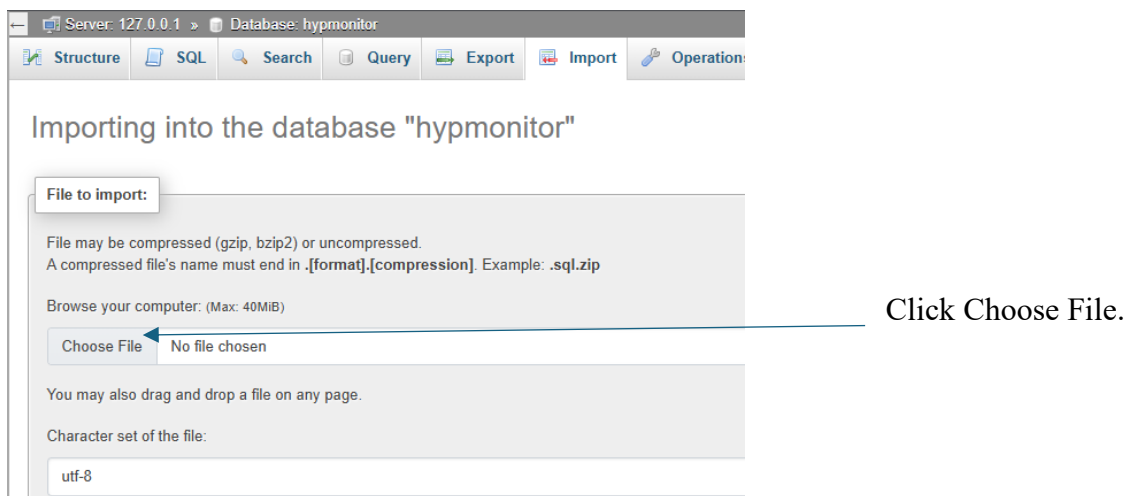
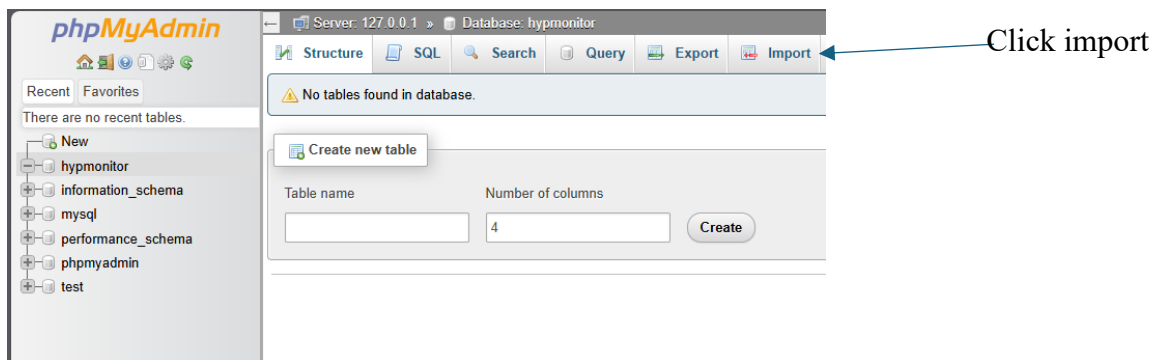
Click on Admin.
This will open your
browser where we will
import the database

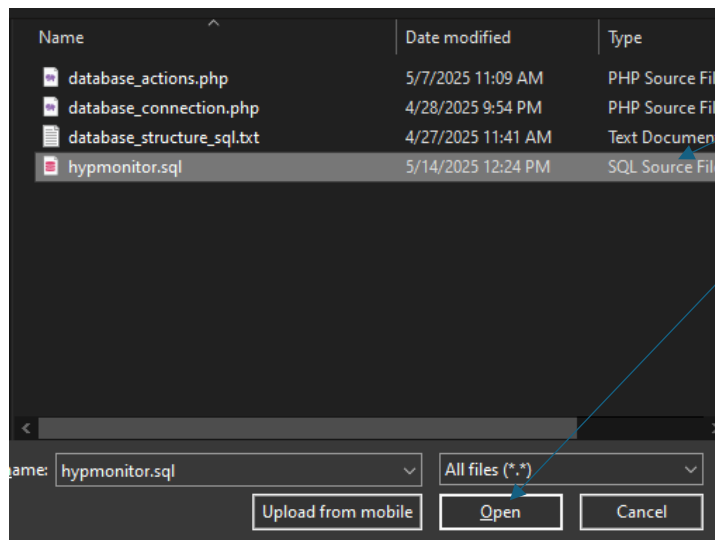


Find the zip file with the
prototype and extract it.
The zip file will be in the
same location as where this
document is

Once extracted go to your browser where phpMyAdmin is opened







1. Click **hypmonitor.sql**
2. Then click open

Importing into the database "hypmonitor"

File to import:

File may be compressed (gzip, bzip2) or uncompressed.
A compressed file's name must end in `[format].[compression]`. Example: `.sql.zip`

Browse your computer: (Max: 40MiB)

Choose File **hypmonitor.sql**

You may also drag and drop a file on any page.

Character set of the file:

utf-8

Format-specific options:

SQL compatibility mode:

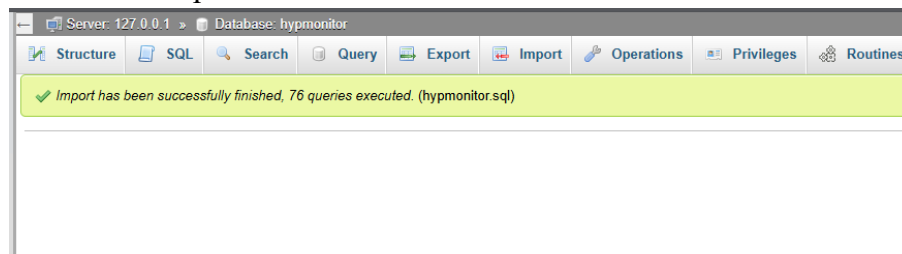
NONE

☒ Do not use AUTO_INCREMENT for zero values

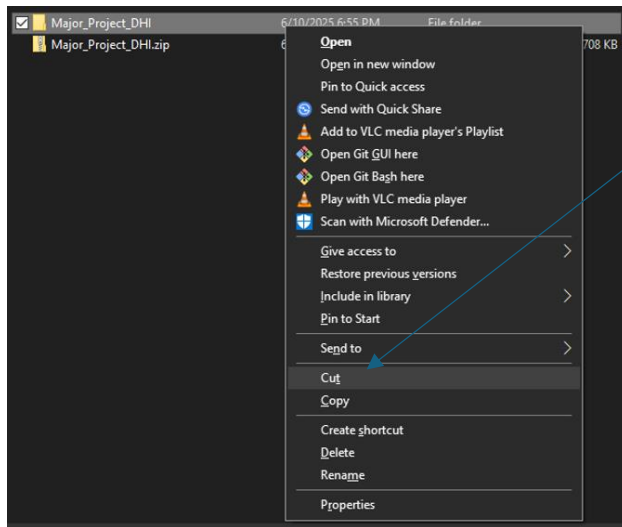
Import

1. You should be seeing the file name here.
2. Scroll down to the bottom of the page then click import

Database set up done.

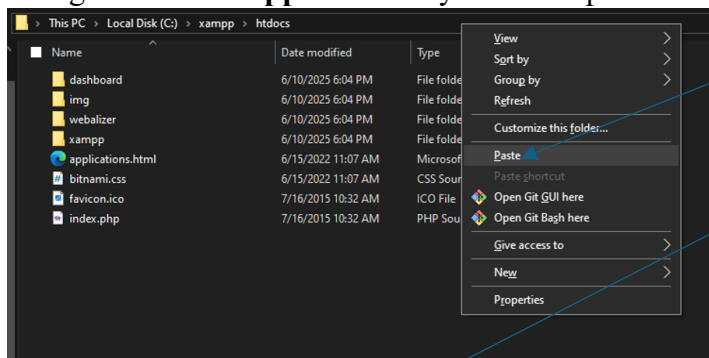


3. Move prototype folder to C:\xampp\htdocs



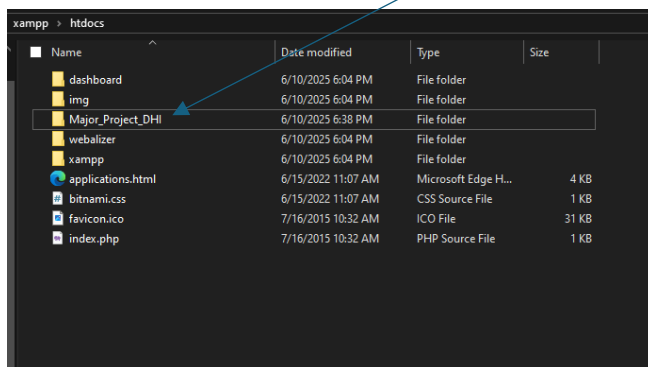
Right click on the prototype folder then select cut.

Navigate to C:\xampp\htdocs in your file explorer



Right click on an empty space then click paste.

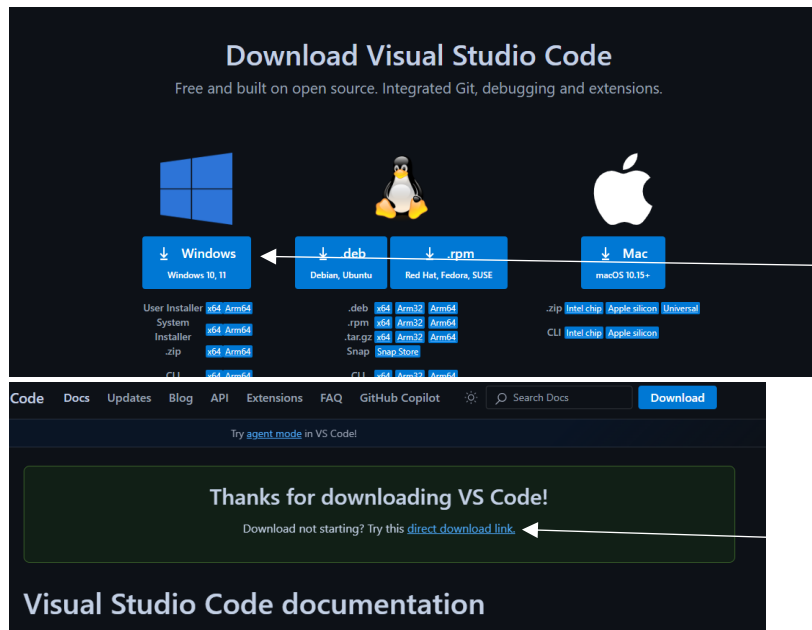
You should be seeing the folder now



4. Download Visual Studio Code (VS Code)

Go to the website and download VS Code for windows

<https://code.visualstudio.com/download>

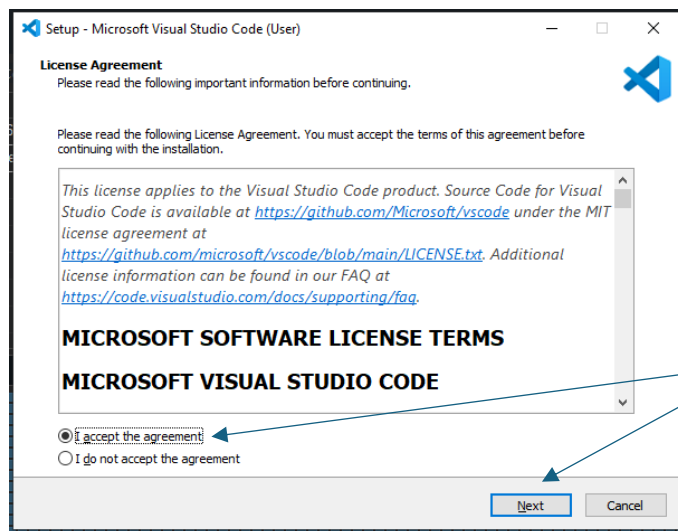


Click to download

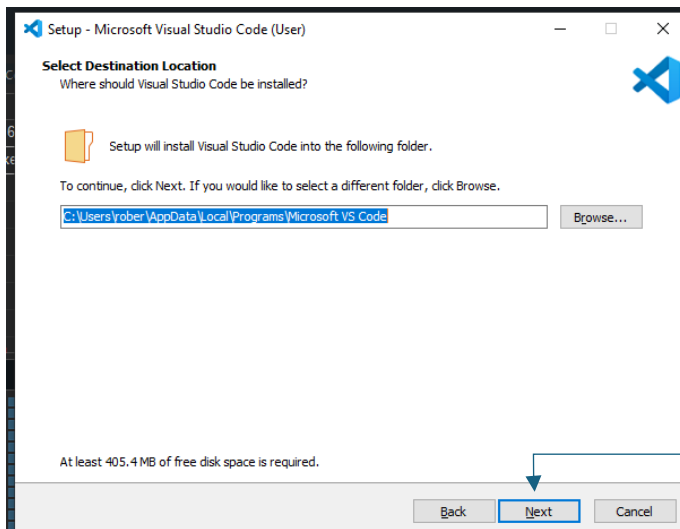
If download did not start automatically click the link

Once downloaded go to the location of the file and double click it.

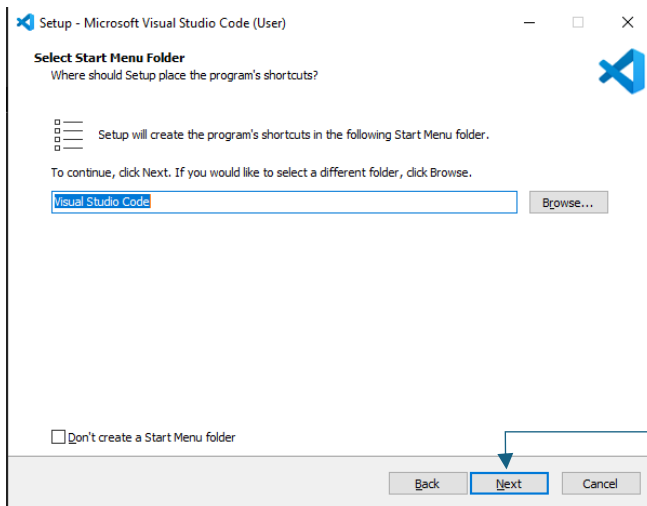
The installation window will popup and you will proceed as followed



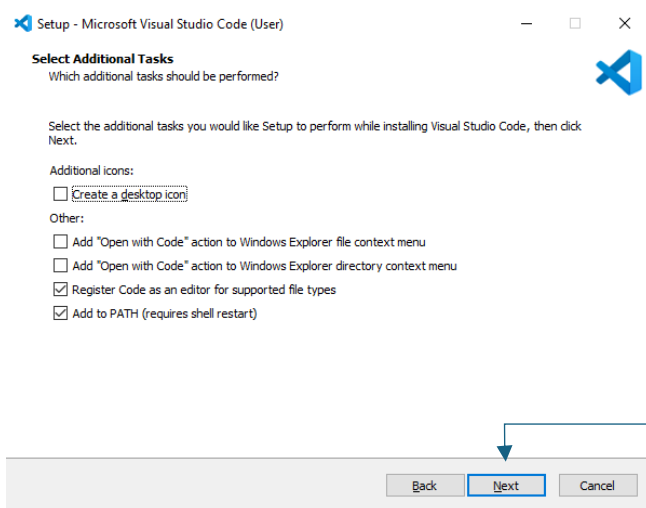
Click I accept the agreement and click next



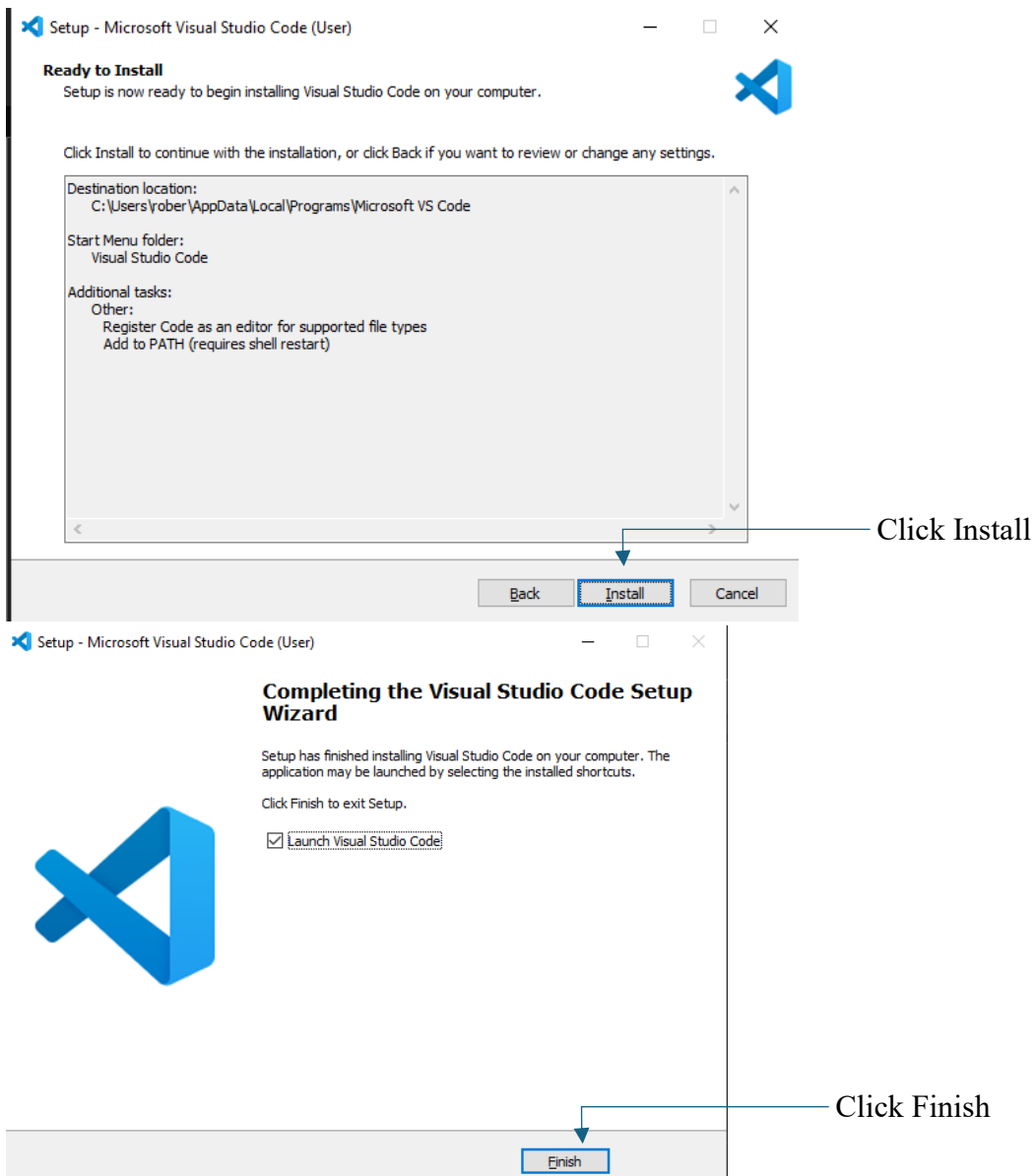
Click next



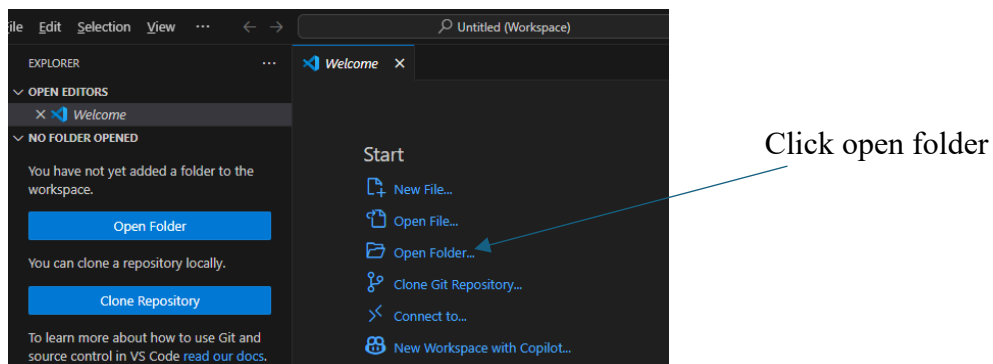
Click next

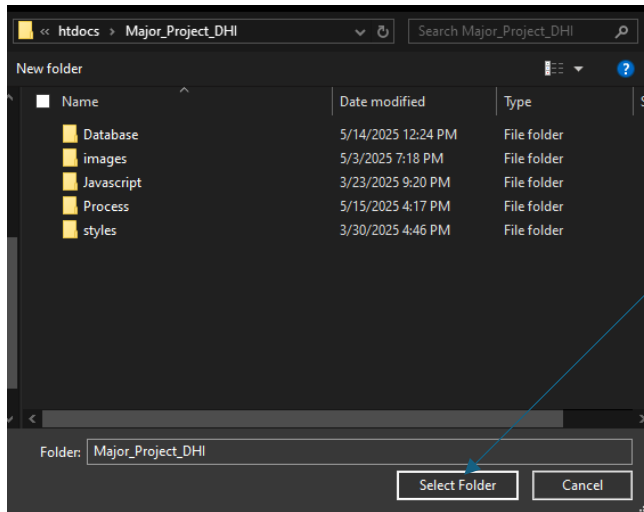


Click next



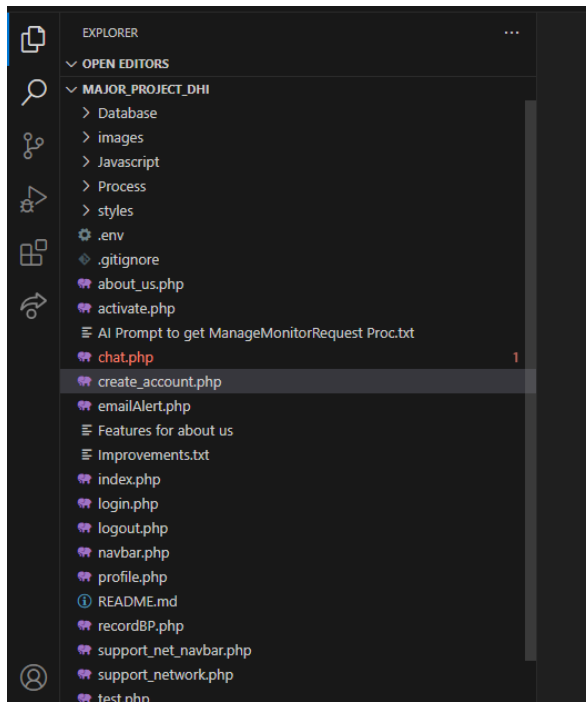
5. Open Prototype folder in VS Code and adding php to executable path



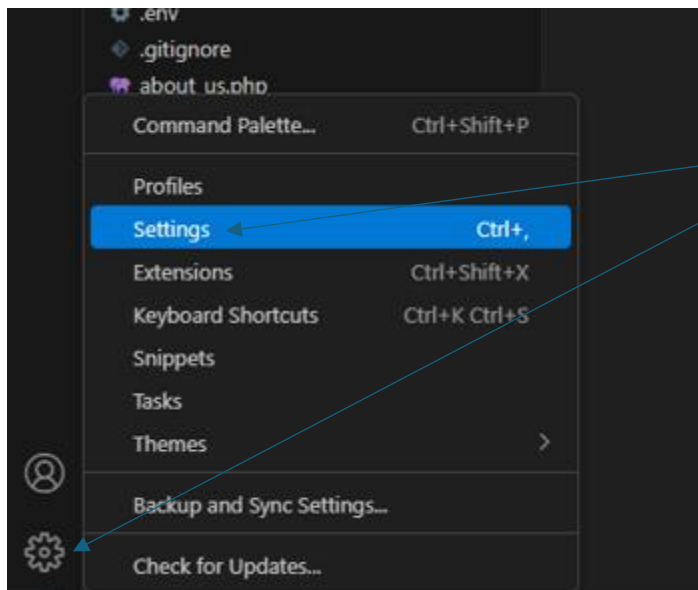


Navigate to
C:\xampp\htdocs\Major_Project_DHI

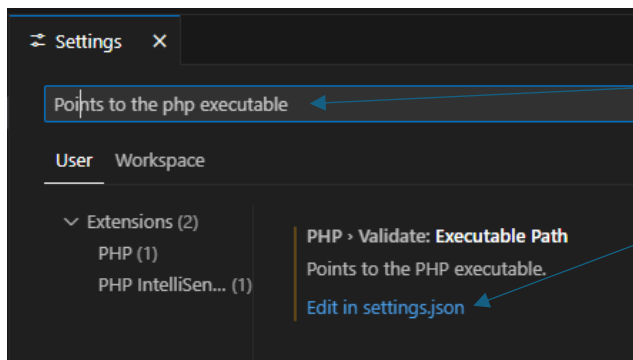
Click **Select Folder**. The folder
should then be opened in vscode



It should look like this



Click on the gear icon in the bottom left then click on settings



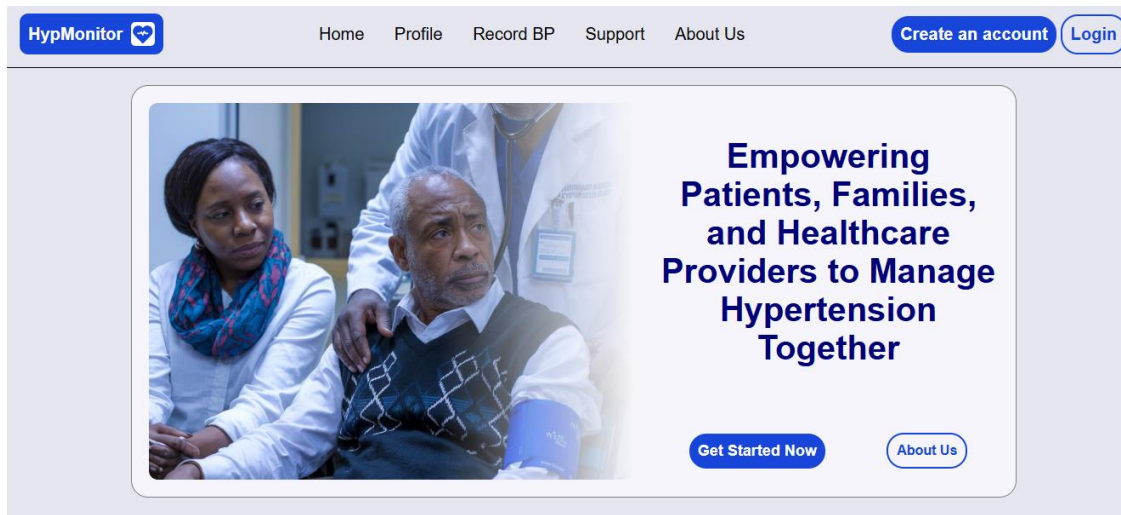
1 Enter **Points to the PHP executable**

2. Then click **Edit in settings.json**

```
1 {
2   "workbench.colorTheme": "Default Dark Modern",
3   "files.autoSave": "afterDelay",
4   "editor.mouseWheelZoom": true,
5   "workbench.iconTheme": "vscode-icons",
6   "php.validate.executablePath": "C:/xampp/php/php.exe",
7   "liveServer.settings.donotVerifyTags": true,
8   "intelliphp.inlineSuggestionsEnabled": true,
```

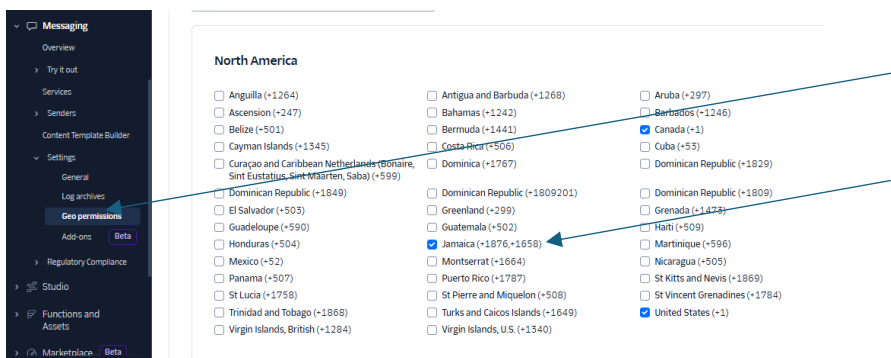
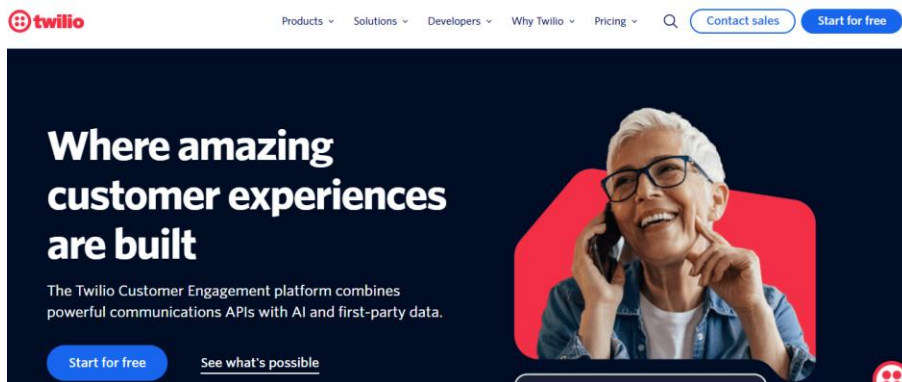
Add the line 6 to your **settings.json** file

Go to your browser and enter http://localhost/Major_Project_DHI/index.php and the home page should appear.

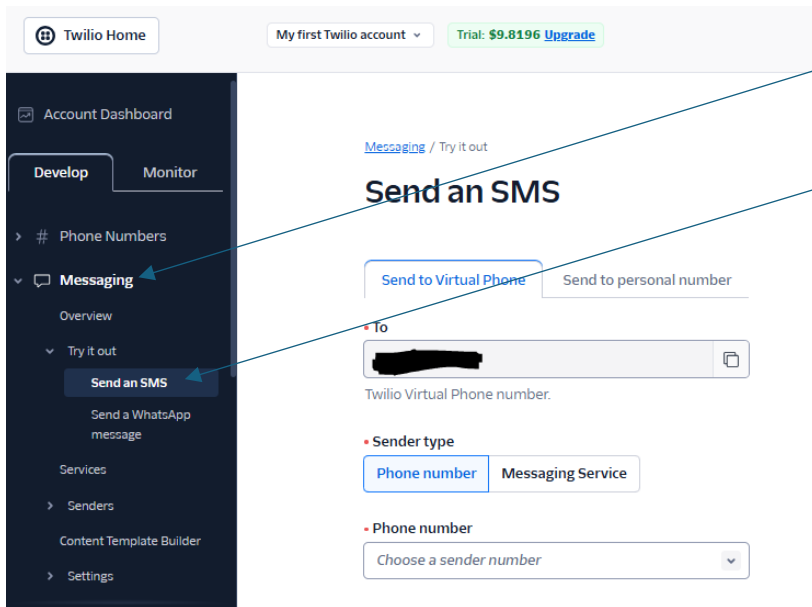


6. Setting up twilio (messaging platform)

Go to <https://www.twilio.com/en-us> and create an account



Once you have successfully created the account, in the **Account Dashboard** go to **Messaging>Settings > Geo Permission** and ensure Jamaica is ticked



In the **Account Dashboard** go to **Messaging**>**try it out** > **Send an SMS**

Send an SMS

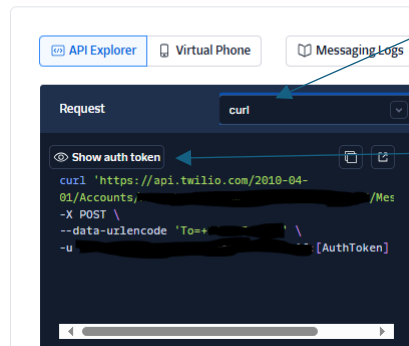
Send to Virtual Phone Send to personal number

To

Sender type
Phone number Messaging Service

Phone number
Choose a sender number

Message
Your message



1. Click **curl** and you will see a drop down being displayed, from the drop down select **php**

2. Click **Show auth token** so see the authentication token

Send an SMS

Send to Virtual Phone Send to personal number

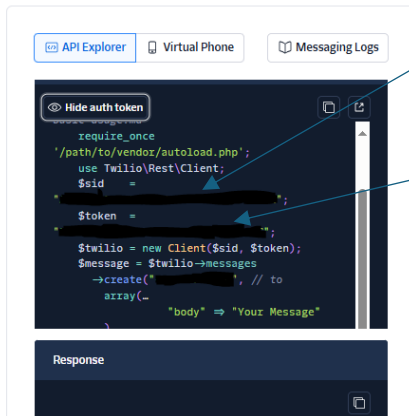
To

Sender type
Phone number Messaging Service

Phone number
Choose a sender number

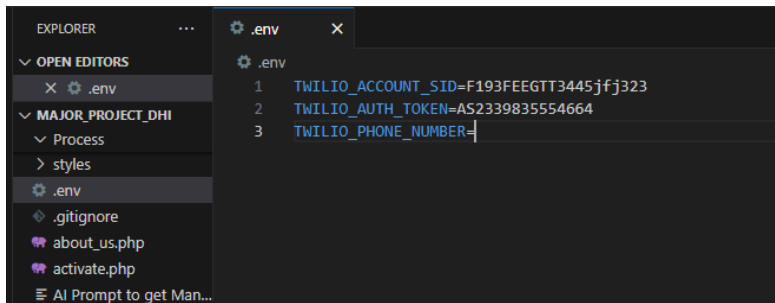
Message
Your message

Send an SMS > Copy code



Once enabled copy the value between the quotes after \$sid="[value to copy]"

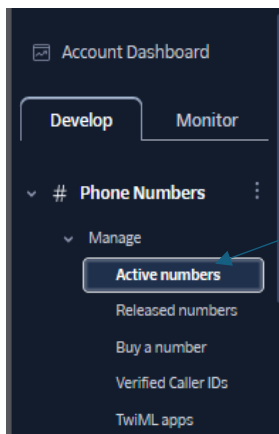
Also copy the authentication token \$token = "[value to copy]"



The screenshot shows the VS Code Explorer on the left with the file tree expanded to show the `.env` file. The main editor window displays the contents of the `.env` file, which contains three lines of configuration: `TWILIO_ACCOUNT_SID=F193FEEGTT3445jffj323`, `TWILIO_AUTH_TOKEN=AS2339835554664`, and `TWILIO_PHONE_NUMBER=`.

Go to the **.env** file in VS Code and paste the SID and auth token. There should be **NO SPACE**, ensure that there is no whitespace after the values have been entered also

Note : the SID and Auth token that you should paste is the one you got from the Twilio website. The one you see in the screenshot is not valid and is there to just give you an idea of how the values should look after you paste it.

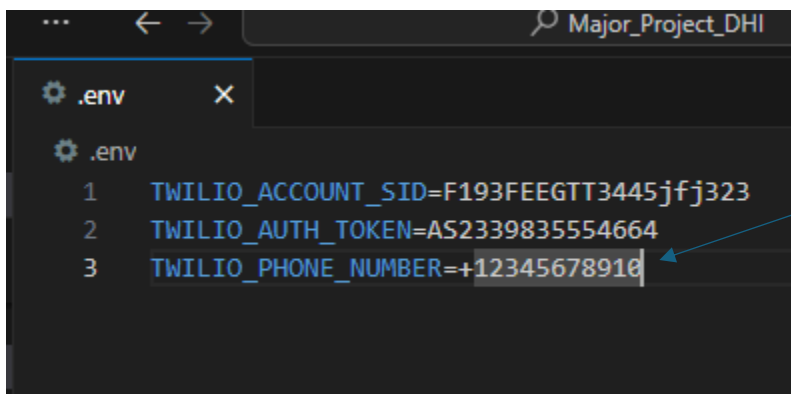


Active Numbers

Inventory Filters		Co
Number		
Number	Friendly Name	
[Redacted]	[Redacted]	
Willow Springs, MO, US	[Redacted]	

To get the phone number that Twilio has assigned to you go to the **Account Dashboard** then go to Phone Numbers > Active numbers

Copy the phone number displayed



The screenshot shows the VS Code editor with the `.env` file open. The file contains three lines of configuration: `TWILIO_ACCOUNT_SID=F193FEEGTT3445jffj323`, `TWILIO_AUTH_TOKEN=AS2339835554664`, and `TWILIO_PHONE_NUMBER=+12345678910`. The phone number is highlighted in blue.

Paste the number you copied from Twilio in the **.env** file and remove any spacing in the number

Note : the phone number that you should paste is the one you got from the Twilio website. The one you see in the screenshot is made-up and is there to just give you an idea of how the values should look after you paste it.

Verified Caller IDs

Verify a number that you own to use it as a caller ID or as the 'To' number for outbound calls/messages from the Sandbox Number. The phone numbers you buy from Twilio, or port to Twilio, can always be used as caller IDs. [Learn more about Verified Caller IDs](#)

Add a new Caller ID

Click Add a new
Caller ID

Number	Friendly Name	
<input type="text"/>	<input type="text"/>	<button>Filter</button> <button>Clear filter</button>

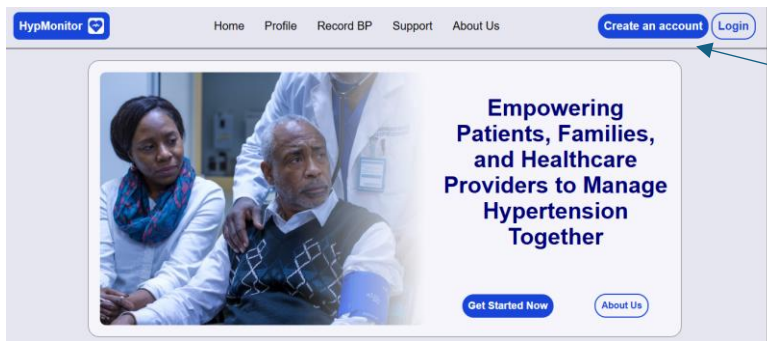
Number	Friendly Name	Actions
[REDACTED]	[REDACTED]	<button>Remove</button>
[REDACTED]	[REDACTED]	<button>Remove</button>
[REDACTED]	[REDACTED]	<button>Remove</button>

Note : The prototype includes functionality to send SMS alerts using Twilio. However, because this implementation uses a Twilio trial account, SMS messages can only be sent to verified phone numbers. To enable message delivery, each recipient's phone number must be manually added and verified in the Twilio console under the "Verified Caller IDs" section.

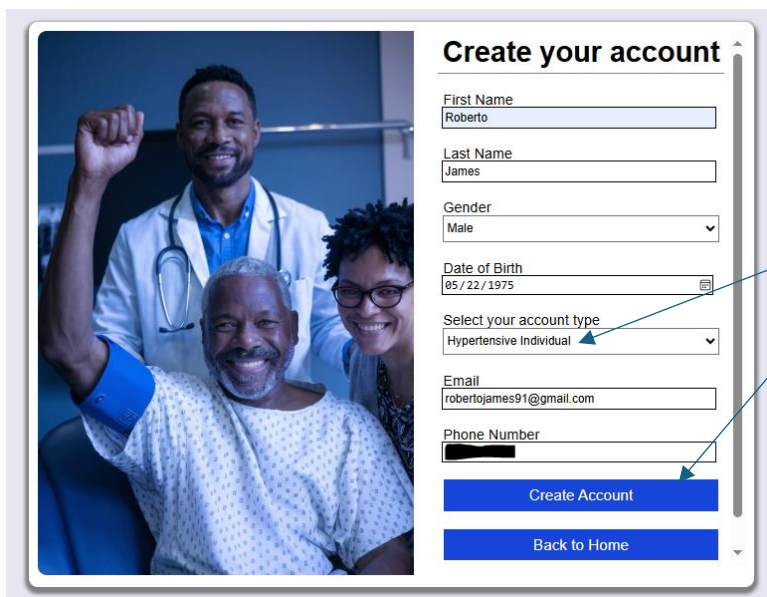
Features

In this section I will be demonstrating the main features of the prototype website

Firstly, you need to create three accounts, One for patients, Health care professional and family member



Click Create an account

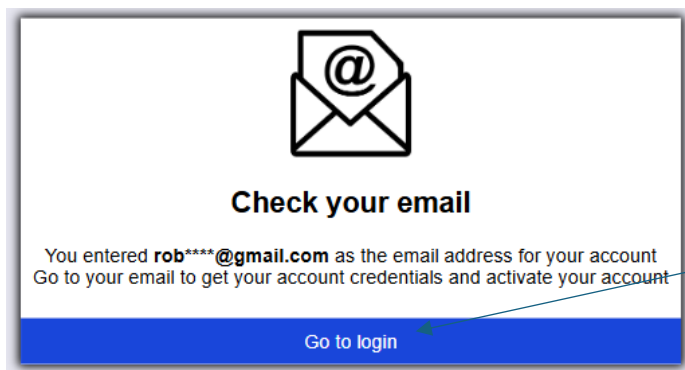
The image shows the 'Create your account' form. On the left side of the form is a photograph of a healthcare professional assisting an elderly patient. The form fields are as follows: First Name (Roberto), Last Name (James), Gender (Male), Date of Birth (05/22/1975), Select your account type (Hypertensive Individual), Email (roberto.james91@gmail.com), and Phone Number (redacted). At the bottom of the form are two buttons: 'Create Account' and 'Back to Home'.

Fill out the form and select **Create Account**.

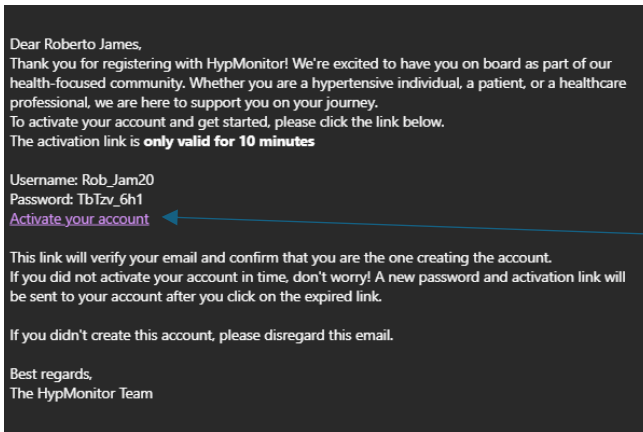
Notice that I am creating an account for a Hypertensive patient.

Ensure to use a valid email and phone number.

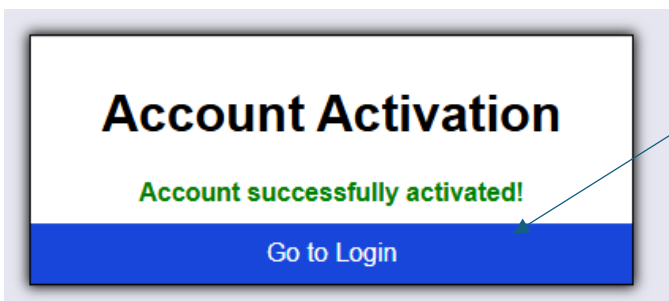
Ensure that the email you are entering you can access on the same machine you are using the website on. This needs to be done because the website is only being hosted locally



Click go to login



You should get an email with your username and password, but before you can use your email you must click **Activate your account** for you to be able to login



If you click the link in time your account should be activate.

Now head to the login page and enter your credentials which is the username and password that was sent to your email

Once logged in you will be on the recordBP page where you will see a form asking you to enter your readings and a chart and table showing your blood pressure info.

Feature 1 : Adding daily blood pressure readings

You can go ahead and enter some normal BP readings

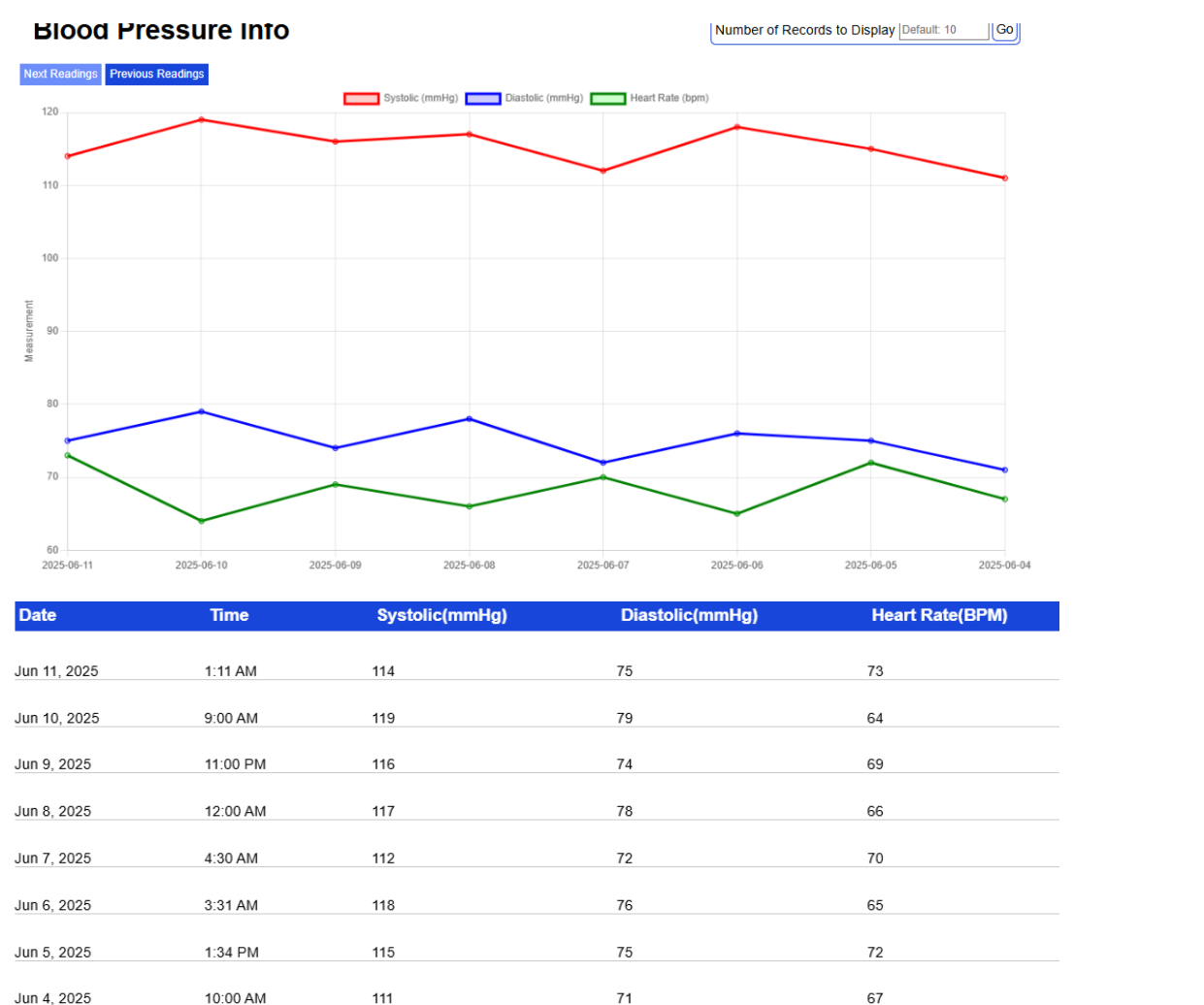
Systolic: 90 – 135 mm Hg

Diastolic: 60 – 90 mm Hg


A screenshot of the HypMonitor web application. The top navigation bar includes the HypMonitor logo, a heart icon, and links for Home, Profile, Record BP, Support, and About Us. A user profile dropdown shows "Rob_Jam20" with a checkmark. The main content area displays a "Track your blood pressure" form. The form asks the user to "Please enter today's readings" and includes input fields for "Systolic (mmHg)", "Diastolic (mmHg)", and "Pulse / Heart Rate (BPM)". It also has fields for "Date" (mm/dd/yyyy) and "Time" (hh:mm). At the bottom of the form are "Confirm Reading" and "Cancel" buttons.

Its best to enter a couple normal readings just to see how the chart displays the hypertension

Blood Pressure Info Number of Records to Display



Now, create two additional accounts that will be added to your support network. Create an account for family members and create an account for Health care Professionals

HypMonitor


Home

Profile

Record BP

Support

About Us

Rob_Jam20

Create an account

Logout

Track your blood pressure

Please enter today's readings

Systolic (mmHg)

Diastolic (mmHg)

Pulse / Heart Rate (BPM)

Date

Time

Confirm Reading

Cancel

Click the arrow beside
username to logout or create
another account

Create your account

First Name

Last Name

Gender
 Select an option

Date of Birth
 mm / dd / yyyy

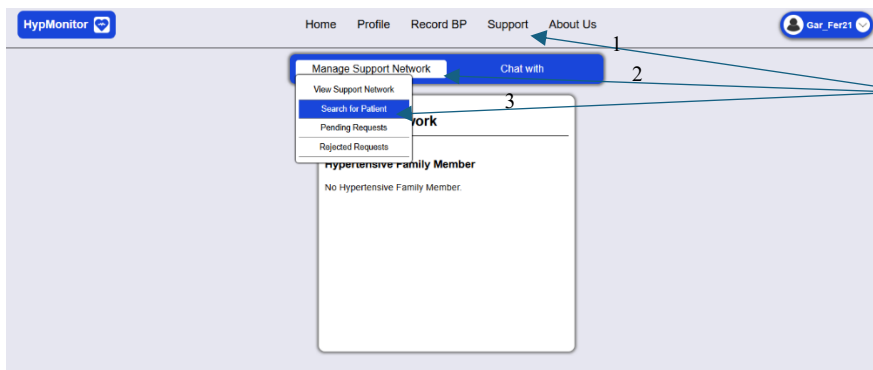
Select your account type
 Select an option

Email

Phone Number
 876-123-4567

Create two more accounts, a Family member and a Healthcare Professional

Feature 2 :Add someone to your support network



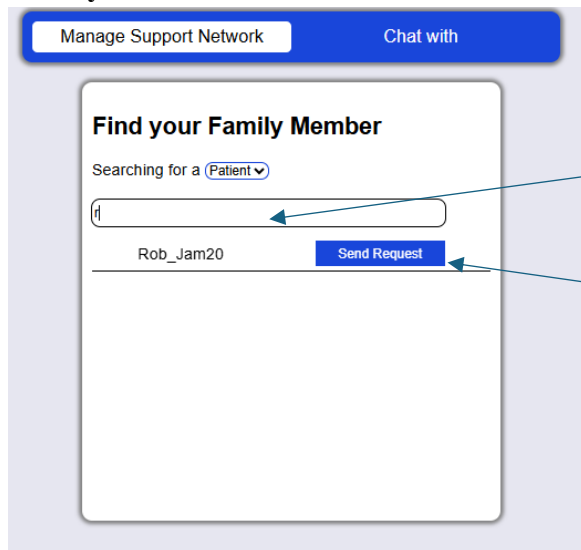
When you create the account for the family member and Health care professional

1.Click support in the navbar then

2.hover the mouse over **Manage support Network** then

3.click **Search for Patient**

Family Member View



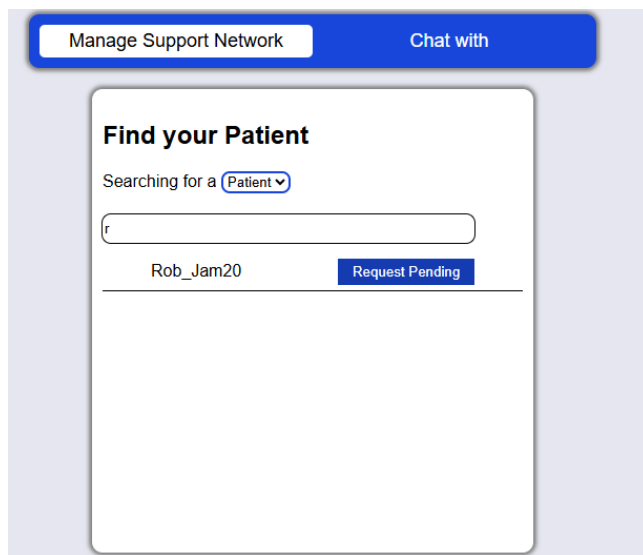
Enter the username of the patient.

Note: you do not need to enter the full username of the patient. The closest match will appear upon entering each letter

When you find the username of the patient you are looking for click **Send Request**

The same should also be done for the Health Professional

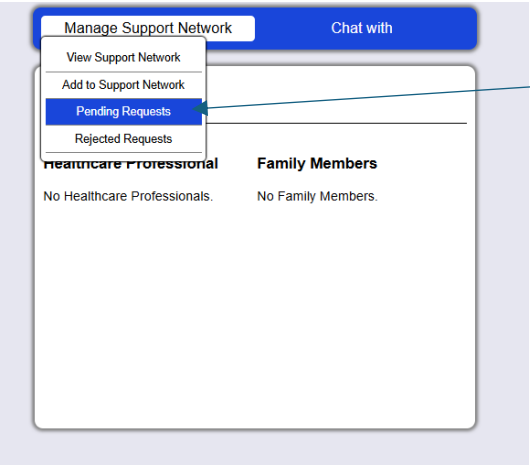
Health Care Professionals View



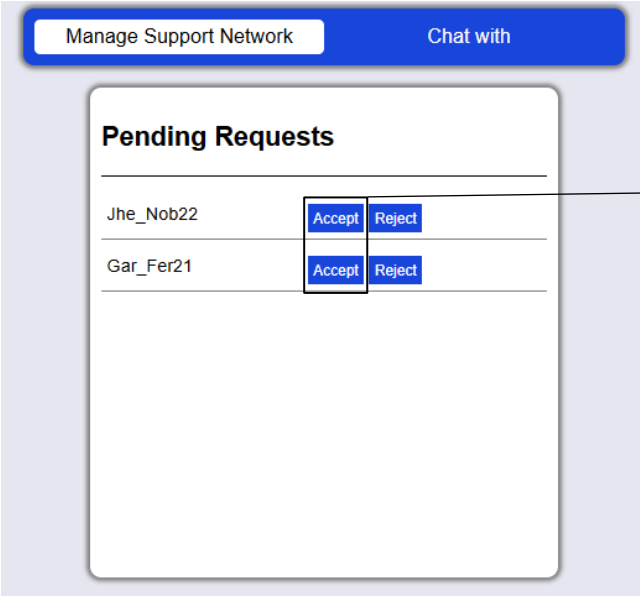
Health Professional also send request to the patient

Note: The Patient is capable of sending a request to both the Health care Professional and Family member but a Healthcare Professional and Family Member is only capable of sending a request to a Patient

Patient View

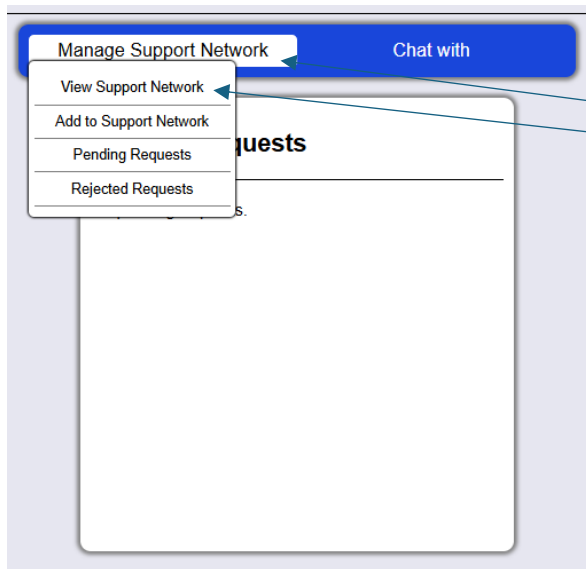


Go to Support page then go to **Pending Requests**

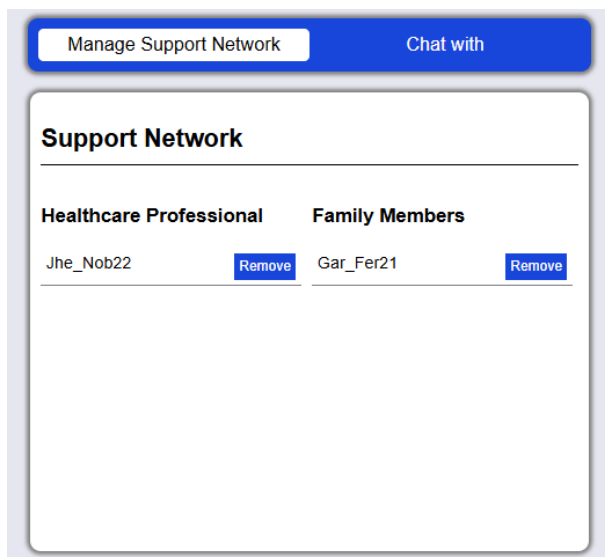


Accept both requests

Patient View



Hover over **Manage Support Network** and click **View Support Network**.

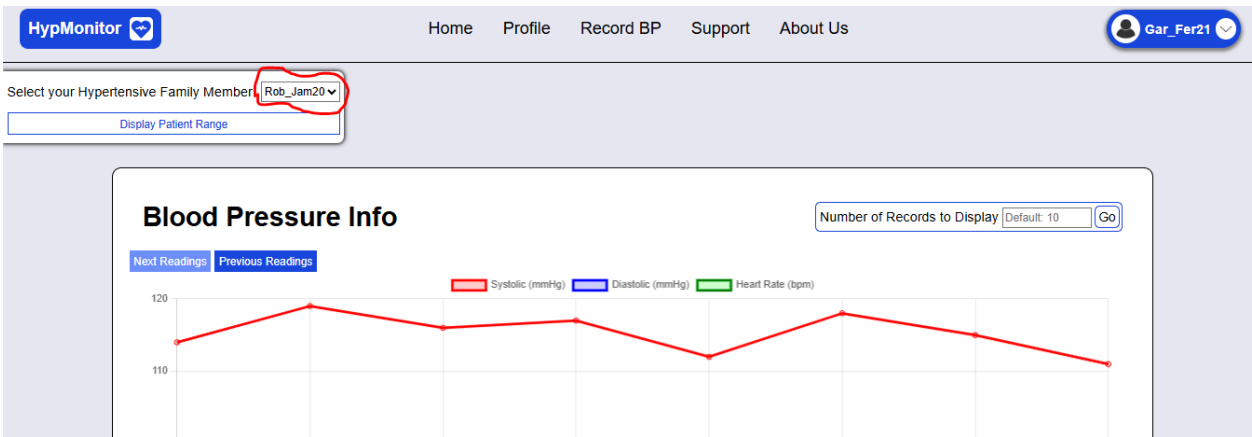


Here you will see family members and the health care professional you accepted.

Family Member View

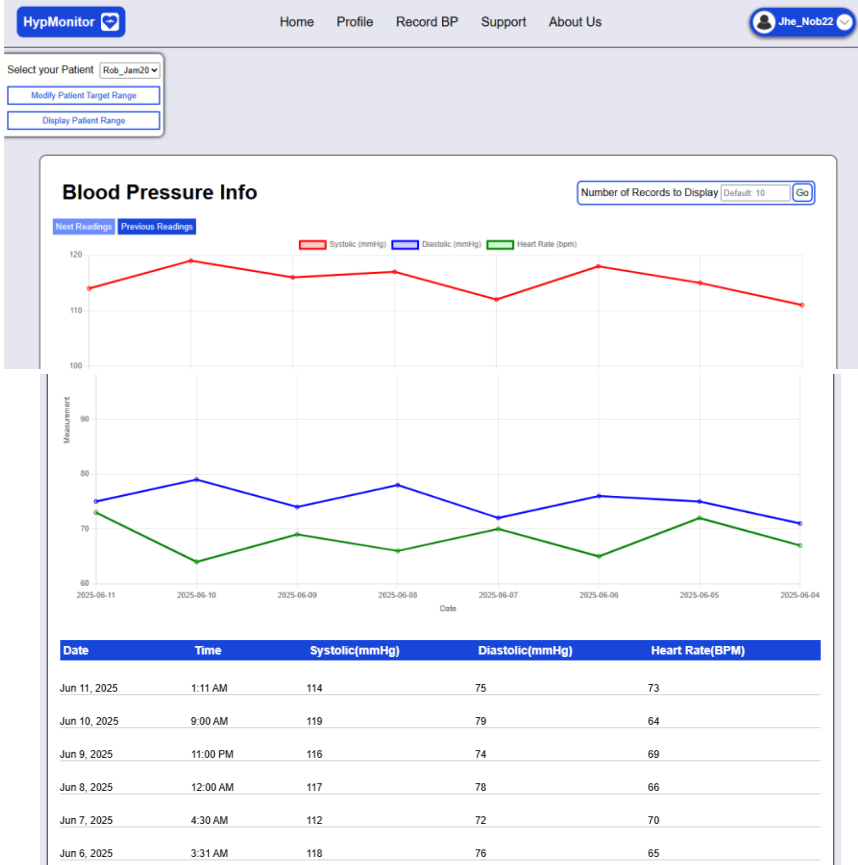
Go to the recordBP page and you will now be able to see the reading of the hypertensive family member that has added you to their support network. If the family member is apart of multiple

patients support network they are free to look at the hypertensive reading for each of them by clicking on the dropdown.



Health Care Professional (HCP) View

Similar to family members, HCP can view a patient's hypertensive readings. Additionally, HCPs have the ability to update the patient's target blood pressure range. If the patient's readings fall outside this specified range, all members of the patient's support network will be notified.



Feature 3 : Email and SMS Alert of high Blood pressure reading

To demonstrate this feature, you can go to the Patient's view and enter a high or low blood pressure reading

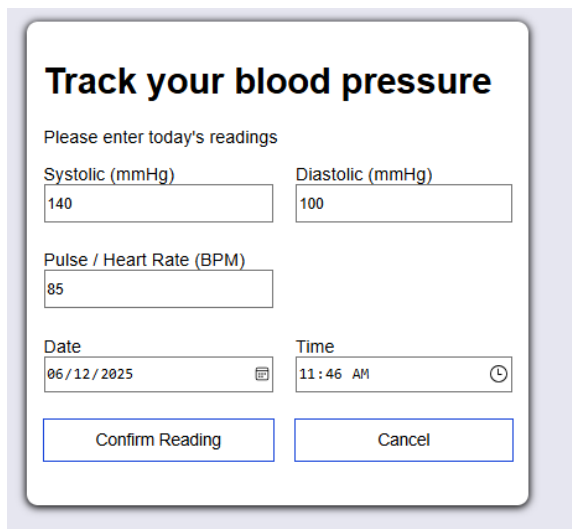
This is the default target range.

Systolic: 90 – 135 mm Hg

Diastolic: 60 – 90 mm Hg

This default target range can be modified by a HCP at any time

Patient View



Track your blood pressure

Please enter today's readings

Systolic (mmHg)	Diastolic (mmHg)
140	100

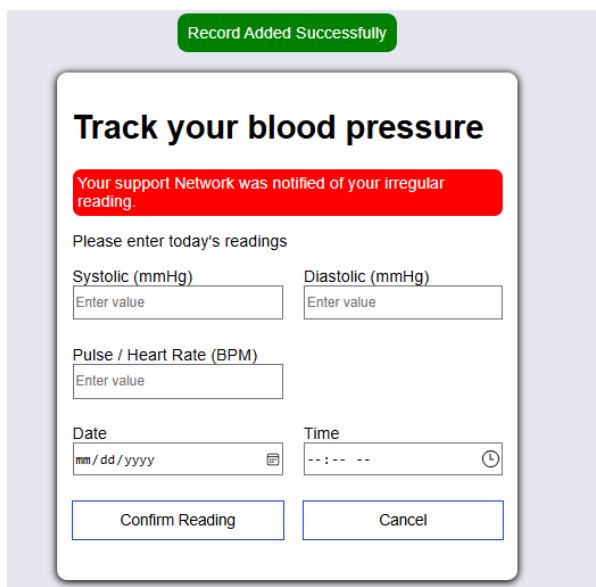
Pulse / Heart Rate (BPM)

85

Date	Time
06/12/2025	11:46 AM

Confirm Reading Cancel

Enter a reading that is out of range



Record Added Successfully

Track your blood pressure

Your support Network was notified of your irregular reading.

Please enter today's readings

Systolic (mmHg)	Diastolic (mmHg)
Enter value	Enter value

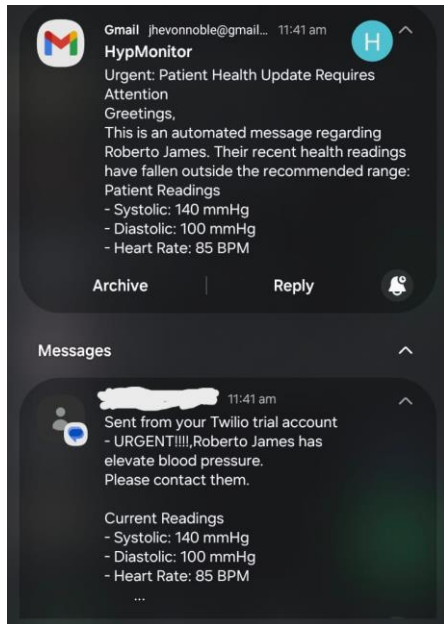
Pulse / Heart Rate (BPM)

Enter value

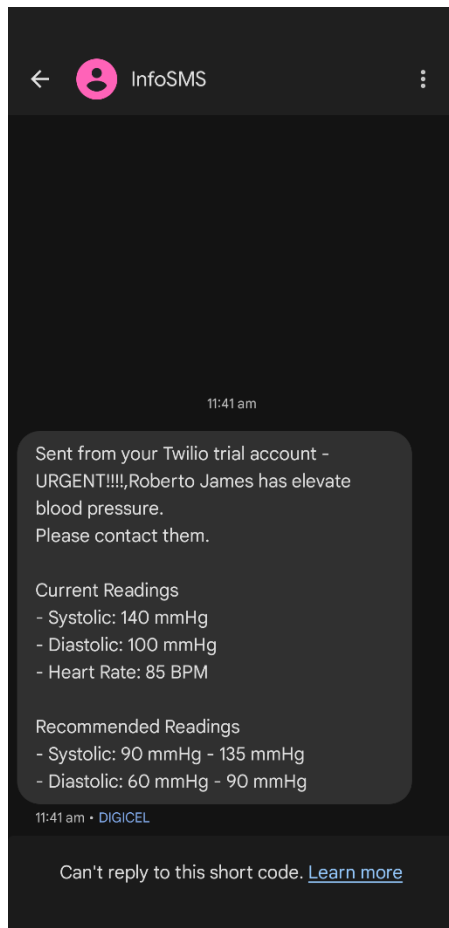
Date	Time
mm/dd/yyyy	--:--:--

Confirm Reading Cancel

After entering a reading that is out of range the Patient will be greeted with this message letting them know that their readings are out of range and their support network will be notified

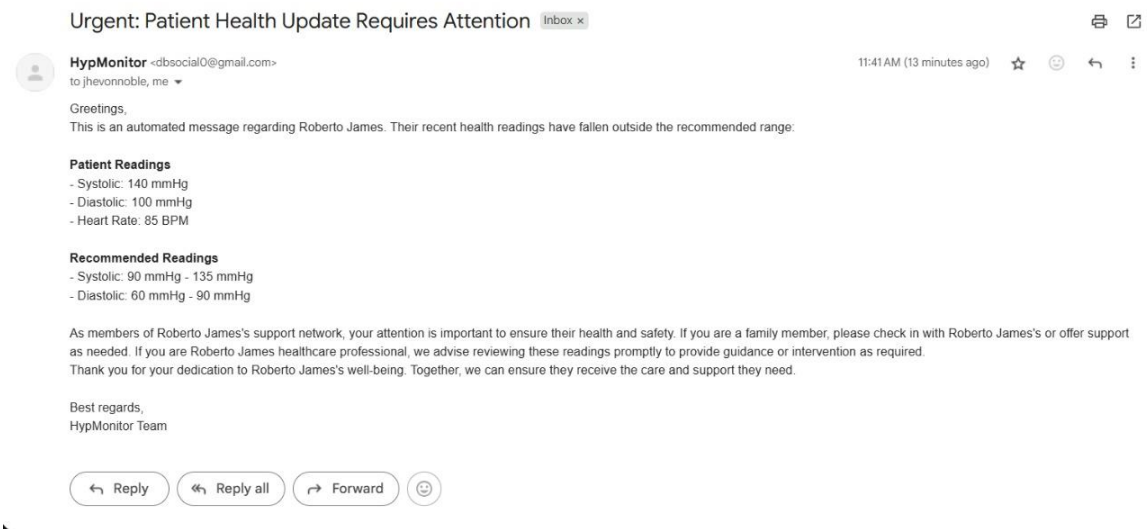


Sms and email alert received by the HCP



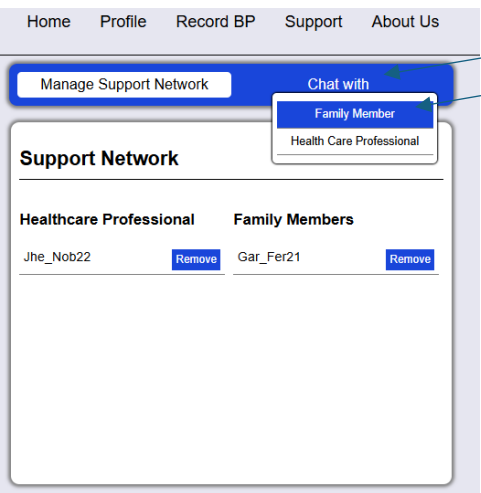
Sms received by the Family Member

Email Received by Family Member



Feature 4 : Online Chat

Patient View



On the **support** page the user can hover over **Chat with** and select who they want to talk to

Note: A patient can send messages to either a family member or HCP. The HCP and Family Member are only able to send messages to a Patient. A HCP cannot speak to patient or vice-versa.

Patient – Family Member Messaging

Patient View



The Patient View interface shows a chat window titled "Family Chat". At the top, there are two buttons: "Manage Support Network" and "Chat with". Below the title bar, the chat area displays messages from "Gar_Fer21" and a response from the patient. The messages are dated "Jun 12, 2025". The patient's response is "not so good" at 12:43 PM. The chat input field at the bottom contains the text "yes, it is" and a "Send" button.

Manage Support Network Chat with

Family Chat

Jun 12, 2025

Gar_Fer21
hey, how are you feeling
12:43 PM

not so good
12:43 PM

Gar_Fer21
I got a notification that your blood pressure is high
12:44 PM

yes, it is

Send

The family chat functions like a group chat. At the moment, the patient has only one family member in their support network, but more can be added over time. Once added, all family members will be able to send messages to the patient and view each other's messages, allowing for collaborative support and communication.

Family Member View



The Family Member View interface shows a chat window titled "Family Member Chat". At the top, there are two buttons: "Manage Support Network" and "Chat with". Below the title bar, there is a dropdown menu showing "Rob_Jam20". The chat area displays messages from "Rob_Jam20" and a response from the family member. The messages are dated "Jun 12, 2025". The family member's response is "hey, how are you feeling" at 12:43 PM. The chat input field at the bottom contains the text "Type your message..." and a "Send" button.

Manage Support Network Chat with

Family Member Chat Rob_Jam20

Jun 12, 2025

Rob_Jam20
not so good
12:43 PM

hey, how are you feeling
12:43 PM

I got a notification that your blood pressure is high
12:44 PM

Type your message...

Send

In the family member view, there is a dropdown menu that allows the user to select which patient they want to message. This is especially useful for family members who are part of multiple support networks. If a family member supports more than one hypertensive patient, they can simply choose the desired patient from the dropdown and send a message directly to that chat group.

Patient – HCP Messaging

Patient View

The Patient View interface shows a chat window titled "Health Professional Chat : Jhevon Noble". At the top, there is a "Manage Support Network" button and a "Chat with" dropdown menu. The chat history shows a date separator for "Jun 12, 2025". The messages are as follows:

- From Jhe_Nob22 (12:55 PM): "Hey James, I just saw a rise in your Blood pressure reading today"
- To Rob_Jam20 (12:56 PM): "Yes doc I ran out of my medication yesterday"
- From Jhe_Nob22 (12:56 PM): "visit the office tomorrow for a check up"

At the bottom, there is a text input field labeled "Type your message..." and a "Send" button.

Health Care Professional View

The Health Care Professional View interface shows a chat window titled "Patient Chat" with a dropdown menu currently set to "Rob_Jam20". The chat history shows a date separator for "Jun 12, 2025". The messages are as follows:

- To Rob_Jam20 (12:55 PM): "Hey James, I just saw a rise in your Blood pressure reading today"
- From Rob_Jam20 (12:56 PM): "Yes doc I ran out of my medication yesterday"
- To Rob_Jam20 (12:56 PM): "visit the office tomorrow for a check up"

At the bottom, there is a text input field labeled "Type your message..." and a "Send" button.

In the Health Care Professional (HCP) view, a dropdown menu is provided to allow the HCP to select which patient they wish to message. This is particularly useful for professionals who are part of multiple patient support networks. If an HCP is supporting more than one hypertensive patient, they can easily choose the relevant patient from the dropdown. Unlike the family chat, the HCP-to-patient messaging is a **one-to-one chat**, meaning only the HCP and the selected patient can view and participate in the conversation.