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Health Monitoring System Using Arduino Multifunctional Emergency Alert

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ABSTRACT: Technology has a significant impact on healthcare, it not only influences the manufacturing of sensing devices but also plays a crucial role in communication, recording and displaying information. Monitoring various medical parameters is very significant particularly during the postoperative days. For this project, we use Ardiuno microcontroller as a gateway for communication to different sensors which include; temperature sensor, humidity sensors and heart beat sensors. After collecting data, the microcontroller sends this information on a network using WIFI module. The data can be accessed anytime by the doctor. The controller is also connected with buzzer to alert the care taker about variation in sensor output. Alert message can be sent to the doctor whenever an emergency arises via the WI-FI module that is interfaced to the controller. This way, the system can be used for preliminary treatment quickly. The system is characterized by a low power consumption ability, simple configuration and high performance, as well as on-time responses.

KEYWORDS: Ardiuno, Temperature and Humidity sensor, ECG sensor, Heart beat sensor, Wireless fidelity module, Buzzer, LCD display.

I. INTRODUCTION

Internet has become one of the important part of our daily life. It has changed how people live, work, play and learn. switch the development of world, health monitoring system is used every field such as hospital, homecare units, etc. health monitoring becomes a very useful research area where the basic routine health parameters can be reviewed any time by any individual. this system may also used chronicle disease patients who have daily check up. Various biomedical sensors like temperature humidity ECG heart rate sensors are used for monitoring the health condition which is integrated on single system on chip. If any changes in parameters takes place it is notified. This notification would help to take an appropriate treatment at an proper time. This may save patients from future health problems which would arise. Also help patients concern doctor to take an appropriate action at correct time.

II. EXSITING SYSTEM

The latest issue of patients' observation structure has been realized by engaging AT mega -8 micro controller with Wi-fi Body part Sensing Net. Here, it involves Thermometer, Sphygmomanometer and Cardiograph. Placing these sensors on a patient's body screens their health condition without inconveniencing their daily schedule while the watch includes detectors, a laptop display, a micro-controller and a GSM modem through which such information can be either transmitted or received by the doctor and that is helpful. Basically this system checks the data which is collected by the sensors and transmits it over the air with the help of the GSM technology. The transmitter transmits the information as a SMS states to the concerned persons. It takes maximum of four to five seconds of time period to provide the information results of the patient

III. SYSTEM ARCHITECTURE

The main concept of the suggested system is the ongoing monitoring of the patient by means of sensors and the internet. For the most part, the wireless body sensor network includes wearable sensors such as temperature, humidity,

ECG, and heart rate sensors. In a word, gathering physiological data of the patient takes place as follows: that is these sensors serve as a collecting unit. The information obtained gets transmitted to the mobile phones of the doctor or caregiver through a Wi-Fi module. The transmitted datas can be viewed at any time. This system uses the AT mega 328p micro controller in Ardiuno board interfaced with 16x2 LCD display and a wifi module. A buzzer is used to alert the doctor or care taker in case of any abnormal situation.
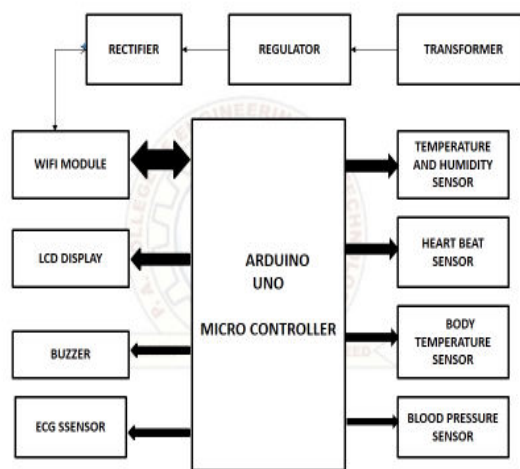
BLOCK DIAGRAM

Figure : 3.1 Block Diagram

IV. HARDWARE USED

1.ARDIUNO UNO:

Arduino Uno is a microcontroller board based on the ATmega328P (data sheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset 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. It is a 8 bit micro controller with low power consumption characteristic. This architecture consists of instruction set that requires only one cycle for execution. This enables the micro controller to achieve the throughput of 1 MIPS / MHZ which results in low power consumption

Figure : 4.1 Ardiuno uno

2.TEMPERATURE SENSOR(LM35):

They are used to measure the heat or energy generated by a certain body,allowing the measure of changes that take place due to this heat generated.It is an integrated circuit whose output is dircectly proportional to the temperature in degree celcius (C). Its voltages ranges upto4 to 30 v. The scale factor upto .01 V/c.

Figure : 4.2 LM35(Temperature sensor)

3.HEART BEAT SENSOR(MAX 30100):

The heart rate is one of the most critical aspects for health evaluations. Human, who is health, normal Human has their heart rate from 60 -100 beats per minute. It is also an oximeter sensor of pulse. It is built with an internal voltage regulator of 5V and can also be powered to 5V. It is designed in such a way that it gives out digital output of heart beat when the finger is placed in it. The beats of the heart may also be manually taken by feeling the pulse with fingers on two locations known as Radial pulse and Carotid pulse. It can be connected to any kind of micro controller such as Ardiuno as well as Raspherry –pi.

4. ECG SENSOR (AD8232):

The AD8232 single lead Heart Rate Monitor measures the electrical activity of the heart. In order to obtain a clear signal from the PR and QT intervals easily, this single lead heart rate monitor acts as an op amp.

Figure 4.4.1:ECG Sensor

It is designed to extract amplify and filter small potiental signals in the presence of noisy conditions, such as those created by motion or remote electrode placement.It is a humidity and temperature sensor which produces the calibrated digital output. It can be interfaced with any type of micro controller like Ardiuno, Raspherry-pi, etc.
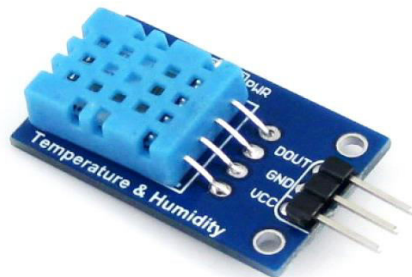
Figure 4.4.3

It is alow cost humidity and temperatue sensor which provides high reliability as well as long term stability.

5. WI-FI MODULE (ESP8266):

Wireless fidelity module is used to connect the computer to the internet for the continuous monitoring of the patient.It is a microchip with full TCP /IP and micro controller capability.
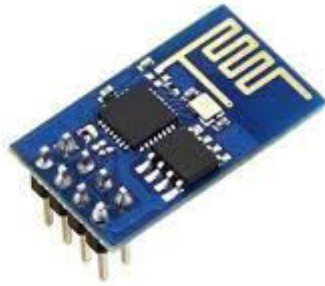
WI -FI MODULE

The ESP8266 is capable of either hosting an application or off loading all Wi-fi networking functions from another application proceesor

V. SOFTWARE USED

ARDIUNO IDE COMPILER:

The **Arduino** Integrated Development Environment - or**Arduino** Software (**IDE**) - contains a text editor for writing code, a message area, a text console, a toolbar with buttons for common functions and a series of menus.The software connects to Arduino and Genuino hardware to upload programs and enables communication with them.
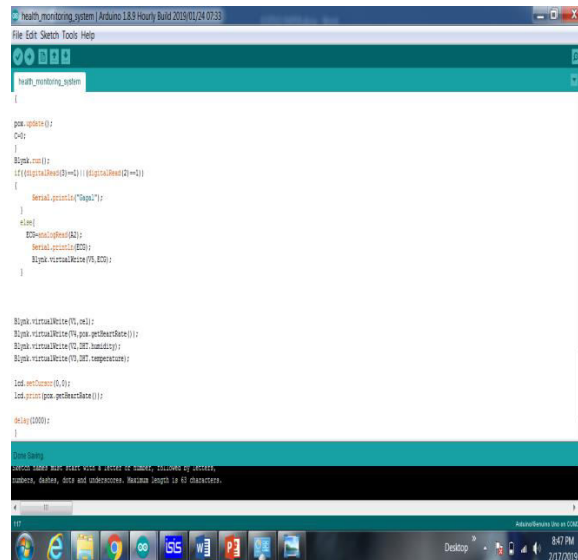

Figure 5.1 : Simulation of output

VI. PROTEUS PROFESSIONAL

Proteus is an app used for modeling systems in the sort of a computer. In his package are mixed-mode SPICE circuit simulation, animated components and microprocessor models. Consequently, it assists in co-simulation of whole microcontroller based designs. In addition, Proteus can simulate the work of the software in microcontrollers with the connected analog and digital electronics. Indeed, it simulates all the Input / Output ports as well as timers, interrupts, USARTs as well as all other peripherals has each processor
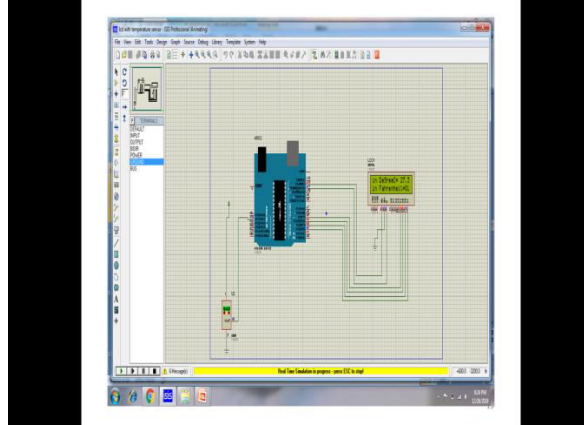
Figure : 5.2 Simulation

VII. CONCLUSION

The health monitoring system comes with multiple specifications catering for different people. The computer is able to accommodate more medical tools than other systems. The length of time required to compute results is less than a minute. In contrast to conventional systems, this one is smaller in size.

REFERENCES

[1]A.M. Ghosh, D. Halder and SK.A. Hossain, "Remote Health Monitoring System through IoT" ,2016

[2] R.T. Hameed, O. Abdul wahabe "Health

Monitoring System Based on Wearable Sensors and CloudPlatform" 20th (ICSTCC), Oct13-15,2016 Sinaia, Romania.

[3]A. Abdullah, A. Ismael, A. Rashid, A. Abou-ElNour, and Mohammed Tarique "Real time wireless health monitoring application using mobile devices" (IJCNC) Vol.7, No.3, May2015.

[4] N.P. Kumari and V. Yadav "Heart Rate Monitoring and Data Transmission via Bluetooth'' International Journal of Innovative and Emerging Research in Engineering, 2015.

[5]M.M.Lambat and S C Wagaj,"Health Monitoring system", International journal of science and research,2015.

[6]]R. WahyuKusuma,I. Ridha,Y. Rianto and E.P. Swelandiah,"FPGA based heartbeats monitor with fingertip optical sensor" October 2014.

[7]E.L.Verma and J.Bagga "Design and Implementation of Online Heart Rate Monitoring System .

[8]R.Suji Pramila and S.Nargunam, "A Survey on Effective in-Home Health Monitoring System" International Journal of Computer Applications April 2013.

[9]D.Lou,X. Chen,Z .Zhao,Y. Xuan,Z.Xu,H. Jin,X. Guo and Z.Fang "A Wireless Health Monitoring System based on Android Operating System" 2013

[10]G.Vijaya Lakshmi, B. Suresh Ram, and T Ramakrishna "Health Monitoring System Using Wi-Fi as a Communication Medium on ARM7", September, 2013.

[11]M. Shelvar, J. Singh and M. Tiwari, "Wireless Patient health monitoring system",2013.

[12]A. Bourouis, M. Feham and A. Bouchachia , " Ubiquitous mobile health monitoring system for elderly(UMHMSE)",2011.

[13]R. Shahriyar , Md. F. Bari , G. Kundu , S.I. Ahamed and M.M. Akbar "Intelligent Mobile Health Monitoring System (IMHMS)" International Journal of Control and Automation

[14]N. Noury,C. Villemazet,A. Fleury,P. Barralon, P. Rumeau,N. Vuillerme and R. Baghai" Ambient Multi-Perceptive System with Electronic Mails for Residential Health Monitoring System" , EMBS Annual International,2006.

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