

ADVANCED IOT BASED COMBINED REMOTE HEALTH MONITORING AND HOME AUTOMATION SYSTEM

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I. ABSTRACT

Nowadays, automation and Internet of Things are changing the world. The day-by-day development of the Internet of Things causes a revolution in modern technology, which makes our life easier and automated. Internet of Things has provided a much easier solution for remote real-time health monitoring of patients from the hospital as well as home. Sensors acquire the data of various parameters regarding patients' health, and the Internet of Things stores that data and displays through the website, which provides access for remote monitoring. Use of Sensor reduces the human error, and the size of the system reduces the occupied space of the room. The unique part of this proposed solution is generation to provide the prescribed medicine to the patient in time. The other beneficial area of the system is the scheme of sending the notification through email and SMS alert if any of the health parameters crosses the threshold value.

Keywords: microcontroller, Temperature sensor, pulse sensor, ECG, GSM, Motors.

II. INTRODUCTION

IoT is the combination of embedded systems, sensors, software and this can be also referred to as internet of everything. A combination of embedded system, software and sensors is referred as Internet of Things. Since everyone is prone to health issues, a continuous health monitoring system in name of IoT can be used. The Home automation mainly focuses on comfort, security and to reduce man power. It includes centralized control of appliances, ventilation, lighting, heating and air conditioning, resource management systems such as energy and security systems. Since everyone is prone to health issues, a continuous health monitoring system in name of IoT can be used. As health is one of the most important issues nowadays, IoT could be utilized in the health industry as a continuous health monitoring system. At the same time, the internet is now easily available for mobile

technologies, which makes remote observance in everything more popular. In this proposed system, patient's heart rate, blood pressure, respiration rate, body temperature, body movement and saline levels are measured. We have tried to develop a health monitoring system to acquire the data and share the information with the health units and relatives by remotely monitoring through the internet. For the security and safety issues, a role-based user authentication system is also available in the system to access the information. Also, the Arduino will be automatically controls the appliances according to the health condition of the patient.

III. BLOCK DIAGRAM

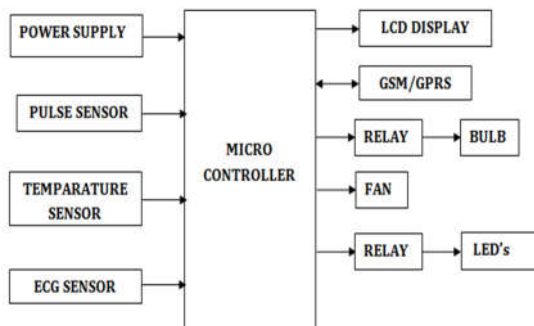


Fig 3.1: System block diagram

System Overview

Power Supply:

This section is meant for supplying Power to all the sections mentioned above. It basically consists of a Transformer to step down the 230V ac to 9V ac followed by diodes. Here diodes are used to rectify the ac to dc. After rectification

the obtained rippled dc is filtered using a capacitor Filter. A positive voltage regulator is used to regulate the obtained dc voltage.

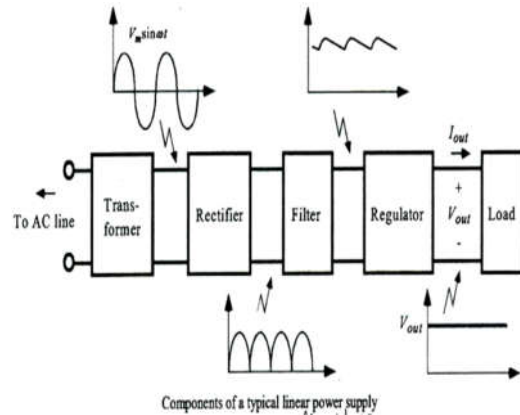


Fig (3.2) functional block diagram of power supply

Microcontroller:

This section forms the control unit of the whole project. This section basically consists of a Microcontroller with its associated circuitry like Crystal with capacitors, Reset circuitry, Pull up resistors (if needed) and so on. The Microcontroller forms the heart of the project because it controls the devices being interfaced and communicates with the devices according to the program being written.

LCD Display:

This section is basically meant to show up the status of the project. This project makes use of Liquid Crystal Display to display / prompt for necessary information.

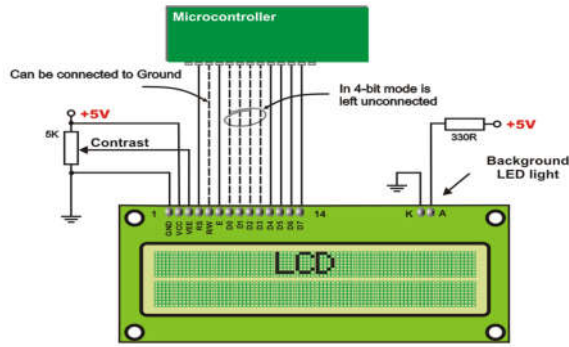


Fig (3.3) LCD display

Temperature sensor:

Thermistors are a temperature sensing device. It is used to sense the temperature. In this project by depends on the value of temperature the exhaust fan will run.

Pulse sensor:

Heart rate data can be really useful whether you're designing an exercise routine, studying your activity or anxiety levels or just want your shirt to blink with your heart beat. The Pulse Sensor Amped is a plug-and-play heart-rate sensor. Simply clip the Pulse Sensor to your earlobe or finger tip.

ECG Sensor Section:

This section basically contains the ECG electrodes which are placed on the body of the person. These signals are given to the controller as inputs and are manipulated by the microcontroller to be displayed on the PC using MATLAB.

GPRS:

This section consists of a GPRS modem. The modem will communicate with microcontroller using serial communication. The modem is interfaced to microcontroller using MAX 232, a serial driver. The Global Packet Radio Service is a TDMA based digital wireless network technology that is used for connecting directly to internet. GPRS module will help us to post data in the web page directly.

Relay Section:

This section consists of an interfacing circuitry to switch ON / OFF the system whenever any unhealthy conditions i.e. overload is detected. This circuitry basically consists of a Relay, transistor and a protection diode. A relay is used to drive the 230V devices.

LED:

A light-emitting diode (LED) is a semiconductor light source. LEDs are used as indicator lamps in many devices, and are increasingly used for lighting. Introduced as a practical electronic component in 1962, early LEDs emitted low-intensity red light, but modern versions are available across the visible, ultraviolet and infrared wavelengths, with very high brightness.

IV. RESULTS:



Fig (4.1): Results will be shown on web server

V. CONCLUSION

This has advanced IoT based automated remote health monitoring and home control system. Human error is reduced in this case. Necessary actions can be taken during semi-major ailment and the health of the patient can be monitored at home as well as by the doctor. The usage of sensors for health data measurement reduces the probability of human error while taking the data. By using this application we can control home appliance. Here, we have introduced the event of a home management and security system exploitation using Internet of Things technology.

VI. REFERENCES

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