



Automatic Wireless Health Monitoring System

Surya S Nair¹

Department of Electronics and Communication Engineering, Royal College of Engineering and Technology, Akkikavu
Kerala, India¹

ABSTRACT: There has been rapid growth in the number of elderly people over the past few decades. So it is important to provide them the best healthcare facilities. A compelling solution for this is to shift healthcare services from hospitals to homes. Appropriate health activities management through monitoring of patients can reduce the cost health sector thus we can empower people against the prevention of chronic diseases.

The health monitoring system is a new step in modern technology and it provide supervision for doctors. The difficulty experienced by medical experts monitoring multiple patients simultaneously is been alleviated by the inclusion of telecommunication devices. The wireless health monitoring system involves monitoring of patients vitals remotely by means of devices that transfer that patient data to remote locations wirelessly. This paper presents the development of microcontroller based system for wireless temperature monitoring using RF technology. The system enables to monitor temperature in real time. So that we can easily save many lives by providing them quick services and would save patients from the future health problems. The system would also help patients concern to take an appropriate action at proper time with fast discussion. The analog to digital converter carries the process using IC. The microcontroller constantly monitors output of analog to digital converter, comparing current data samples against stored samples. wireless physiological data monitoring system uses a radio channel to send real time vital sign data from wearable biomedical sensor devices to a coordinator.

KEYWORDS:Health care, modern technology ,wireless health monitoring ,telecommunication .

I. INTRODUCTION

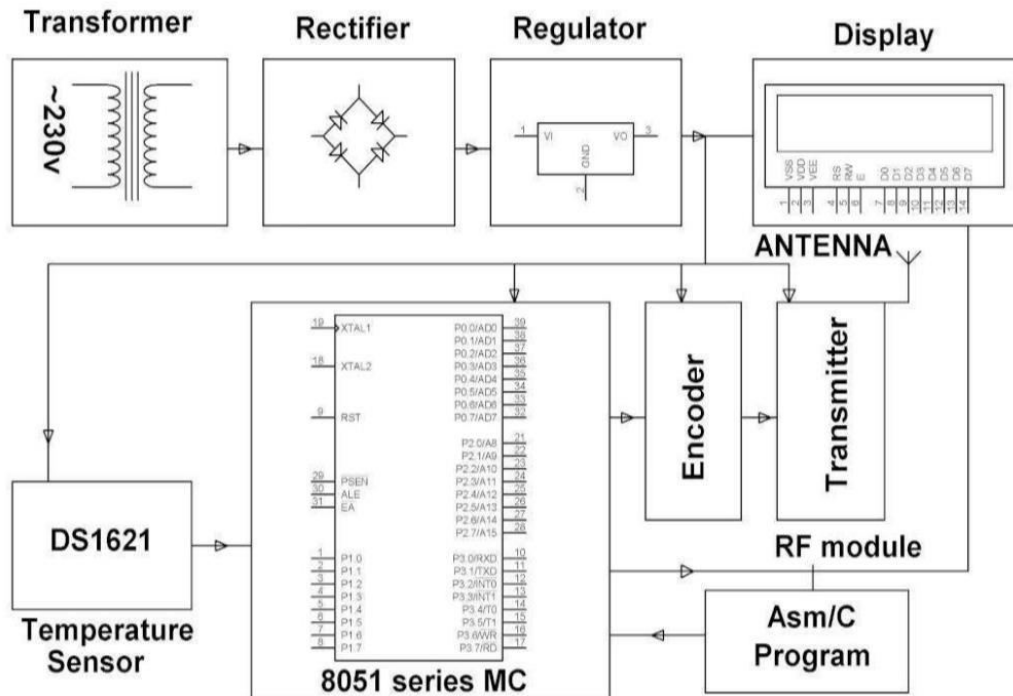
The biomedical field has many advantages in today's world .The wireless health monitoring system is a new step in automation. The system provide supervision for doctors. The people can always stay connected with their health situations and can take immediate action if necessary. The system contributes to good health and wellbeing of humans .The wireless health monitoring system not only transmit vital psychological signs to medical personnel but also simplifies the measurement and as a result raises the monitoring efficiency of patients .Health care system faced with the challenges such a weak interoperability and coordination among providers involved in patient treatment ,sharing information and so on .All those challenges will be rectified here. Use of different electronic health system in disease management has very important advantages. In deliver healthcare to chronic disease a patient considering social and human aspects and having a systematic review was essential .Paying attention to all aspects such as feedback, budget, motivation, hierarchy, useful standards, individual affordability, identification barriers and opportunity and so on are necessary .The stakeholder support to use of technology is very important. The system is affordable and patient friendly .Here the system make use of radio frequency technology and generate adhoc results. The main goal of the system is to monitor the temperature of patients body and display the same to the doctor using of RF technology .

II. WORKING

Diagram 1 and diagram 2 shows the block diagram explaining the working principle. The system monitors the temperature of patient using the method of wireless communication. The system produces the output as a digital display which can be viewed by doctor. The information's are sent to the doctor using RF technology.

The components used in this system include a power supply unit, an 8051 microcontroller, a temperature sensor, a RF transmitter, a receiver module and LCD display.

The 8051 microcontroller is used as a CPU for monitoring the temperature of a body. The entire circuit is being supplied by power from the power supply block. The temperature of patients body is calculated with the help of temperature sensor which is placed at the transmitter section. The data is read continuously and is send to the microcontroller. Then happens the encoding of transmitted data into serial data, over the air through RF module. Body temperature values are displayed on LCD. Through the antenna at the end of transmitter section, data transfer occur to the receiver section.



At the receiver section, receiver receives the data and is decoded using decoder. Data comparison is done with transmitted data and data stored in 8051. At the output, data is displayed on the LCD screen. Receiver module is placed at doctor's chamber. So that c
 Diagram1: Transmitter section chnology we can reduce the
 number of emergency department visit

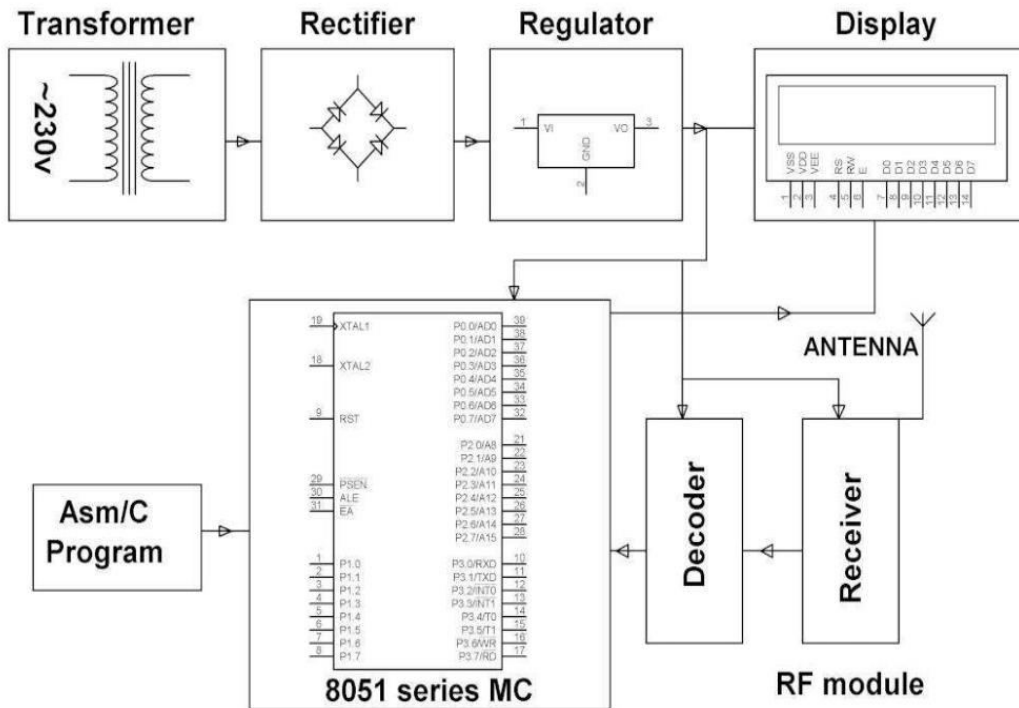
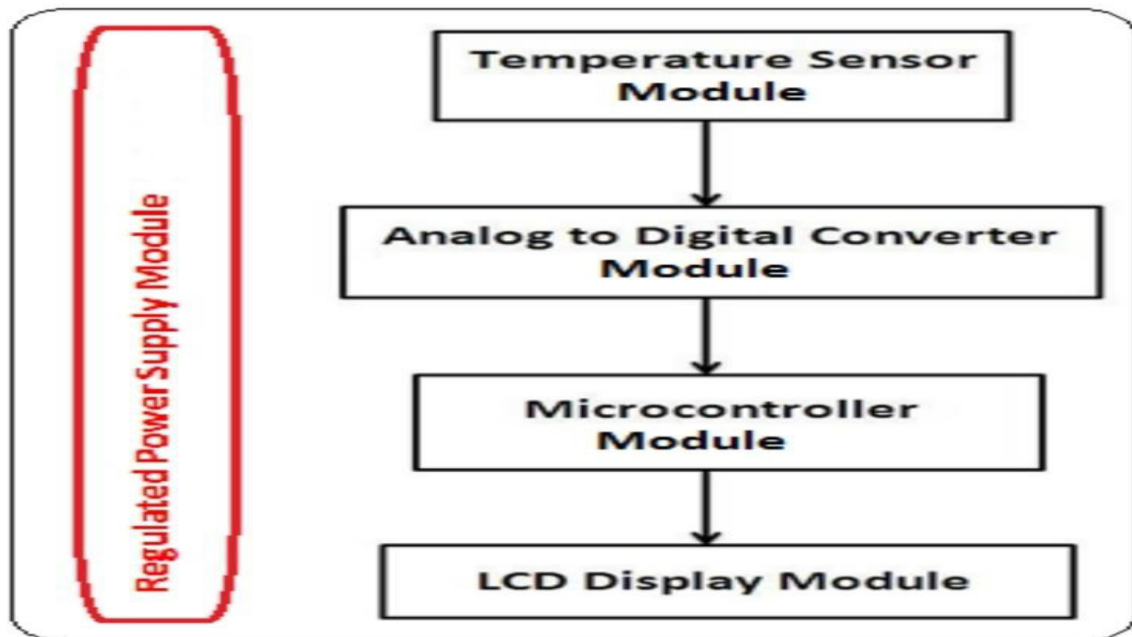


Diagram2: Receiver Section

The modular design of health monitoring system as shown in diagram 3. It shows the modular block diagram used in the proposed system. It consists of temperature sensor module, an analog to digital converter module, microcontroller module and at last a LCD display module. Here the system is provided with regulated power supply. The temperature of patient is measured using a temperature sensor and the analog value obtained is converted to digital value by using analog to digital converter. Then it is given to microcontroller module and the output is provided by LCD display module.



Here the proposed system is simulated using tinkercad. In this paper health monitoring system for patients is proposed which monitor body parameters like temperature. The system helps the staffs and caregivers to monitor patients. If any abnormalities are produced it gives an alert to caregivers. By the use of internet data can be available to remote locations or to the specialized doctors. Thus the designed parameters like security, correctness, availability and efficiency are achieved successfully.

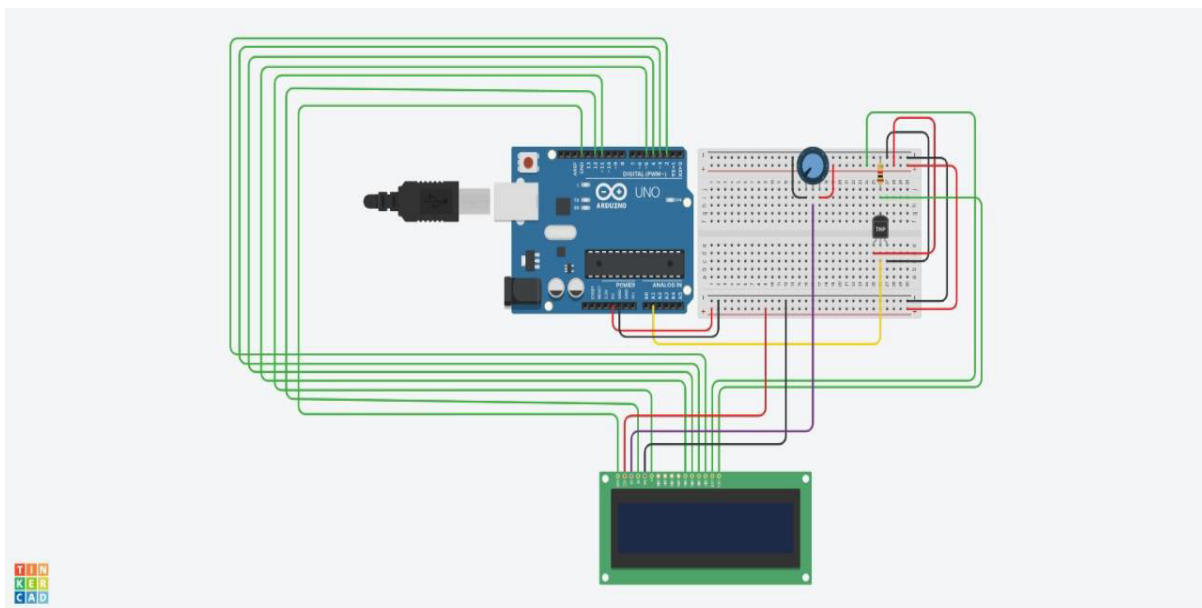


Diagram4: Simulated Result



V. FEATURES

The features of health monitoring is to have a quantitative assessment of the important physiological variables of the patients during critical periods of their biological functions. Patients can potentially receive more education and feedback than they would if they waited for regular appointments, such as annually. Overall, patients can be more satisfied, and doctors can care for their patients more efficiently.

VI. ADVANTAGES AND DISADVANTAGES

Ensure good health and well-being ,real-time analysis ,health management and patient monitoring, user friendly ,affordable,realtime processing ,improved chronic condition management, reduce burden to healthcare system ,improved patient outcomes are the advantages of health monitoring system .

Doctors have to pay effort in order to engage patients and motivate them to use remote patient monitoring. The main drawback of this technology is the unproved accuracy of devices. As long as the possibility of imprecision exists ,the effectiveness of remote patient monitoring will remain uncertain to many.

VII. FUTURE SCOPE

The action of monitoring patients health occur without being physically present. Doctors can use a secured webpage where information's are shared through mobile phones. Tests are done to check the device maintenance, effectiveness and convenience. The e-ICU models are also trending which allow doctors to monitor patients using two cameras, high speed internet and connected devices. Therefore, the system can change the way patient care takes place by reducing the error and effort. The system will driven by high progress and receptiveness in database maintenance. In future the communication can be made collaborative by adding two way Communication protocols for IOT so that doctors can monitor and advice patients online. Similarly, the patients can ask their queries. The technology thus hold's a strengthening future providing Independent and mobile health monitoring while reducing the stress to visit doctors and health personnel.

VIII. APPLICATIONS

The applications of automatic wireless health monitoring systems are many .The system is used to transfer the data from transmitter section to receiver section wirelessly .The proposed system mainly focuses on the situations for the doctors and patients are the distant location and it is very important to give the entire details about the patient to the doctor. Besidesthis, the system can also be applicable for acknowledging the students with fastest modes of information.

IX. CONCLUSION

Application of electronic health system for patient monitoring has a significant advantages. The use of these tools in health care needs to study about these technologies, compare their benefits and limitations note to organizational resources including human,technical,financial suitable planning and affordability of these facilities. Determining and decreasing challenges and identifying opportunity that affects and successful implementation of these technologies have critical role in proper application of each of the systems.

REFERENCES

- [1] W.Ping,W.JinGang,S.XiaoBo,andH.Wei,“The research of telemedicine system based on embedded computer,”in Proceedings of the 27th Annual International Conference of the Engineering in Medicine and Biology Society(IEEE-EMBS'05),pp.114–117,IEEE,Shanghai,China,January2006.
- [2] A.Kailas,C.C.Chong,andF.Watanabe,“From mobile phones to personal wellness dashboards,”IEEE Pulse,vol. 1,no.1,pp.57–63,2010.
- [3] M.F.A.R.,&.B.a.W.(2014),“A Wireless Emergency Telemedicine System for Patients Monitoring and Diagnosis.
- [4] G.López,V.Custodio,andJ.I.Moreno,“LOBIN:E-textile and wireless-sensor-network-based platform for health care monitoring in future hospital environments,”IEEE Transactions on Information Technology in Biomedicine,vol.14,no.6,pp.1446–1458,2010
- [5] Sowmyasudhan S and Manjunath S, "A wireless based real-time Patient monitoring system", International Journal of Scientific & Engineering Research, vol. 2, no. 11, Nov. 2011.



- [6] Edward Teaw, Guofeng Hou, Michael Gouzman, K. Wendy Tang, Matthew Kane, Amy Kesluk and Jason Farrell, "A Wireless Health Monitoring System", International Conference on Information Acquisition, Print ISBN: 0-7803-9303-1, June 27 - July 3 2005.
- [7] J. Luo, Y. Chen, K. Tang and J. Luo, "Remote monitoring information system and its applications based on the Internet of Things", International Conference on FBIE.
- [8] H. Fotouhi, A. Causevic, K. Lundqvist and M. Bjorkman, "Communication and Security in Health Monitoring systems –“ A Review”, IEEE 40th Annual COMPSAC Atlanta GA USA, 2016, ISSN 0730-3157.
- [9] M. Rodgers, V. Pai and R. Conroy, "Recent advances in wearable sensors for health monitoring", Sensors Journal IEEE, vol. PP, no. 99, pp. 1-1, 2014.
- [10] M. R. Yuce, "Implementation of wireless body area networks for healthcare systems", Sensors and Actuators A: Physical, vol. 162, no. 1, pp. 116-129, 2010.