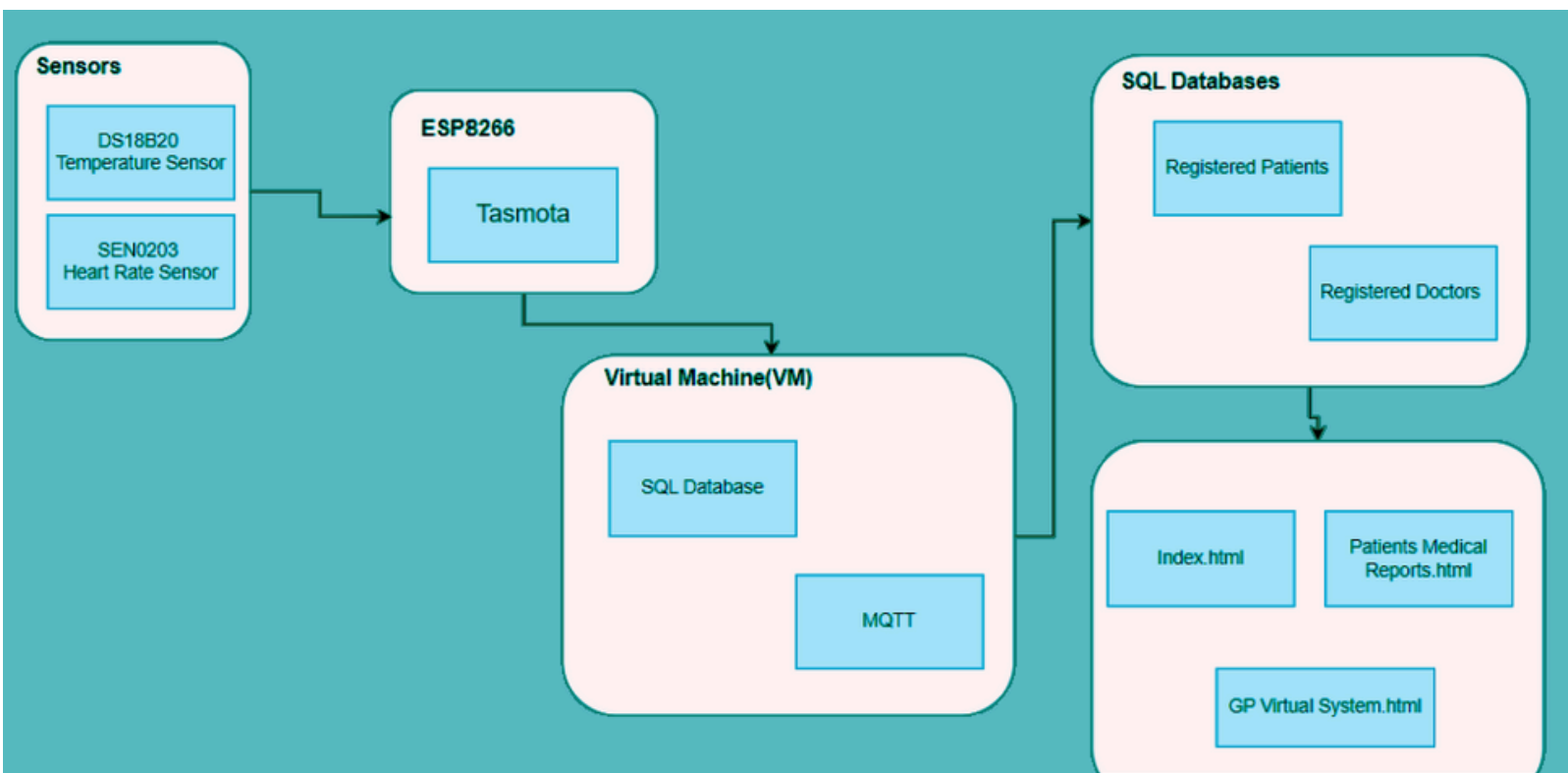


GP VIRTUAL SYSTEM



What?

- Developed a GP Monitoring System, a virtual health device that uses sensors to monitor body temperature, blood pressure, and heart rate. Data is stored in a SQL database and generates medical reports, allowing access to patient health data over extended periods.
- Utilized SQL databases for backend integration and HTML operated websites for frontend integration.
- ESP8266 chip used for the projects IoT capabilities,
- Integrated TC74 temperature sensor and SEN0203 Heart rate sensor with Tasmota and Arduino connecting to software tools like HTML Websites for data management.

GP VIRTUAL SYSTEM



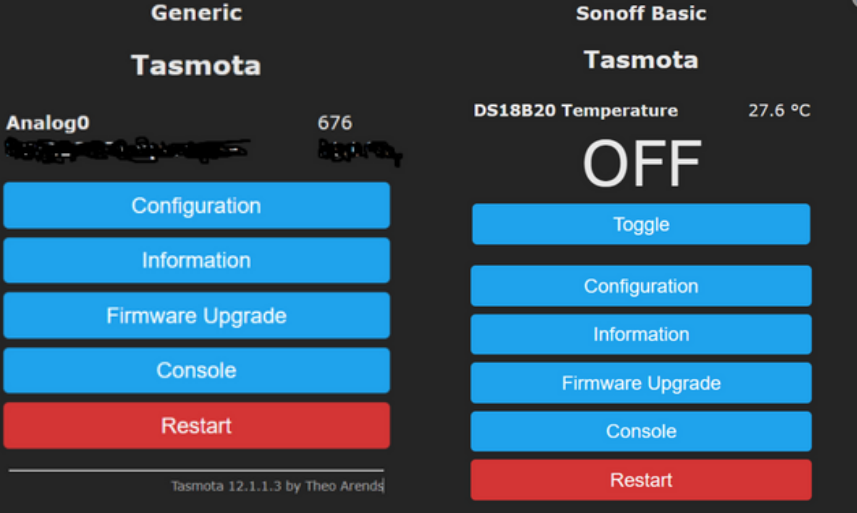
What?

Tasmota Configuration:

- Tasmota is an open-source platform based on devices which it allows smart devices to communicate to wireless network protocol called MQTT.

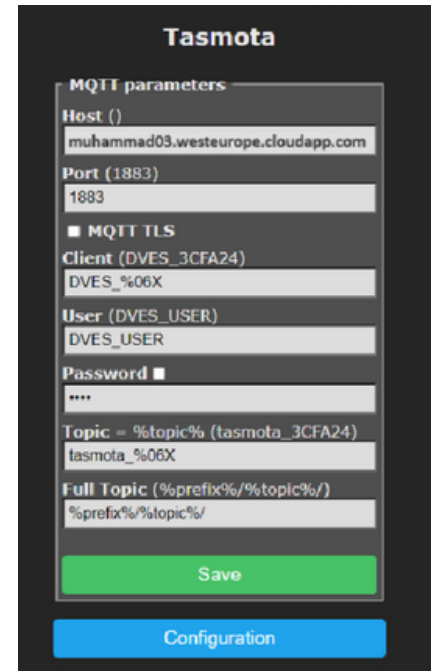
How?

- The Tasmota configuration was done by configuring the ESP tool commands and the ESP bin file and using the Termite which is a serial terminal program for Windows Operating System.



Results

- Configured Tasmota using its Wi-Fi IP address to match settings for the DS18B20 Temperature sensor and SEN0203 Heart rate sensors. This setup accurately displays sensor readings directly on the Tasmota home screen..



Results

- Using the networking ports on Microsoft Azure and the console on Tasmota, the MQTT parameters were successfully connected.

| | | |
|-----|-------------------------|------|
| 320 | MQTT | 1883 |
| 340 | Grafana | 3000 |
| 350 | Portainer | 9000 |
| 360 | AllowAnyCustom80Inbound | 80 |
| 380 | influxdb | 8086 |
| 390 | NodeRed | 1880 |

```

Connected
Web server active on tasmota-3CFA24-6692 with IP address 192.168.1.97
Attempting connection...
Connected
tele/tasmota_3CFA24/LWT = Online (retained)
cmnd/tasmota_3CFA24/POWER =
tele/tasmota_3CFA24/INFO1 = {"Info1":{"Module":"ESP32-S3-DevKitC-1-JS","Version":"13.2.0.1","Info2":{"WebServerMode":"Admin","Hostname":"tasmota-3CFA24","Info3":{"RestartReason":"Usb uart reset digital core","BootCount":1,"Power":"ON"}}}}
stat/tasmota_3CFA24/RESULT = {"POWER":"ON"}
stat/tasmota_3CFA24/POWER = ON

```

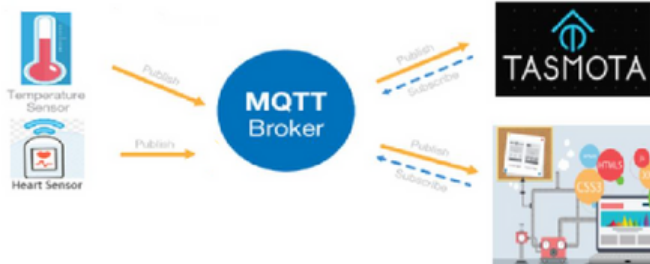


Table of Registered Patients in the database:

| | id | name | password | medical id |
|---|----|----------|----------|-------------|
| ▶ | 1 | jamie | 654321 | jamie123 |
| | 2 | john | 654321 | john123 |
| | 3 | adam | 654321 | adam123 |
| | 4 | igor | 654321 | igor123 |
| | 5 | benedict | 654321 | benedict123 |
| | 6 | japhet | 654321 | japhet123 |
| | 7 | lauren | 654321 | lauren123 |
| | 8 | isabelle | 654321 | isabelle123 |
| | 9 | jed | 654321 | jed123 |
| | 10 | thomas | 654321 | thomas |

Table of Registered Doctors in the database:

| | id | name | password | medical id |
|---|----|--------------------|----------|-------------|
| ▶ | 1 | Dr.James Power | 654321 | james123 |
| | 2 | Dr.Mark Sow | 654321 | mark123 |
| | 3 | Dr.Micheal o'neill | 654321 | micheal123 |
| | 4 | Dr.Conor D'higgins | 654321 | conor123 |
| | 5 | Dr.John down | 654321 | john123 |
| | 6 | Dr.Reynolds S | 654321 | reynolds123 |
| | 7 | Dr.Stephen Pow | 654321 | stephen123 |
| | 8 | Dr.Jake ryan | 654321 | jake123 |
| | 9 | Dr.Jack tow | 654321 | jack123 |
| | 10 | Dr.Sweetman | 654321 | sweetman123 |
| | 11 | Dr.Canning | 654321 | canning123 |
| | 12 | Dr.Aaron | 654321 | aaron123 |

What?

MQTT Configuration

- MQTT is a message protocol or collection of rules for machine-to-machine communication. It works with Smart sensors, wearables, and other Internet of Things (IoT) devices.

How?

- Using a Mosquitto server on Microsoft Azure, the MQTT setup was set up as a broker. The DNS name from Azure was copied onto Tasmota's Host() function, this connection enables Tasmota to send and receive messages in real time, as well as remote device administration.

What?

SQL Configuration

- SQL (Structured Query Language) is a computer language used to interact with relational databases. It enables the organization, management, and retrieval of stored data from a database.

How?

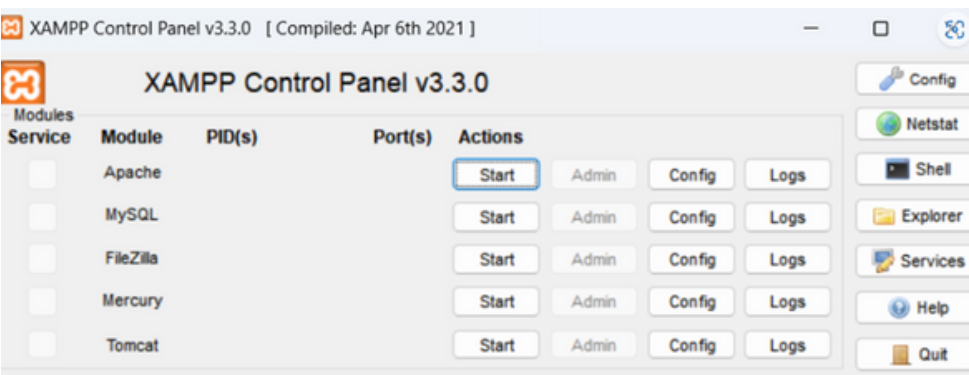
- Using the MySQL server with the connection of local host using Xampp which is a open-source collection of online solutions that comes with modules for MariaDB, PHP, Perl12, and Apache servers.

<!-- Navigation buttons -->

❮

❯

GP VIRTUAL SYSTEM



What?

Xampp Configuration

- Xampp is a open source of collection of online solutions and it helps to test web application before being deployed on the local server.

How?

- In this project, it is used to connect the MYSQL server database to the local host. With the help of Xampp, the project was able to use a local host to access the website and connect to the MYSQL server.

What?

GP Virtual System & PHP Websites Configuration

- The websites are operated with computer languages such as HTML,CSS, Java and PHP.

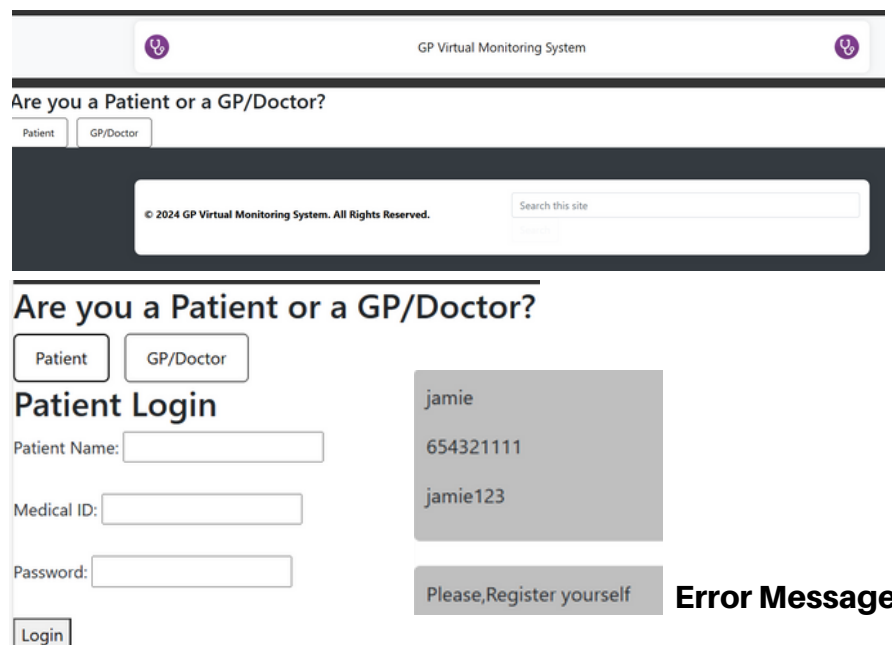
How?

- In this project, The HTML,CSS, Java is operated for the whole websites for designing, styling, data of the health in the website and medical reports. The PHP web server in this project connects the SQL database to the HTML-based website. When a user attempts to log in, the PHP code checks the SQL database to verify if the patient is registered. If verified, the user is redirected to the next page; if not, an error message prompts the user to register.

HTML Website



PHP Website




The final implementation was successful, with the SQL databases correctly interfacing with the HTML websites. The websites accurately displayed information for both doctors and patients, including precise health measurements on current and yearly reports. All prescriptions were properly signed and recorded, and all other project components functioned as intended.

MUHAMMAD MEMON

COMPUTER ENGINEERING AT TECHNOLGICAL UNIVERSITY DUBLIN

 memonabdullah057@gmail.com

 [linkedin.com/in/muhammadmemon](https://www.linkedin.com/in/muhammadmemon)

 (089) 986 - 3355

GP VIRTUAL SYSTEM

What?

Medical Reports Websites Configuration

- The websites are operated with computer languages such as HTML,CSS and Java.

How?

- In this project, The HTML,CSS, Java is operated for the whole websites for designing, styling, data of the health information and showing current, yearly medical reports and prescription resources.

Current Report

The Current Report is utilized during virtual appointments between patients and GPs or doctors.
It can be accessed via the IP address and contains live updates of vital signs such as body temperature, heart rate, and blood pressure, along with the patient's date of birth and medical ID.

[Go to Current Reports](#)

Yearly Reports

The Yearly Reports provide a comprehensive overview of your medical history for each year.
They can also be accessed via an IP Address and contain accurate medical information spanning from 2024 to 2019, including details such as Patients name,Medical ID and date of birth

[Go to Yearly Reports](#)

Free Prescriptions Available

The Prescriptions section is primarily for the patient's assigned GP.
The form will include information about the patient, diagnosis, and treatment required following any specific illness observed during the virtual meeting with the health gadget.

[Go to Prescriptions](#)

Current Medical Report

Your Name:

Medical ID:

Phone Number:

Date of Birth:

[Generate Report](#)

Current Medical Report

Patient's Name:

Medical ID:

Phone Number:

Date of Birth:

Body Temperature: °C

Heart Rate: BPM

Blood Pressure: mmHg

Prescriptions

Patient's Name

Medical ID

Phone Number

Date of Birth

Heart Rate (BPM)

Body Temperature (°C)

SpO2 (%)

Diagnosis

Treatment

Additional Notes

GP's Signature

Patient's Signature

Date of Report

[Generate Prescription](#)

Results

- The final project generates current and annual reports, as well as prescriptions, based on the patient's health. A real-time report and prescription can be created, while annual reports are available for backup and reference, as needed by both patients and doctors. The project concludes with an overview of the websites, software, hardware, and other tools used throughout the process, resulting in a comprehensive healthcare solution.