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Heart Attack Detection and Heart Rate Monitor using IoT

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Abstract - These days we have increased the percentage of heart related problems including increased risk of heart failures, higher blood pressure, cardiac arrest, etc. Proposed system uses sensors that allows to detect heart rate of patient using heartbeat sensor even if the person is at home. The sensor is then interfaced with selected microcontroller which is ATmega32, that checking heart rate readings and transmitting these information over internet. After sensing heartbeats, system will monitoring and if the patients heart beat is goes above the limit, system will send the alert message to the controller which will be displayed on LCD. System always monitors for high as well as low blood pressure levels as well as temperature. Therefore one who monitor heart rate gets an alert message of heart attack of the patient directly from all around the world.

Key Words: ATmega32, Heartbeat sensor, LCD

1. INTRODUCTION

These days a number of people are losing their life due to heart related problems. Heart attack can occur when the flow of blood to the heart is blocked. Due to the late diagnosis of heart attack we are inadequate to save the lives of many people. In this project, our system suggest that will detect heart attack by monitoring the heart rate using on IOT. For a healthy adult, ordinary heart rate is ranging from 60 to 100 beats per minute while athlete's heart beat generally range from 40 to 60 beats per minutes depending upon their fitness. If a person's heart rate is constantly over 100 beats per minute then the person is said to be having higher heart rate than normal heart rate which is also notorious. It can diminution the efficiency of heart by letdown the amount of blood pumped through the body can result in chest pain and lightheadedness. With the advancement in technology it is easy to monitor the patient's heart rate even at home. IoT is efficient network mechanism to intellect and gather information from world ubiquitously us then share the information athwart internet anywhere it can be managed for some tenacity.

2. System Design

A system diagram is a visual model of a system, its components, and their inter- actions. With supporting documentation, it can capture all the essential information of a system's design.

2.1 Block Diagram

Firstly we shall monitor body temperature in degree celcius second we shall measure heart beat in beats per minutes and third we shall monitor blood pressure. After this all the information is send to the server with the help of internet. On server there would be a web page on which we will have the certain information like name of patient, the parameters like temperature, heart rate and blood pressure. From anywhere in the world user can connect to the server using internet while there can be many users.

2.2 Circuit Diagram

Circuit diagram consist of microcontroller that is ATmega32, and to get the things done from microcontroller we are supposed to fulfill some requirements of our microcontroller. For example, we have to give 5v power supply to the analog reference, analog VCC voltage and ground is connected to ground. This is used for internal ADC. The power supply is used for internal ADC. Pin no. 9 is RESET and it is active low. Normally it is connected to VCC through 10K resistor that is pull up resistor. The potential at this point is normally 5V. that means if we have 5V here, then the condition is normal. And if we pressed switch, 0V is applied to it, then 5V is changing to 0V. It means that it is RESET condition. In RESET condition microcontroller is execute a program from beginning.

The XTAL 1 and XTAL 2 here we can connect 16MHz crystal externally, if we want more frequency than 8MHz. Otherwise we have internal 1 MHz to 8 MHz RC oscillator, which can generate pulses for internal operation of the microcontroller which does not needed external crystal. So XTAL 1 and XTAL 2 are optional pins.

The pin 10 is connected to 5V that means VCC. Pin 11 is connected to ground and this is required for microcontroller core.

Then we have connected a LCD, this LCD will be operated in a 4 bit mode. Here pin no. 1 is connected to ground, pin no. 2 is connected to VCC, which means connected to 5V. D4, D5, D6, D7 are connected to P4, P5, P6, P7 and Rc and Rs are connected to enable. This are control pins.

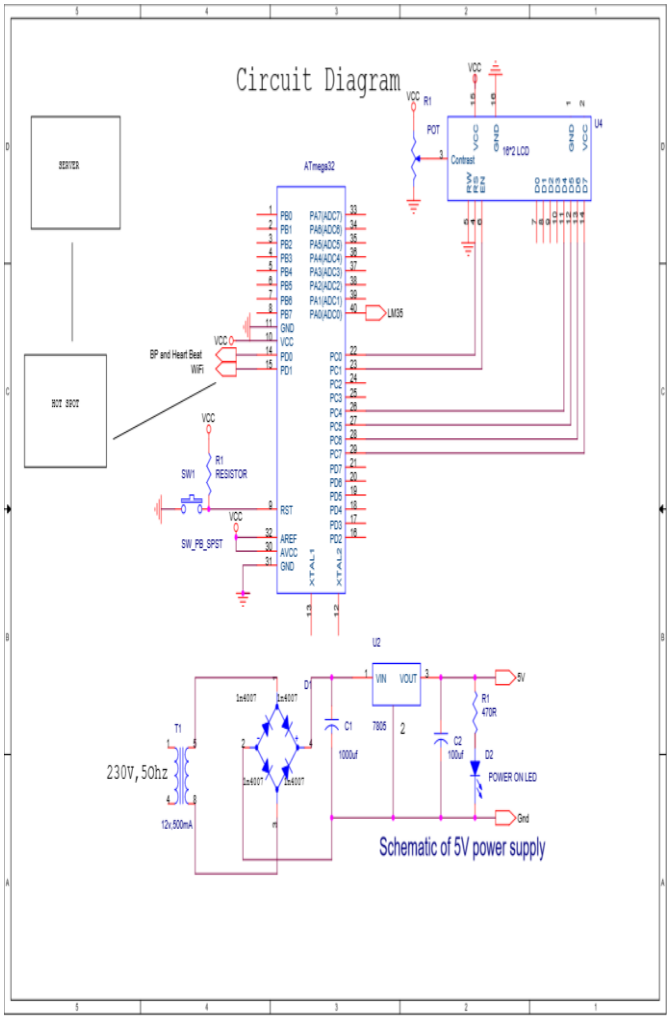

Fig: Circuit Diagram

3. Experimental results:

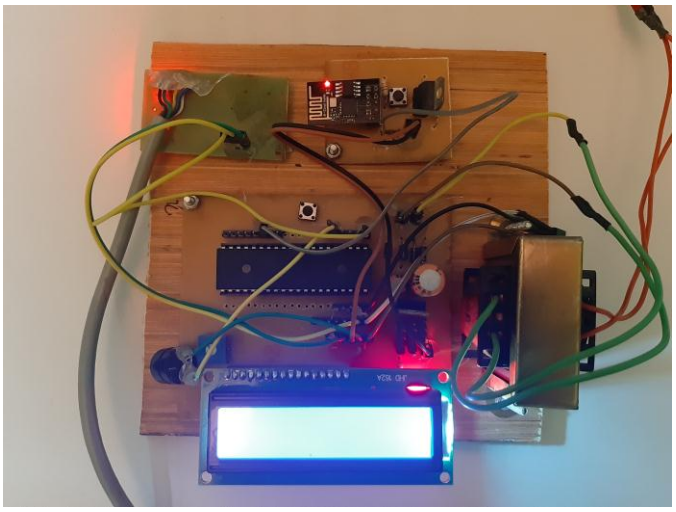

Fig: Result 1

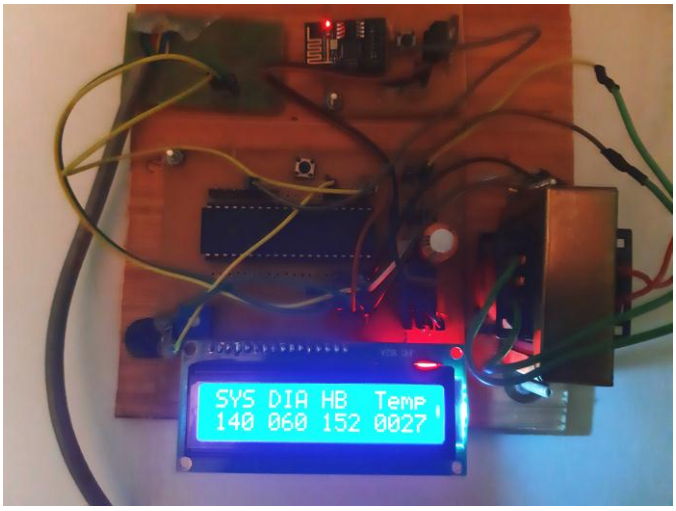

Fig: Result 2

Fig: Result 3

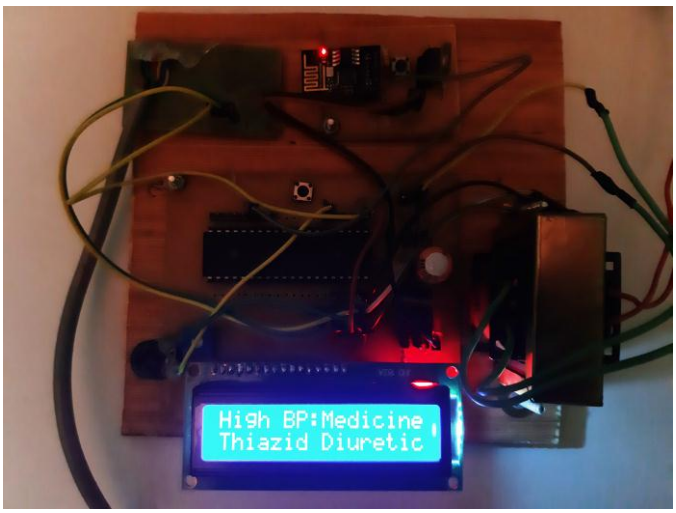

Fig: Result 4

CONCLUSIONS

We present real time monitoring system. Biomedical engineering (BME) is the application of engineering principles and techniques to the medical field. It combines the design and problem solving skills of engineering with medical and biological sciences to improve patient's health care and the quality of life of individuals. A medical device is intended for use in the diagnosis of disease, or in the cure, treatment, or prevention of disease.

This system helps old age people who are more likely to suffer from heart diseases. Apart from heart rate, blood pressure and temperature can also be measured using this system. Doctors or surrounding people will be notified about the condition of patient with the help of alert message.

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