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KEY WORDS:

ANDROID BASED PORTABLE HEALTH SUPPORT SYSTEM

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ABSTRACT

The Android based Health support systems have drawn considerable attention for researcher. The main objective was to develop a reliable patient monitoring system so that the health care professionals can monitor their patients, who are either hospitalized or executing their normal life activities. In this system we present a Android mobile device wireless health support system that can provide real time data about physiological conditions of a patient. This system is designed to measure and monitor important physiological data of a patient in order to accurately describe the status of her/his health. The system mainly consists of sensors, the data acquisition unit, microcontroller and software. The patient's temperature, blood pressure , Blood Glucose etc. will be monitored, displayed, and stored by our system.

I. INTRODUCTION

Health is one of the global challenges for humanity. According to the constitutions of World Health Organization (WHO) the highest attainable standard of health is a fundamental right for an individual.. Healthy individuals also reduce pressure on the already overwhelmed hospitals, clinics, and medical professionals and reduce workload on the public safety networks, charities, and governmental (or non-governmental) organizations.

To keep individuals healthy an effective and readily accessible modern healthcare system is a prerequisite's modernized healthcare system should provide better healthcare services to people at any time and from anywhere in an economic and patient friendly manner. Currently, the healthcare system is undergoing a cultural shift from a traditional approach to a modernized patient centered approach. In the traditional approach the healthcare professionals play the major role. They need to visit he patients for necessary diagnosis and advising. There are two basic problems associated with this approach. Firstly, the healthcare professionals must be on site of the patient all the time and secondly, the patient remains admitted in a hospital, wired to bedside biomedical instruments, for a period of time.

In order to solve these two problems the patient oriented approach has been conceived. In this approach the patients are equipped with knowledge and information to play a more active role in disease diagnosis, and prevention. The key element of this second approach is a reliable and readily available patient monitoring system (PMS).The need for a real time recording and notification of vital signs of a patient is of prime importance for an effective PMS. By encapsulating the advantages of modern bioinstrumentation, computers. and telecommunication technologies a modern PMS should acquire, record, efficient, timely, and hence an active database system must be associated with the PMS.

In this Paper a smartphone based wireless healthcare support system is presented, which can provide online information about medical status of a patient. The proposed system consists of sensors, adata acquisition unit, smartphone. The system is able to display, record, and send patient's physiological data to android mobile phone .

II.RELATED WORKS

Wireless health monitoring system (WHMS) has drawn considerable attentions from the research community as well as industry during the last decade. Numerous and yearly increasing research and development efforts have been posted in the literatures. We have limited this effort to include only some of the very recent related works.

[1]Real time wireless health monitoring application using mobile devices. In this paper different sensors are used to monitor the patients condition. And displayed on PC or Laptop and the report are send to mobile device through the text message.

[3] Real time mobile healthcare system for monitoring the elderly patients from indoor or outdoor locations has been presented A bio-signal sensor and a smartphone are the main components of the system. The data collected by the bio-signal sensor are transmitted to an intelligent server via GPRS/UMTS network. The system is able to monitor the mobility, location, and vital signs of the elderly patient from a remote location.

[4]A smart shirt has been designed in The shirt can measure electrocardiogram(ECG)and acceleration signals for continuous and real time health monitoring of a patient. The shirt mainly consists of sensors and conductive fabrics to get the body signal. The measured body signals are transmitted to a base station and server PC via IEEE 802.15.4 network. The wearable devices consume low power and they are small enough to fit into a shirt. To reduce the noise associated with the ECG signal an adaptive filtering method has also been proposed in this work.

[5] Windows Mobile based system for monitoring body parameters has been presented in the proposed system consists of a body sensor network that is used to measure and collect physiological data. Bluetooth has been used to transmit data from the sensor network to a mobile device. The reliability and robustness of the proposed system has been verified by the authors The experimental results show that the proposed system is able to monitor the physiological data of patients under mobility condition.

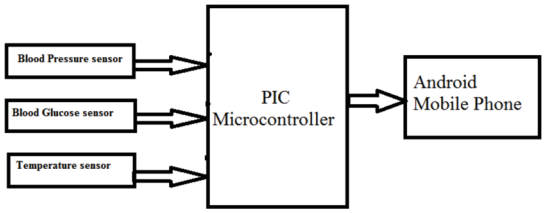
[6] A complete wireless body area network (WBAN) system has been designed . The proposed system uses medical bands to obtain physiological data from sensor nodes. The author has chosen medical bands in order to reduce the interference between the sensor device and other existing network devices. To increase the operating range multi-hopping technique has been used and a medical gateway wireless board has been used in this regard. This gateway has been used to connect the sensor nodes to a local area network or the Internet. By using Internet the healthcare professionals can access patients' physiological data from anywhere at any time.

[7] Many health monitoring systems use wearable sensors that produce continuous data and generate many false alerts. Hence, these systems become unsuitable for use in clinical practice. To solve this problem some machine learning approaches have been proposed. In these approaches data generated by the wearable sensors are combined with clinical observations to provide early warning of serious physiological changes in the patients. The effectiveness of these approaches has been tested at Oxford University Hospital. successfully combine data acquired from the

wearable sensors. Combining these data with manual observations the clinical staff makes important decisions about the patients.

[8] Cloud computing has been incorporated in a healthcare system. The authors have proposed a cloud based intelligent healthcare monitoring system (CIHMS) for providing medical feedback to a patient through cloud. The proposed system can obtain adequate data related topatient's disease and deliver the data to a remote location by using cloud computing devices.

II.BLOCK DIAGRAM



A. The LM35 Temperature Sensor:

The LM35 series are precision integrated circuit LM35 temperature sensors, whose output voltage is linearly proportional to the temperature in Celsius (Centigrade). The LM35 sensor thus has an advantage over linear temperature sensors, calibrated in °Kelvin.The LM35 sensor does not require any external calibration or trimming to provide typical accuracies of ±Ľ°C at room temperature and ±ľ° Cover a full -55 to +150°C temperature range. The LM35's low output impedance, linear output, and precise inherent calibration make interfacing to readout or control circuitry especially easy. As it draws only 60 µA from its supply, it has very low self-heating, less than 0.1°C in still air.

B. Blood Pressure Sensor:

Blood pressure sensor is a device that measures the pressure of the blood in the arteries as it is pumped around the body by the heart. When our heart beats, it contracts and pushes blood through the arteries to the rest of our body. This force creates pressure on the arteries. Blood pressure is recorded as two numbers—the systolic pressure (as the heart beats) over the diastolic pressure (as the heart relaxes between beats). Some special features of blood pressure sensor includes (i) automatic measurement of systolic, diastolic and pulse, (ii) large LCD screen with LED backlight, and (ii) touch pad key. In addition a typical blood pressure sensor can store 80 measurements data with time and date.

c) Blood Glucose Sensor

Blood glucose sensor is a medical device for determining the approximate concentration of glucose in the blood. A small drop of blood, obtained by pricking the skin with a lancet, is placed on a disposable test strip that the meter reads and uses to calculate the blood glucose level.

d) PIC Microcontroller:

The input is given to microcontroller through these sensor .The PIC microcontroller has inbuilt ADC .Where the conversion takes place and finally output is displayed on smart phone through Bluetooth.

e)Android Mobile Phone:

Mobile is to display the real time output directly on mobile screen. Mobile phone is also used to generate the alarm by android phone to indicate the seriousness of patient body.

f) Node MCU:

The Node MCU (Node Micro Controller Unit) is an open source software and hardware development environment that is built around a very inexpensive System-on-a-Chip. This system is used to connect hardware board to the android phone through internet access through WI-FI connection

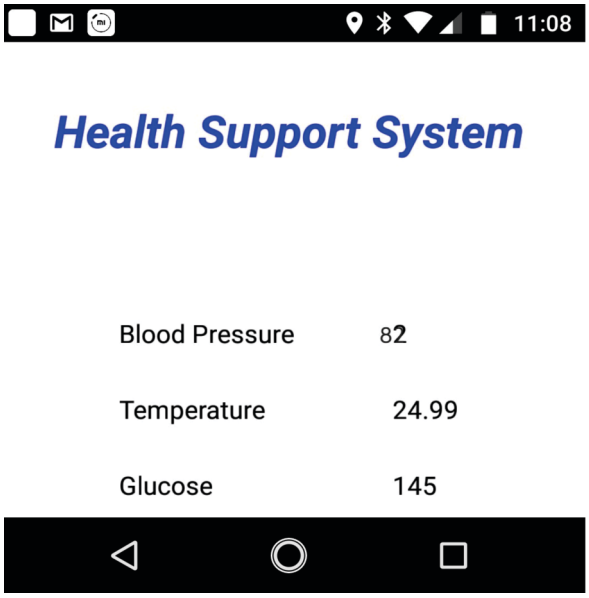
III.SYSTEM OPERATIONS, RESULTS, AND VALIDATIONS

1. We connect the temperature sensor, a blood pressure sensor, and blood glucose level sensor to the microcontroller.
3. we connect a wireless module of system to the tablet (as a receiver) or the smartphone that has android software running on it to take the reading of the physiological data from the patients' body. The data are then processed and displayed.
4. The data are also saved according to the time and presented in a report format. In addition some personal details of the patient are also recorded.
5. The data is then published in the internet so that the patient's data can be accessed by the authorized healthcare personnel from anywhere at any time.

IV. RESULTS

I.OUTPUT:

Output which is generated from Temperature sensor, Blood pressure sensor and LM35 from patient body will be displayed on android mobile phone through the android app running on it.



V. CONCLUSION

This paper present "Portable health support system" which is easy to use by common man. .By using the system the healthcare professionals can monitor, diagnose, and advice their patients all time

VI.REFERENCES

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