PATIENT MONITORING SYSTEM AND TRACKING (RPMST) BASED ON RFID

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ABSTRACT
The main purpose of this project is for patients who are in dangerous or emergency condition .For each patient who enter into the hospital, RFID module is provided. RFID module contains tag and reader .The registration of patients can be done online also and offline also. During registration unique ID is given to each patient. The data is stored server room. The server room contains reader and microcontroller kit .The reader extracts information from the tag whenever patient enters the hospital. The RFID is mainly used for registration process. The status of patient is continuously updates in server room through GSM network. If the patient heart beat or temperature increases above specified threshold value then messages send to doctor and his relatives through GSM network .The location of patient is detected by using GPS network.

KEYWORDS: GSM Modem, MAX 232 IC, micro-controller 89C52, RFID Reader, RFID Tag, LCD display

INTRODUCTION
According to World Health Organization (WHO) is surveys says that 1.4 million people are injured or dead because of incorrect medical treatment .It is impossible to maintain patients treatment data then,remove this problem we are used in Patient Monitoring System And Tracking Based on RFID .RFID means radio frequency identification. RFID has unique ID number . It consist of two parts tag and reader .The tag consist of an antenna and electronic chip. In the electronic chip patients basic information is saved .This basic information is send to the reader. Tag may be passive or active and obtain the energy through the magnetic field generated by reader through antenna.

Our focus is on the people(patients)who do not have any assistance at home particularly the oldies who are totally on bed. Our implementation highlights the monitoring techniques in RFID technology. In this projects we are using two sensors such as heart beat module, sugar sensor, ECG sensor and temperature sensor(LM 35).

Our project consist of two sections .The first section is monitoring and second section is tracking .In first section patients information (such as heart beat rate ,temperature ,sugar, ECG pulse)are saved. And this information is continuously updated. In second section tracking is done through GPS network. In case of emergency in a closed environment the patient is provided with assistance in a short span of time.

LITERATURE SERVEY

- **"Patient Monitoring Using Infrastructure Oriented Wireless LANS"[2006]** In this paper wireless & mobile technology for patient monitoring in closed environment is used. In this paper they uses infrastructure oriented wireless LAN such as IEEE 802.11.
  Drawback :1. WLAN is used for short range such as building , park, etc.
  2. The reliability of patient monitoring using WLAN is less
  3. The cost of this project is high because it may a need additional training for system operators ,health care professionals.
  4. In WLAN delay for patient monitoring increases if the number of patients increases. **[1]**

- **"Bluetooth Based patient monitoring system" [2010]** This paper presents a wireless sensor network for monitoring patients for physiological conditions continuously using Bluetooth.
  The Bluetooth technology have following disadvantages:
  1.Bluetooth sends a information relatively slowly .
  2.It can connect only two devices at a time.
  3.It can loose connection in certain condition.
  4.It only allows short range communication between devices.**[2]**
  5. It is only applicable for small hospital.

- **"RFID Based Hospital Real Time Patient Management System" [2012]**To create standard based secure access the patients personal data (such as patients name,age, habit ,blood group etc) and medical record by using RFID tag and web server with the help of hardware kit.
  Drawback:1.The emergency contact is not provided .
  2. The cost of this project is also increased if the additional servers ,data base ,middleware and application.**[3]**

- **"A Distributed RFID Based System for Patients Identification And Monitoring"[2014]**
  The goal of this paper is represent distributed RFID based system for patient's identification and monitoring. This project is proposed to reduce the medical mistakes, improve the overall safety and enhance the quality of medical services in the hospitals.
  Drawback: 1. this process is very time consuming because of HL7 system is used.
  2. In this project the memory space of RFID tag is limited about 1-2kbps.
  3. SIMOPAC software is used along with RFID so cost is increased. **[4]**
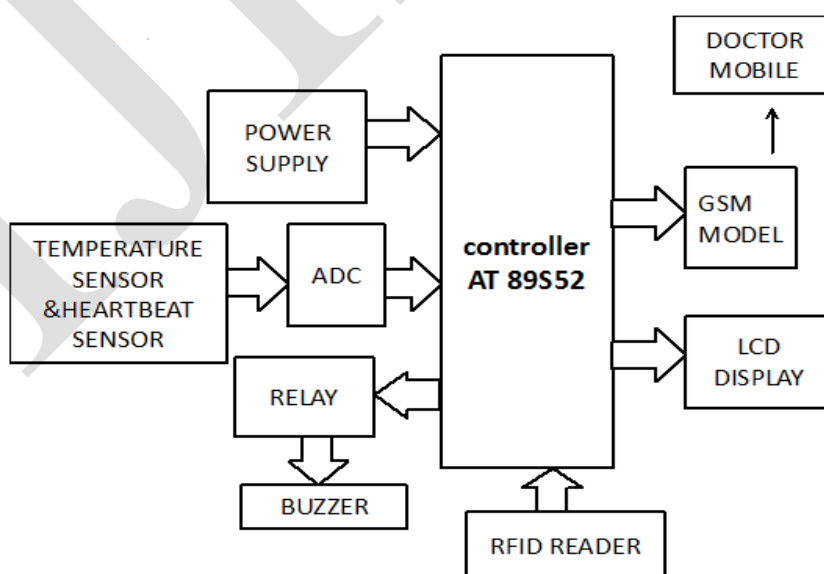
PROPOSED SYSTEM

Fig shows of proposed system

WORKING

Our project required 12v dc voltage so; step down transformer is used to convert the 230v AC supply into 12v AC supply.

The rectifier converts the AC to DC supply &regulator provides the constant DC supply.

LM 35 temperature sensor is used to monitor the patients the body temperature sensor module is used to measure heartbeats (BPM).

The output of both sensors are analog to convert in digital forms then used by successive approximation and it is converted of the digital information is given to the controller.

For controlling the whole system AT 89s52 controller are used. The AT89s52 is a low power, high performance CMOS 8 bit microcomputer with 4k bytes of flash programmable and erasable read only memory (EEPROM). The device is manufactured using Atmel's high density non volatile memory technology and is compatible with the industry standard MCS-51 instruction set and pin out. The on chip flash allows program memory to be reprogrammed in system or by a conventional non volatile memory programmer.

Relay is an electromagnetic switch whenever an abnormal condition happens to the relay closed. And it is given to the buzzer alerts to the other system.

GSM stands for Global System for Mobile. Our project SIM900 GSM is used. It is used for sending message alert to the doctor. A GSM network is composed of several functional entities, whose functions and interfaces are specified. The layout of a generic GSM network. The GSM network can be divided into three broad parts. The Mobile Station is carried by the subscriber. The Base Station Subsystem controls the radio link with the Mobile Station. The Network Subsystem, the main part of which is the Mobile services Switching Centre (MSC), performs the switching of calls between the mobile users, and between mobile and fixed network users. The MSC also handles the mobility management operations.

GPS stands for Global Positioning System. GPS is used for tracking or finding the exact location of the patients.

LCD Display 16*2 is used for display the output of sensors.

TEMPERATURE SENSOR

LM35 is a precision IC temperature sensor with its output proportional to the temperature (in $^\circ$ C). The sensor circuitry is sealed and therefore it is not subjected to oxidation and other processes. With **LM35**, temperature can be measured more accurately than with a thermistor. It also possess low self-heating and does not cause more than 0.1°C temperature rise in still air. The operating temperature range is from -55°C to 150°C. The output voltage varies by 10mV in response to every $^\circ$ C rise/fall in ambient temperature, *i.e.,* its scale factor is 0.01V/$^\circ$C.

PIN DIAGRAM
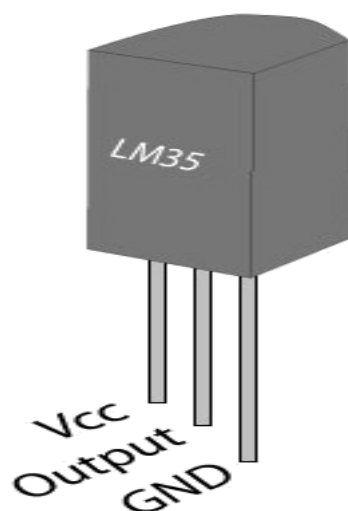
HEARTBEAT SENSOR

Heart beat sensor is designed to give digital output of heat beat when a finger is placed on it. When the heart beat detector is working, the beat LED flashes in unison with each hear beat. This digital output can be connected to microcontroller directly to measure the Beats per Minute (BPM) rate. It works on the principle of light modulation by blood flow through finger at each pulse. However this sensor is of high cost, hence in this project we are using a transducer to demonstrate the measure of heart beat rate. we are just showing a prototype and demonstrating how we can measure heart beat rate and send to remote doctors.

FEATURES

- Microcontroller based SMD design
- Heat beat indication by LED
- Instant output digital signal for directly connecting to microcontroller
- Compact Size
- Working Voltage +5V DC
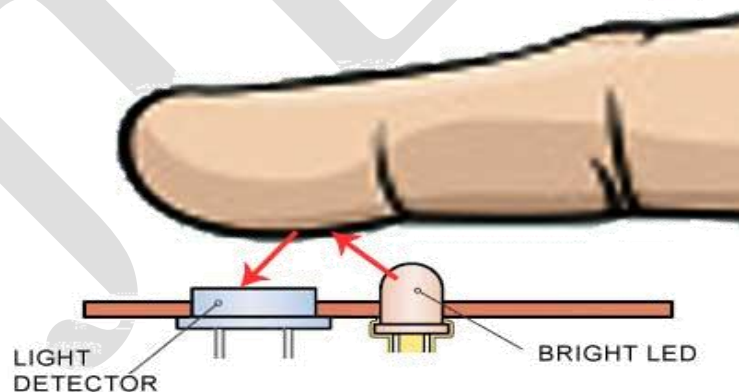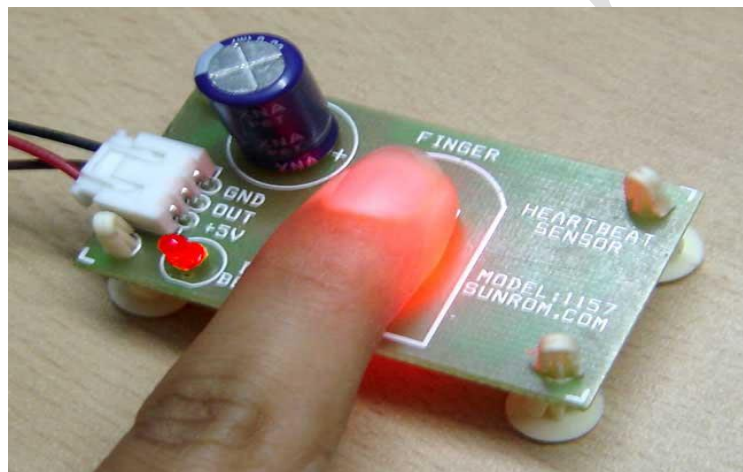
ADVANTAGES

➢ It will prevent patients from admit situation.
➢ Continuously parameters monitoring so quick action.
➢ It requires less paper work.

APPLICATION

➢ Used in hospital.
➢ Also for wild life tracking.

FUTURE PROSPECTS

In future we can implement following factors:

1. Using zigbee technology for continuously parameter updating .
2. Using GPS for patient tracking.

CONCLUSION

Thus we conclude that our project is helpful in hospital as well as those people lies on bed alone at home. It also provides facility of ambulance in case of emergency.

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