HEARTBEAT MONITORING SYSTEM WITH TEMPERATURE SENSOR

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Abstract:- *Recently the health care sensors are playing a major role in hospitality. The heart monitoring systems is one of the major improvement in the hospitality because of its advanced technology. A wireless heart monitoring system is to measure heartbeat, body temperature as well ECG by using NodeMCU with cloud as our storage for the readings of various sensors present in this project using PHP and basic HTML .*

Key Words*: *NodeMCU, Wi-Fi interface, PHP, basic HTML, Web Server, Database, Cloud

1. INTRODUCTION:

During treatment, it is very important to continuously monitor the vital physiological signs of the patient. Therefore heart monitoring systems has always been occupying a very important position in the field of medical devices.

Here we have connected the heartbeat sensor, temperature sensor and ECG sensor, so that simultaneously we can monitor the patient's condition.

A NodeMCU is used instead of DSP technology to develop this system so that it is easy to operate and available at an affordable cost.

We use cloud in this project as large amount of storage is required constantly to store the measured medical information of a person in this system and this cloud with all of this medical information such as heart rate, ECG, Body temperature can be accessed by a doctor from long distance.

2. WORKING

Here all sensors will send data to controller i.e. NodeMCU.After turning on NodeMCU, it will try to connect to router, whose ssid and password is added previously. Then in every 10 seconds NodeMCU post all sensor data to web server.

All this data in database can be accessed by remote location. To view all data in graphical format we are using view.php file.To see all data doctor need to login in server by using its username and password .Once logged in all data can be viewed in graphical format. This page is updated in every 2 seconds. First, we created a MySQL database with a table and variables.

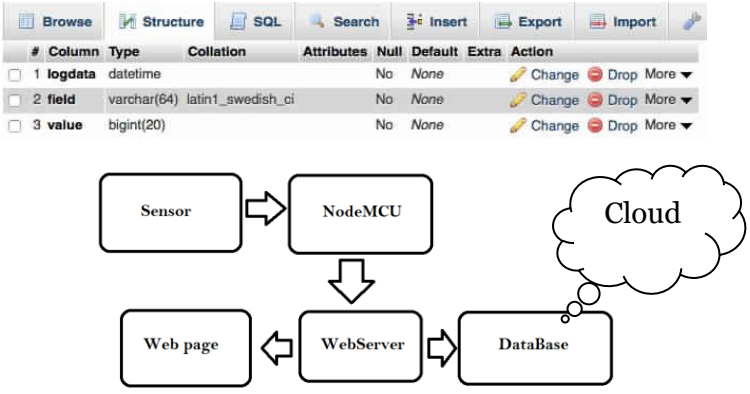

Fig 1.0 Block Diagram

We have used PHP and Basic HTML.

PHP (recursive acronym for PHP Hypertext Pre-processor) is a widely-used open source general-purpose scripting language that is especially suited for web development and can be embedded into HTML.PHP is used to communicate with hardware and database as back end.

PHP has few useful text processing features, which include the Perl compatible regular expressions (PCRE), and many extensions and tools to parse and access XML documents.

PHP standardizes all of the XML extensions on the solid base of libxml2, and extends the feature set adding Simple XML, XML Reader and XML Writer support. HTML is used for login page and view page as front end user interface.

COMPONENTS DISCRIPTION:

1. NodeMCU

Fig 2.Node MCU

We have selected Node MCU as controller for our project, Because it can connect to Network and also work as controllers. Node MCU use esp 8266 12e Wi-Fi Soc chip set , it has 13 GPIO pins.

Node MCU easily work with databases servers. We are post our data in remote server for global access. Node MCU can be connect to other router and can also work as router on same time.

To edit external Wi-Fi router settings we are using both modes. Simple HTML page is used to get SSID and password of external Wi-Fi router setting. Once submitted the data is stored in EEPROM and then after software restart it get automatically connect to router and connect to internet.

In our project Node MCU checks sensor data in every 20 microsecond and post data to server. In server one PHP program check for post and save it in database[5].

2. Sensors :

- LM35

The LM35 is commonly used temperature sensor. It is used to measure temperature with an electrical o/p comparative to the temperature (in °C). It measure temperature more correctly compare with a thermistor.

This sensor generates a high output voltage as compare to thermocouples. Its Fig 3. LM35

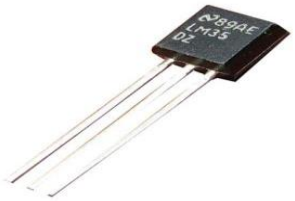

Fig 3. LM35

Output voltage is proportional to the Celsius temperature and scale factor is 0.01V/°C [10]

In our project we are using it to measure body temperature of forehead and show that data on web page in graphical format so that we doctor does not need to physically check patient again and again.

- HEART BEAT SENSOR

Fig4. Heartbeat sensor

Heart beat sensor is used to measure heart beat per minutes. It is based on the principle of psycho-physiological signal used as a stimulus for the virtual- reality system.

Sensor shines a light lobe through the ear. Then measures the light that gets transmitted to the LDR. In order to calculate the heart rate based on the blood flow to the fingertip.

Here we are using heart beat sensor to calculate live heart beat of patient and send it to database to show it in graphical format. As heart beat plays vital role in finding health related problems.

- ECG sensor

An ECG Sensor is electrodes attaches directly to the chest to detect every heart beat.Electrodes convert heart beat to electric signal [7].

It is very light weight, slim.

This device always use by doctor.

Electrodes have 3 pins and connected by cable with 30 inches in length.

It is makes easy to connect with controller and placed at the waist.

In addition to the plug-in for the cable is a male sound plug which will make the cable to easily removed or inserted into the amplifier board. The sensor assembled on an arm pulse. All the sensor electrodes have methods to assemble in body.

Fig 5. ECG sensor

PROJECT OUTPUT:

3. CONCLUSION

This project is been implemented by using NodeMCU application and web server. We are using this system in rural areas to help human to measure the medical parameters like heartbeat, ECG etc.

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