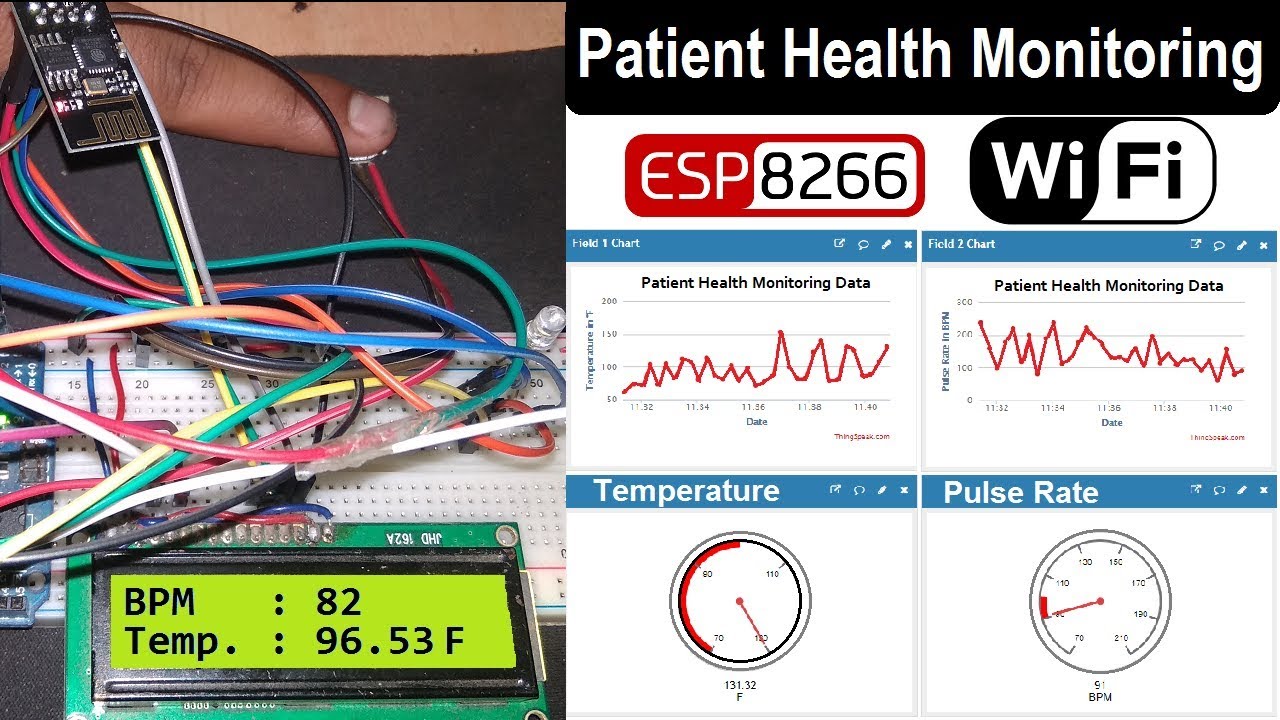


**IOT BASED HEALTH MONITORING SYSTEM**



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Contents

[**1.** **Executive Summary** 3](#_Toc70265130)

[**2.** **Introduction** 3](#_Toc70265131)

[2.1 Key Features & Functionalities 3](#_Toc70265132)

[**3.** **Architecture** 3](#_Toc70265133)

[3.1 Flow Chart 3](#_Toc70265134)

[3.2 Circuit Diagram 4](#_Toc70265137)

[3.3 Components 5](#_Toc70265144)

[**4.** **Technical Specifications** 7](#_Toc70265145)

[4.1 LIVE TEMPERATURE DETECTION OF BODY 8](#_Toc70265146)

[Ds18B20 Waterproof Digital Temperature Sensor 8](#_Toc70265147)

[4.2 LIVE PULSE DETECTION OF BODY 9](#_Toc70265148)

[4.3 Stress Detection Feature 11](#_Toc70265149)

[4.4 Live graph of temperature and pulse rate using OLED 11](#_Toc70265150)

[4.5 LIVE Location Detection feature 12](#_Toc70265151)

## **Executive Summary**

The intent of this report is to create a feasibility study/analysis of the task/project awarded by ArIES- The innovative arm of IIT Roorkee.

The feasibility analysis has been carried around the IoT based health monitoring system to effectively and efficiently monitoring certain parameters to enable correct treatment of the patient(s).

## **Introduction**

In the current era where the lifestyle of every individual is so messed up and hence it is utmost important to have the monitoring of the health should be done regularly. This is required to get health advise & proper medication (if required). In order to do so, the said system- IoT based Health Monitoring will play vital role in achieving the same in much affordable and effective way(s).

## Key Features & Functionalities

* Live Temperature detection of body
* Live Pulse rate detection of body
* Stress level detection using AI
* Live graph of temperature and pulse rate using OLED
* Live location of user

## **Architecture**

## Flow Chart

![Diagram

Description automatically generated](data:image/jpeg;base64,/9j/4AAQSkZJRgABAQEAeAB4AAD/4RDsRXhpZgAATU0AKgAAAAgABAE7AAIAAAALAAAISodpAAQAAAABAAAIVpydAAEAAAAWAAAQzuocAAcAAAgMAAAAPgAAAAAc6gAAAAgAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAEthbWFsIFV0bGEAAAAFkAMAAgAAABQAABCkkAQAAgAAABQAABC4kpEAAgAAAAM5OQAAkpIAAgAAAAM5OQAA6hwABwAACAwAAAiYAAAAABzqAAAACAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA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vTLhZ4m644Kn0YdQfY0AXaKKKACiiigAoorE8R+LNP8Mwx/a/NnuZs+Ta2675ZMdSB2A9TQBt0VFa3MN7axXNrIssMyB43U8MD0NS0AFFFFABRRRQAUUUUAFFVNV1KDR9JudQvGxDbRl298dAPcnj8axrLx5otw0cV9JNpNzIgYQajEYCcnHBbg/gaAOkopsciTRrJE6ujDIZTkH8adQAUUVzupeNtKs5xaWLPq2oMPktNPHmt9WI4UDvk9OcUAa+p6nZ6Pps19qMywW8K5Z2/kPUnsKwvDFnc6nqEvinVoTBPdxCK0tm5Nvb5yM/7TH5j6cD2qOz8OX2u30GreMcK8Db7bSo3DQwHn5nP8b+/QV1lABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABXL+Nv9d4a/7DkH/oMldRXL+Nv9d4a/7DkH/oMlAHUUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFcv4n/5Gvwp/1+S/+imrqK5fxP8A8jX4U/6/Jf8A0U1AHUUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABXP6p4Ps7y/Op6dNNpWqZz9rtTjef9tD8rj6jmugooA5VNS8WaPGV1TSYtZiTP8ApOnyBJCAOCYmxkn/AGT+FOHxA0iEf8TS31PTGzjbd2EgJP8AwEMK6iigDl/+Fk+Eu2sxk9gsUhJ/DbQfHdpcKf7H0rV9TP8ACYLJlToSMs+ABx+vSuoooA5WRPGGtAoTa+HbZmwSrC4udvt/AueeeSPw50tG8LaZoiTm3jkuJ7kYubm6cyyz/wC8T/IYFbFFAHDw3MvgDVTaX2W8NXcpNrP2sHY58tvRCTwe35126OsiK8bBlYZVlOQR602eCK5geC5iSaKRSrxyKGVh6EHqK5T/AIR7WfDRLeELlbixyWOk3rEqvqIpOq/Q5GcmgDrqK5j/AITqyspPJ8R2d5ok2Bzcxb4mJ/uyJlSPc4rZtNc0q/XdZalaXAxn91OrYH4GgC9RTPOj8vzPMXZ/e3DH51Ru/EOjWCFrzVbKADP351BOOoAzkn2oA0aZLNHBC0s8ixRoMs7sAFHqSa5aTx5DeOY/C+lXuuPkgyRJ5UI5xzI+B19M9Ce1CeGdS8QOsvjW4hltgd0elWgKxI3Yu+dzn2+7mgCLY/jnVoZnjK+HLGQSR7wR9vlHRsd4h79T6jp1d1aW19btBe28VxC33o5kDqfqDxUqIsaKkahVUYVVGAB6UtAHMS/D3w+XeSyhuNNkcEF7G5eL9AcdvSk/4QhhwninxGo7D7cD+pUmuoooA5j/AIQDSZiv9p3GpaoqjhL6+kkXrnpkA9OnSt2w0yx0q3EGm2kNrGABtiQLnHrjr1P51aooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACuX8bf67w1/wBhyD/0GSuorF8UaPc6tYWzafJGl5Y3cd5AJgdjsmflbHIBBIzQBtUVyw1zxftG7wfCTjkjVkH/ALLS/wBueLv+hOi/8Gyf/EUAdRRXL/254u/6E6L/AMGyf/EUf254u/6E6L/wbJ/8RQB1FFcv/bni7/oTov8AwbJ/8RR/bni7/oTov/Bsn/xFAHUUVy/9ueLv+hOi/wDBsn/xFH9ueLv+hOi/8Gyf/EUAdRRXL/254u/6E6L/AMGyf/EUf254u/6E6L/wbJ/8RQB1FFcv/bni7/oTov8AwbJ/8RR/bni7/oTov/Bsn/xFAHUUVy/9ueLv+hOi/wDBsn/xFH9ueLv+hOi/8Gyf/EUAdRXL+J/+Rr8Kf9fkv/opqP7c8Xf9CdF/4Nk/+IpkFjreueItN1HW7CHS7fTPMdIEufPaaR1K8kAAADnv/OgDq6KKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKAEIDKQwBBGCD3rHuvB/h28A+0aJYtgYysCqfzAFbNFAHNL8O/CauWGiW+T6liPyzir1n4T8P2GPsmjWMbDPz+Qpb/vojNa9FABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQBnT3UyTsqvgA8cCo/ttx/z0/8dFFFUIPttx/z0/8AHRR9tuP+en/jooooAPttx/z0/wDHRR9tuP8Anp/46KKKAD7bcf8APT/x0Ufbbj/np/46KKKAD7bcf89P/HRR9tuP+en/AI6KKKAD7bcf89P/AB0Ufbbj/np/46KKKAD7bcf89P8Ax0Ufbbj/AJ6f+OiiigA+23H/AD0/8dFH224/56f+OiiigA+23H/PT/x0Ufbbj/np/wCOiiigA+23H/PT/wAdFH224/56f+OiiigA+23H/PT/AMdFH224/wCen/jooooAPttx/wA9P/HRR9tuP+en/jooooAPttx/z0/8dFH224/56f8AjooooAPttx/z0/8AHRR9tuP+en/jooooAPttx/z0/wDHRR9tuP8Anp/46KKKAD7bcf8APT/x0Ufbbj/np/46KKKAD7bcf89P/HRR9tuP+en/AI6KKKAD7bcf89P/AB0Ufbbj/np/46KKKAD7bcf89P8Ax0Ufbbj/AJ6f+OiiigA+23H/AD0/8dFH224/56f+OiiigA+23H/PT/x0Ufbbj/np/wCOiiigA+23H/PT/wAdFH224/56f+OiiigA+23H/PT/AMdFH224/wCen/jooooAPttx/wA9P/HRR9tuP+en/jooooAPttx/z0/8dFH224/56f8AjooooAPttx/z0/8AHRR9tuP+en/jooooAPttx/z0/wDHRR9tuP8Anp/46KKKAD7bcf8APT/x0Ufbbj/np/46KKKAD7bcf89P/HRR9tuP+en/AI6KKKAD7bcf89P/AB0Ufbbj/np/46KKKAD7bcf89P8Ax0Ufbbj/AJ6f+OiiigA+23H/AD0/8dFH224/56f+OiiigA+23H/PT/x0Ufbbj/np/wCOiiigA+23H/PT/wAdFH224/56f+OiiigA+23H/PT/AMdFH224/wCen/jooooAPttx/wA9P/HRR9tuP+en/jooooAfBdzPMqs+QTzwK0qKKTGFFFFIAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooA//2Q==)

**Data acquisition from sensors**: The various sensors collect the data from the user. The sensor values from temperature and pulse sensor will be stored in arduino microcontroller, while the stress values will be directly displayed on the web Application.

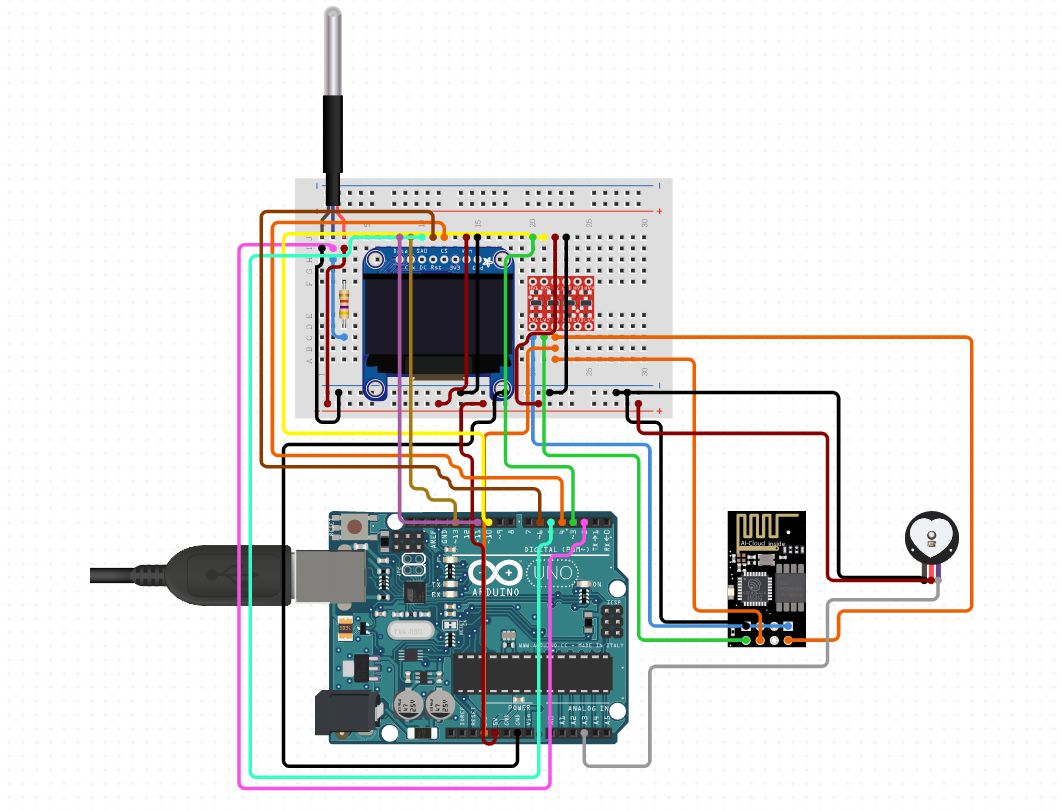
**Sending the values to cloud server**: The values stored in the arduino are then sent to the firebase cloud server through internet. We access the internet through the WiFi module connected to the arduino microcontroller.

**Live location**: Through internet we will access the Google geolocation software, the values of latitude and longitude will be taken from it and stored in the arduino microcontroller, which will be then sent to the cloud server thorough internet.

**Final display of the parameters**: All the data stored in the real-time database will be then sent to the web application. The live feed of the stress detector will be available on the application, along with the health parameters. A button will be provided in the UI of the Web app which can be used to switch the program “On” and “Off”.



## Circuit Diagram

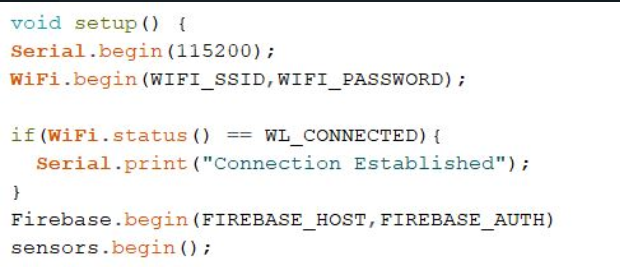


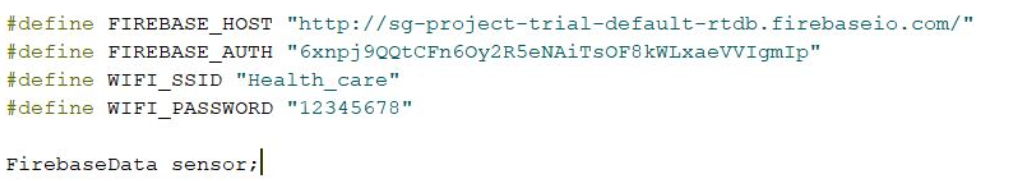


## Components

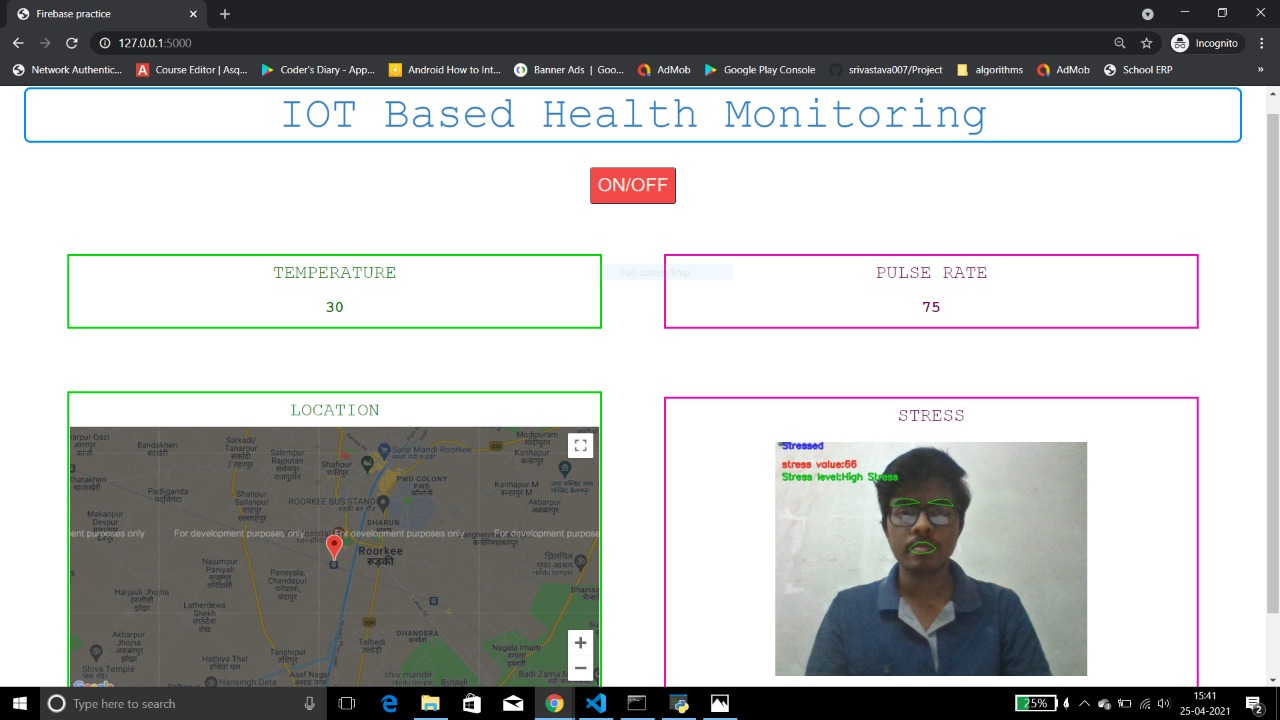
* ARDUINO UNO
* BREADBOARD
* JUMPER WIRE
* TEMPERATURE SENSOR
* PULSE SENSOR
* OLED DISPLAY
* WEB APPLICATION
* FIREBASE (REALTIME DATABASE)

The Arduino is connected to Wi-Fi, and after it is online, it is connected to Firebase. When the sensors read the value of temperature, pulse rate, location (longitude and latitude), the data is pushed in firebase.

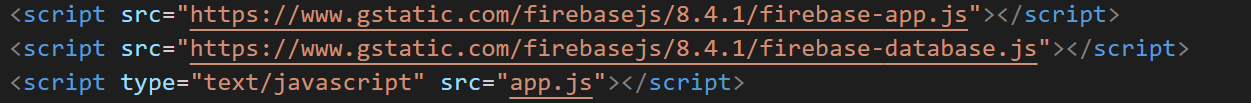


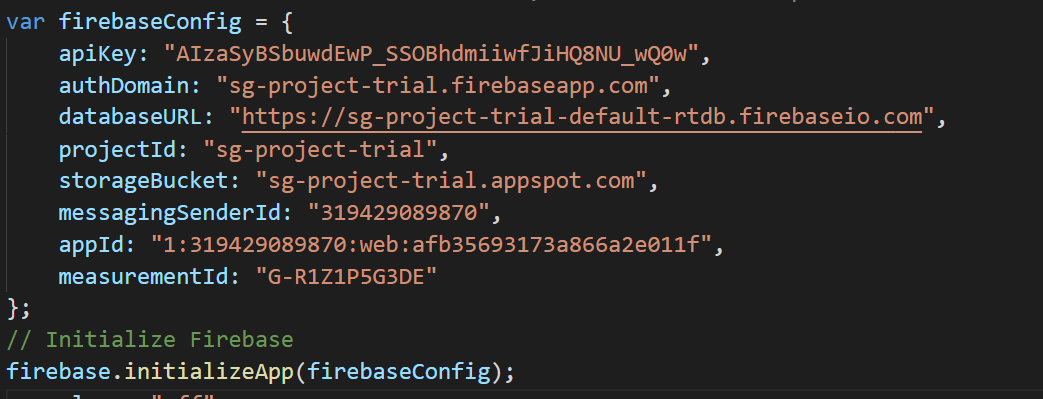


The web application receives data from firebase and displays it on the screen. The layout of the webpage is designed with the help of HTML and CSS. It displays four values, i.e., Temperature, Pulse Rate, Stress Levels and live location.

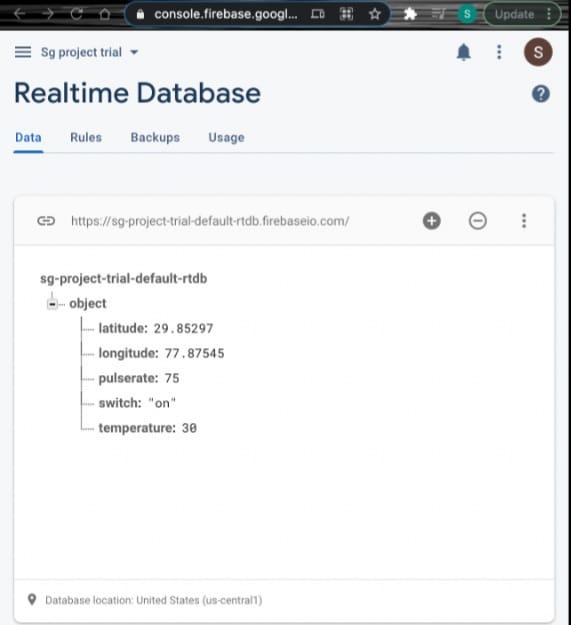


The Firebase SDK is initialized into the app by adding the given code in the JavaScript file. To read the database from firebase its reference is created in the JavaScript file.





The following nodes are created on firebase that are to be displayed on the web app- Pulse, Temperature, Latitude and Longitude and switch. With the help of the switch node, the user can switch on/off the device.



The live location is accessed using a Google Map API:



## **Technical Specifications**

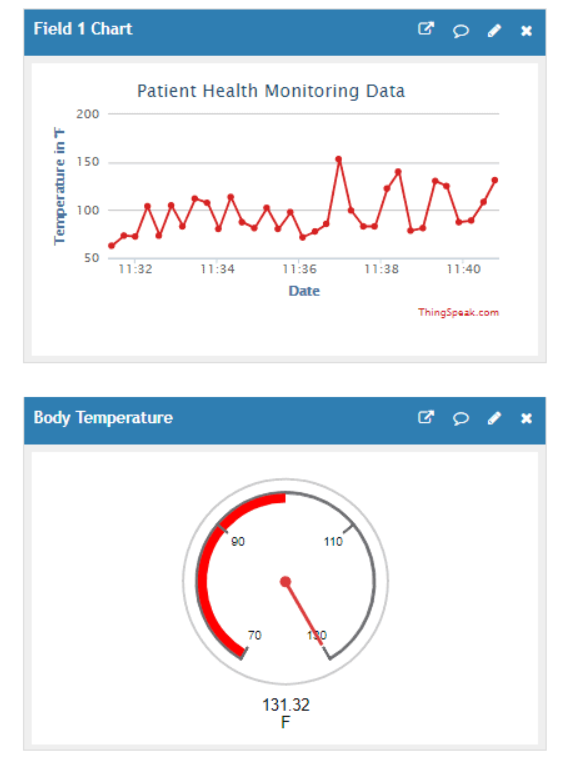
## Live Temperature Detection Of Body



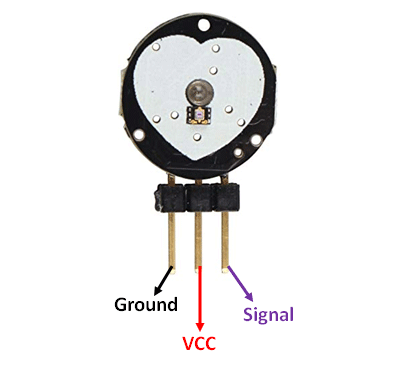
Ds18B20 Waterproof Digital Temperature Sensor

We will use DS18B20 temperature sensor for temperature detection of body. The waterproof version of DS18B20 temperature sensor is useful when you need to measure temperature from some distance or in wet conditions. While the sensor is good up to 125C the cable is encapsulated in PVC so it suggested to measure under 100C. Since it is digital, the user do not face signal degradation over long distances. This DS18B20 based probe is very handy when it comes to measuring temperature of objects in wet condition. Digital output of DS18B20 eliminates the possibility of signal loss or noise and thus it can be used to measure temperature of objects which are at distance from the controller/processing unit by increasing the length of wire.

This Sensor measures temperature of body and send it to the the Google firebase cloud (using Arduino and wifi module) then webapp takes this data from cloud and show the live temperature of the body.



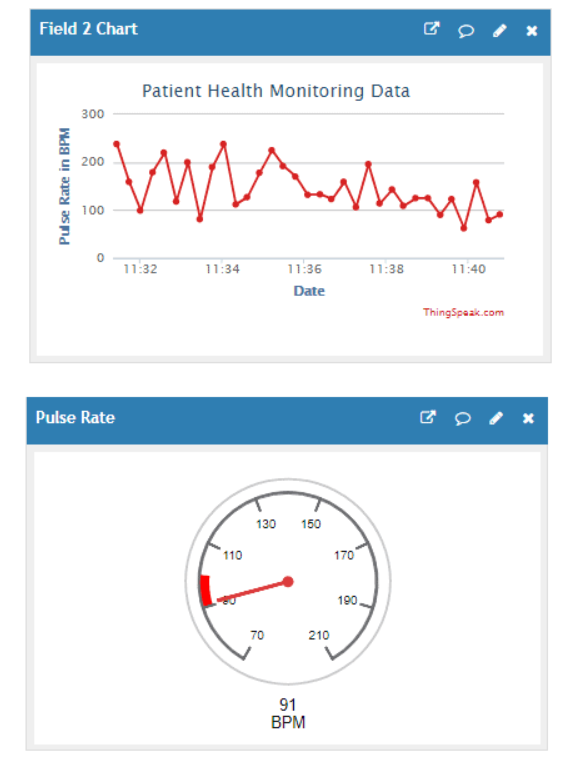
## Live Pulse Detection Of Body



PULSE SENSOR

The working of the **Pulse/Heart beat sensor** is very simple. The sensor has two sides, on one side the LED is placed along with an ambient light sensor and on the other side we have some circuitry. This circuitry is responsible for the amplification and noise cancellation work. The LED on the front side of the sensor is placed over a vein in our human body. This can either be your Finger tip or you ear tips, but it should be placed directly on top of a vein.

Now the LED emits light which will fall on the vein directly. The veins will have blood flow inside them only when the heart is pumping, so if we monitor the flow of blood we can monitor the heart beats as well.

This Sensor measures pulse rate of body and send it to the Google firebase cloud (using Arduino and wifi module).then webapp takes this data from cloud and show the live pulserate.

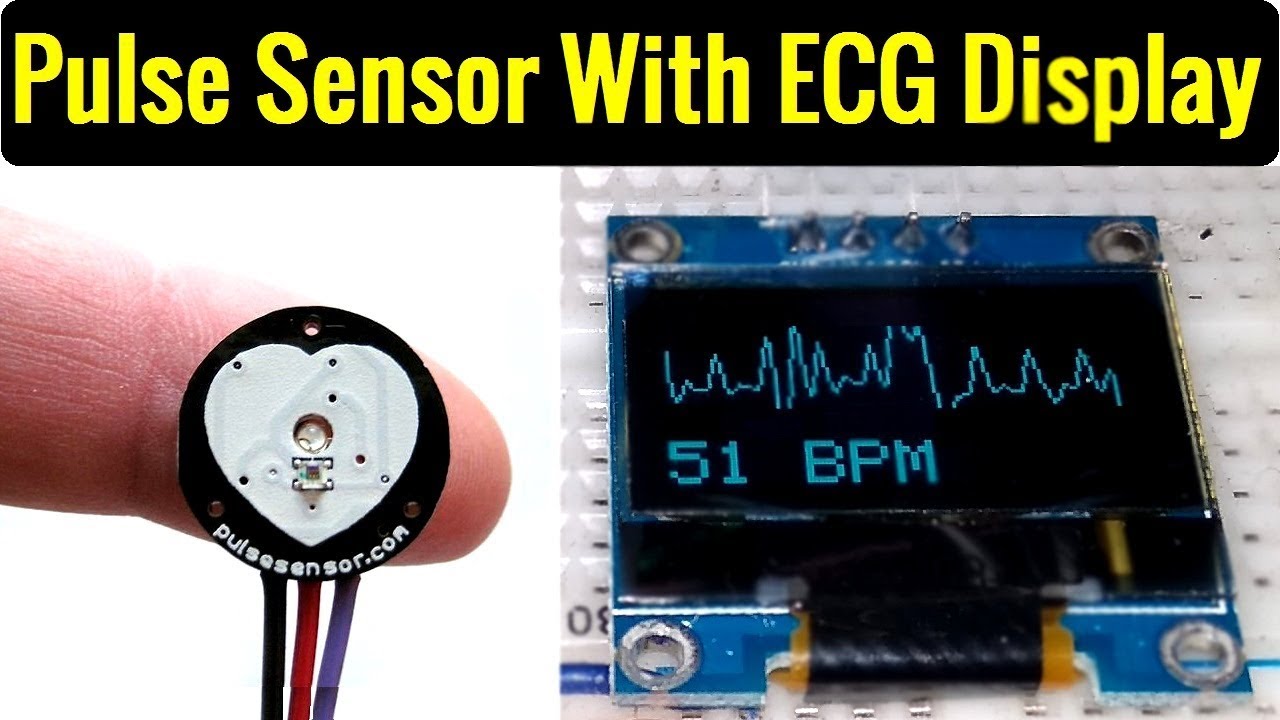
## Stress Detection Feature

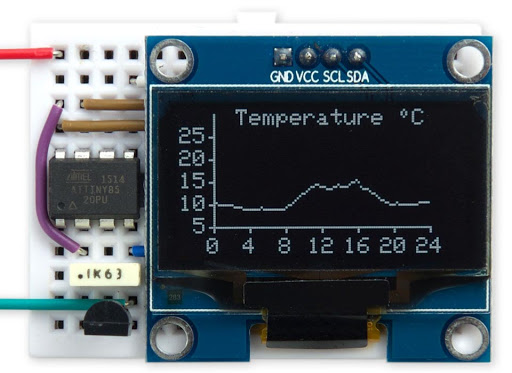
The stress detection feature is made possible by using python along with some libraries like: Keras, OpenCV and Dlib. The trained model in the code detects the eyes, eyebrows and the lips from the video feed given to it. The distance between the lips, eyebrows and the aperture of eye is considered to determine the stress levels. The weights are assigned accordingly to all the parameters to get a final stress value. A particular threshold is assigned to the stress value, crossing which the stress level would be displayed as HIGH, in other cases it would be displayed LOW.

## Live graph of temperature and pulse rate using OLED

OLED (Organic Light Emitting Diodes) is a flat light emitting technology, made by placing a series of organic thin films between two conductors. When electrical current is applied, a bright light is emitted. OLEDs are emissive displays that do not require a backlight and so are thinner and more efficient than LCD displays (which do require a white backlight).

With the help of OLED and arduino we display the live graph and values of temperature and pulse as shown below





## LIVE Location Detection feature

As we all know that Android OS for smartphones is powered by Google. Generally, most of the phones have GPS and Wi-Fi enabled all the time so Google not only tracks our location, but it also tracks the nearby Wi-Fi networks. For example, if you are walking through a street with Wi-Fi and GPS enabled so your phone is constantly scanning the nearby Wi-Fi networks and what Google does, it saves the MAC addresses and the name of this Wi-Fi networks along with the location of our phone.

So based on the signal strengths received by phone, Google estimates the location of that Wi-Fi network and it saves that data into the database. Therefore, next time if anybody will pass through that same Wi-Fi networks and does not have GPS enabled in his phone, he can still get the location of the phone based on the location of that Wi-Fi network.

We will **scan all the nearby Wi-Fi networks** and extract the MAC address and strength of these networks. Then, we make the json string from the extracted information and send it to the Google cloud and in return we get the co-ordinates of the location i.e. latitude, longitude and accuracy. Accuracy will depend on number of Wi-fi networks available nearby.

