Group -6

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HEALTH MONITORING SYSTEM USING IOT

Abstract

The main concept of this project is to create a low cost affordable health monitoring system for people in remote locations where availability of specialist doctors is not possible. This system is portable. Low cost and can be easily operated by anyone with limited knowledge. Also this concept is developed using IoT, so that we can send the data to a remote server from which it can be accessed by doctors. This project is designed using Arduino mega 2560 microcontroller development board, ADS1292r ECG shield, LM35 industrial grade temperature sensor, ESP8266 Wi-Fi controller chipset, 16X2 LCD Display. The ECG shield and LM35 are generating analog output, so they are interfaced to the analog pins of Arduino Mega. Using the Pulseoximeter, we can get the Pulse rate and BP. All the above readings (ECG graph, Blood pressure, Heartbeat, temperature) are read through respective pins and are stored in various variables along with displaying on LCD locally. An account has to be created in any one of the IoT platforms like Allthingstalk, Thingspeak, Smartliving, IBM Bluemix etc. The credentials of the IoT account like Username, Device-Id, Asset-Id, Secret key etc., has to be noted down to be added in the Arduino program. In the Arduino program, the above credentials are added along with unique pin numbers for assets (Parameters) to be differentiated. The parametric readings from above procedure which are stored in various variables along with their respective pin numbers (to identify them) are transmitted to the IoT account using ESP8266 Wi-Fi interface. Then the IoT platform processes them and adds to the previously stored values to log data. The logged parametric data can be accessed from anywhere by accessing our IoT account. Also, we can add multiple users to a single account to monitor data like remote specialis-t doctors etc.

condition. In previous methods, monitoring of patient can be done only by using different instruments for different parameters. So, we decided to monitor required conditions of patient by assembling different instruments in a single module.NowadaysIoT is the widely used technology. The growth of internet is tremendous and has been further extended to connecting things through internet. All devices are connected to one another with various smart technologies to create worldwide ubiquitous network called Internet of Things (IoT). We recorded the data of each sensor and uploaded the data into the server. We observed the data on many devices using internet with secured login and password.

2. LITERATURE SURVEY

The design and development of a ZigBee based wearable physiological parameters monitoring device has been developed and reported in this paper. The system can be used to monitor physiological parameters, such as heart rate and temperature of a human body. The objective of this project is to design and implement a reliable, cheap, low powered, and accurate system that can be worn on a regular basis and monitors the vital signs based on Zigbee technology. The device detects if a person is medically distressed and receiver unit that is connected to a computer plot graph for monitored physiological parameters, of a human body.Centralized patient monitoring systems are in huge demand as they not only reduce the labour work and cost but also the time of the clinical hospitals. Earlier wired communication was used but now Zigbee which is a wireless mesh network is preferred as it reduces the cost. Zigbee is also preferred over Bluetooth and infrared wireless communication because it is energy efficient, has low cost and long distance range (several miles).

2.1 Block Diagram And Description

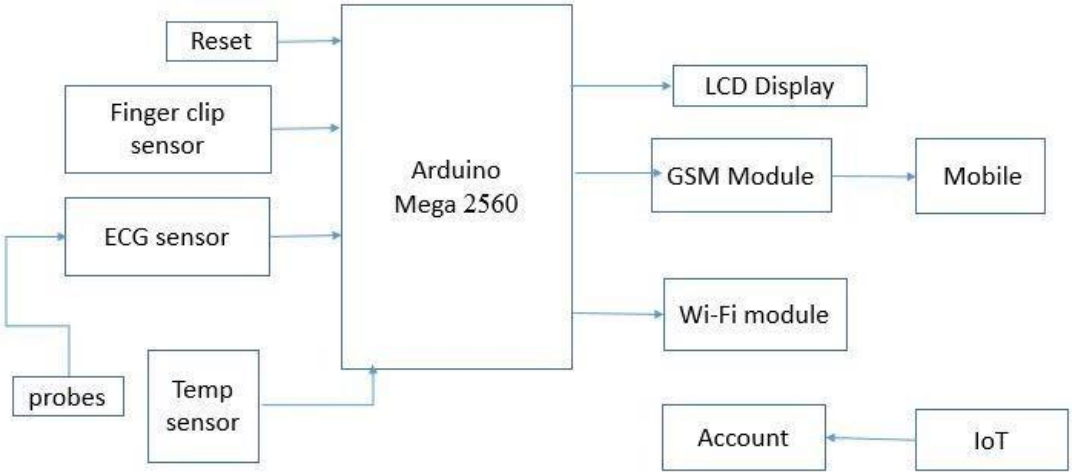

Figure 1. Block Diagram of Health Monitoring System Using IoT.

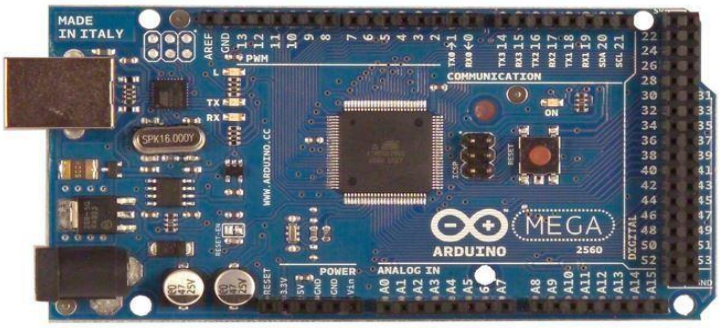

Figure 2. Arduino Mega 2560

The Arduino Mega 2560 is a microcontroller board based on the AT mega 2560 (datasheet).It has 54 digital input/output pins (of which 14 can be used as PWM outputs),16 analog inputs,4 UARTs (hardware serial ports),a 16 MHz crystal oscillator,a USB connection,a power jack,an ICSP header,and are set button.It contains everything needed to support the microcontroller. Simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started.The Mega is compatible with most shields designed for the Arduino Duemilanoveor Diecimila.

2.2. Feature

- Twice as many USB ports
- Better power management
- Digital I/O pins
- Analog input pins
- Same low price

2.3 Interfacing

Arduino is interfacing with various modules:

Table 1. GPIO Pins Component

Sl. No.	Component
1	LCD
2	Wi-Fi
3	LM35C
4	ECG sensor
5	Finger clip sensor
6	GSM Model

2.4 Project Overview

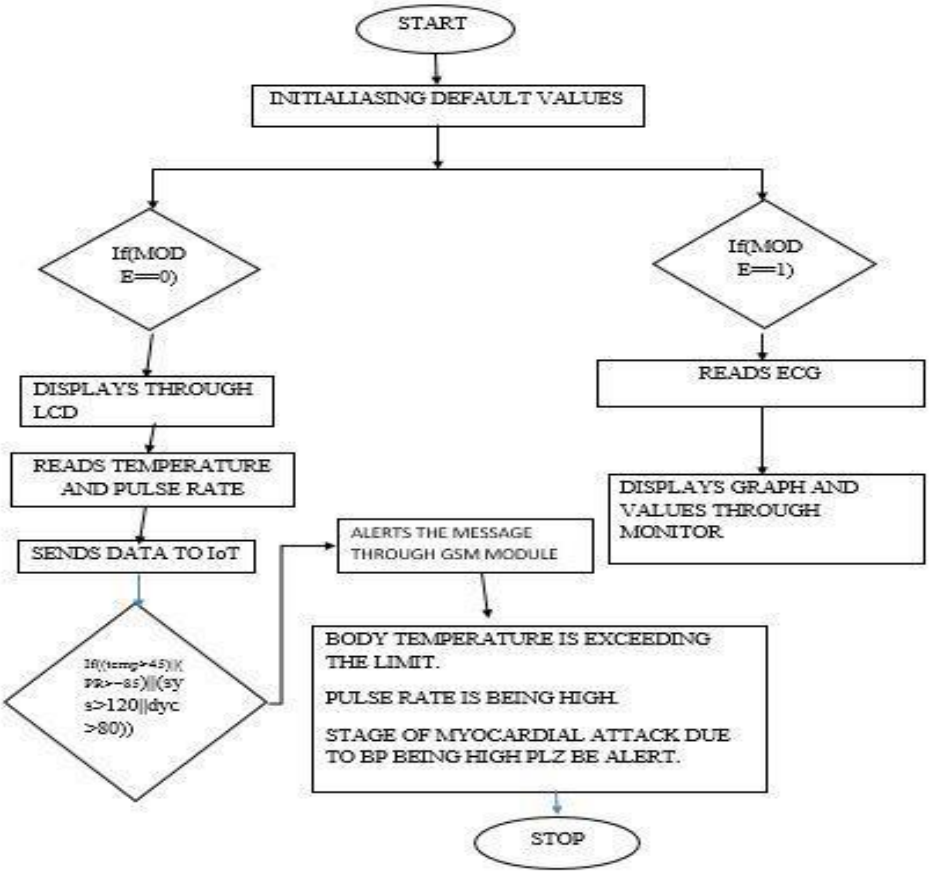

Figure 3. Flow Chart

3. RESULTS

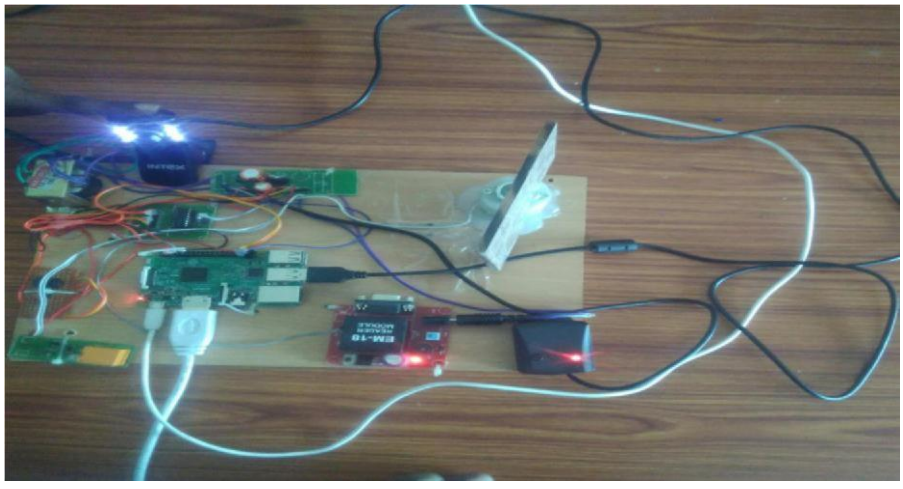

Figure 4. Hardware Implementation

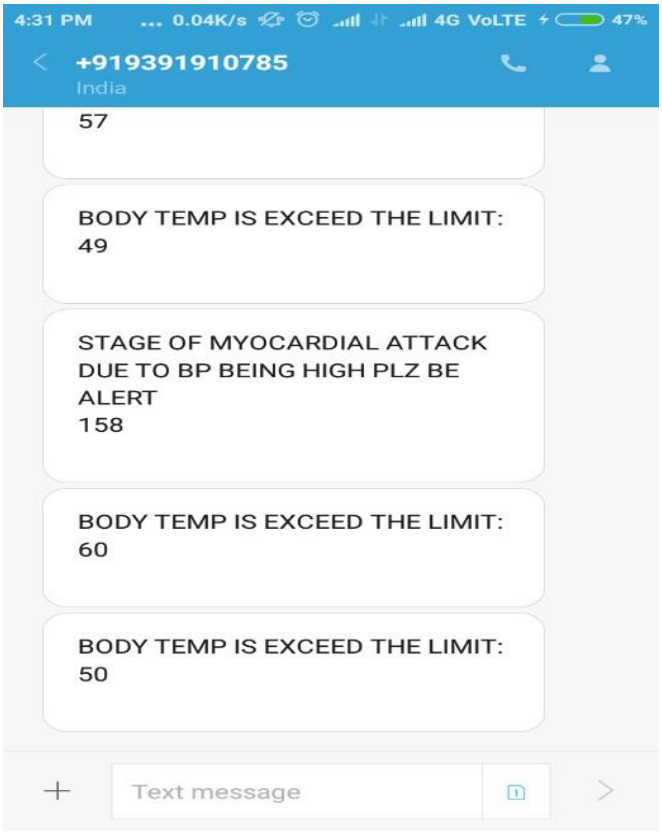

Figure 5. Result from SMS Alert

3.1 Future Scope

1. Wi-Fi module is an external peripheral connected to Arduino mega 2560. It is better if it is in built so, complexity can be reduced.
2. We use a IoT free account where by registering to particular website. it will be fine if it is possible to observe the ECG graph in IoT server.
3. In this project we can observe only BP, in IoT server.

4. CONCLUSION

By placing finger into finger clip sensor the monitoring of a patient can be done. Once this is done it takes 1 min of minimum time to show the exact parameters of the patient.We can observe parameters like BP, HB, ECG of a patient through LCD board. BP & HB can be observed in LCD and ECG(graph) in system .The continuous monitoring can also be observed in IoT by logging into particular account which was created in the IoT server. ECG values cannot be found in IoT server due to high bit rate.If the values of BP, HB exceeds the reference value it alerts the caretaker of the patient.

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