HUMAN HEALTH MONITORING SYSTEM

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Abstract: **-** The main focus of the method is to implement a prototype model for the real time patient monitoring system. The proposed method is used to measure the physical parameters like body temperature, heart beat rate, Blood Pressure, oxygen in to blood and glucose level in to blood with the help of biosensors. Conventionally there are number of techniques available for the patient's health monitoring system with wired communication technology. In the novel system the patient health is continuously monitored and the acquired data is display on LCD. System active when coin insert in to coin box. Embedded processor supports for analyzing the input from the patient and the results of all the parameters are stored in the database. The implementation of the system is achieved by the advanced Atmega328 microcontroller and simulation results are obtained.

I. INTRODUCTION

Now recently wireless sensor networks (WSN) play a vital role in the research, technological community hence resulting in the development of various high-performance smart sensing system. Many new research is focused at improving quality of human life in terms of health by designing and fabricating sensors which are either in direct contact with the human body (invasive) or indirectly (noninvasive) in contact. Health monitoring is an informal, non-statutory method of surveying your work force for symptoms of ill health.The important role of health monitoring is to give feedback into a system that reviews the current control methods in place.In addition, there are specific regulations dealing with manual handling and whole body vibration in the workplace. To ensure you are complying with your duties under these regulations you should refer to HSE (health system engineering) guidance, if manual whole body vibration are risks in your workplace. Whole body vibration is particularly prevalent in those that drive industrial and parameters and the sampled parameters are wireless. Importance of biomedical engineering The development of biomedical engineering is responsible for improving healthcare diagnosis, monitoring and therapy. The idea is driven by the vision of a cable free biomedical monitoring system. On body sensors monitor the vital parameters (blood pressure, temperature and heart beat rate). Periodic health monitoring (or preventative care) allows people to discover and treat health problems early, before they have consequences. Especially for risk patients and long term applications, such a technology offers more freedom and comfort.

II. LITERATURE REVIEW

1. *"Health Monitoring using Internet of Things (IoT)" by HimadriNathSaha at 978-1-5386-2215-5/17/$31.00 ©2017 IEEE.*

   In this health observation system can keep track of patient's pulse rate, eco rate of heart, pressure level rate, temperature etc. If system detects any abrupt changes in patient heartbeat or temperature, the system mechanically alerts the user concerning the patients standing over IOT and additionally shows details of heartbeat and temperature of patient live over the Internet.

2. *"Wireless Health Monitoring System for Patients" by Salman Ahmed at IEEE2016.*

   The necessity of this project is to alleviate the difficulty that is encountered by medical experts in monitoring multiple patients simultaneously. This project will enable them to observe patients without having to be physically present at their bedside, be it in the hospital or in their home. A patient's body temperature, heart rate and electrocardiography (ECG) are transferred wirelessly through an agent such as Bluetooth technology.

3. *"Fitness Monitoring System Based on Heart Rate and Sp02 Level" by LakshmananSomanathan at IEEE2015***.**

   The paper presents CaszOxiSys, a real-time system for monitoring and analyzing physiological signals during fitness activity. CaszOxiSys consists of non-invasive pair of physiological sensor (light-emitting diode &photodiode) wirelessly connected through Bluetooth to a netbook or laptop which analyses physiological data and presents it to the user in an intelligible and informative way. This paper focuses on an implementation of CaszOxiSys using a pulse oximeter to monitor the user's heart rate and oxygen saturation.

III. WORKING PRINCIPLE

In working section there is microcontroller ATMEGA328. It is a 28 pin microcontroller. Here we are using three analog sensors pulse rate sensor, body temperature sensor and blood pressure sensor spo2 sensor sno2 sensor. Transistor BC547is used as amplifier and it is a NPN type transistor. Crystal of 16 MHz is used for oscillation purpose. We are using here the 16*2 LCD (liquid crystal oscillator) for displaying the output. The potentiometer is used for adjusting the brightness of LCD display. Here we are using ATMega328 microcontroller. It has 32 kb internal

memory, 8 bits, 2kb RAM and 28 pins. Microcontroller having three ports , out of 28 pins 20 pins use as a i/p and o/p and remaining 8 pins are as 2 pins for Vcc power supply, 2 pins are used for crystal oscillator, 1 pin for reset ,2 pins for GND and 1 pin for analog reference . Out of 20 pins we are giving 6 pins to the LCD, 1 pin for temperature sensor, 1 pin for GSM and 2 pin for converter.

IV. BLOCK DIAGRAM

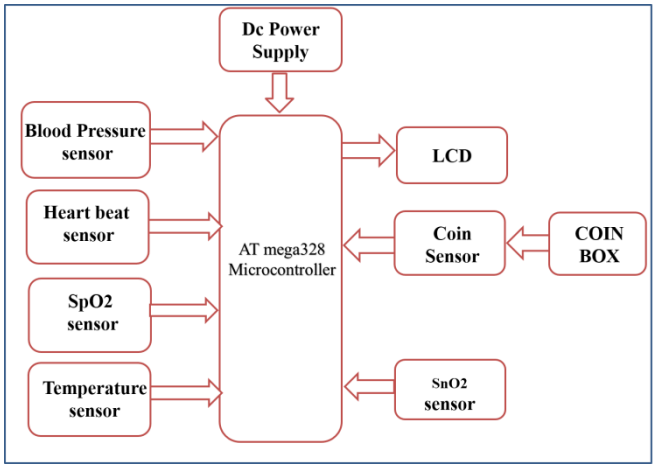

Fig 2: Block diagram

The block diagram of human health monitoring system is shown in fig. The block diagram consists of ATMEGA328,Blood Pressure Sensor, Heart beat Sensor,SpO2 sensor, Temperature sensor,Sno2 sensor, LCD, Coin Sensor, Coin Box and DC Power Supply.

A. *Temperature Sensor*

Using targeted circuit, skin temperature measurement is done. The temperature sensor gives an analog output and by using the ADC converter which is inbuilt in micro-controller the analog voltage is converted into digital voltage . This sensor allows it to measure the external temperature of the skin, positioned in such a way that it is in contact with the person's skin. Hence, from the skin temperature, the body temperature is measured.

B. *Pulse Rate Sensor*

A custom pulse rate sensor was designed to read the patient's pulse rate. The designed sensor is very small and its cost is less. From the pulse rate of the person, we can also measure the person's heart rate whose technique is based on near infrared spectroscopy. The pulse rate sensor is low cost method of measuring the pulse rate.

C. *Spo2 Sensor:*

Pulse oximeter is a standard non-invasive method used for measuring arterial haemoglobin oxygen saturation (Sp02). The CaszOxiSys utilizes the Alive Pulse Oximeter, which consists of a sensor and sensing module. The sensor (including cable) which includes a light emitting diode and a photodiode is light-weight, small, and flexible.These physical characteristics of the sensor make it suitable for use in fitness monitoring applications. The sensor is connected to the sensing module via a serial cable.

D. *Blood pressure sensor:*

The Blood Pressure Sensor is a non-invasive sensor designed to measure human blood pressure. It measures systolic, diastolic and mean arterial pressure utilizing the oscillometric technique. Pulse rate is also reported.

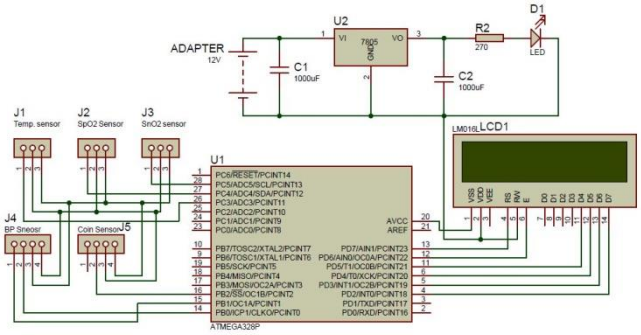

Fig 3:Schematic Diagram

V. CONCLUSION

We developed a model for smart health monitoring system that monitors the patient health with the help of the sensors. AT mega 328 board was found to be more compact, user friendly and less complex, which could readily be used in order to perform several tedious and repetitive tasks. The placing appropriate sensors like temperature, blood pressure, hemoglobin, oxygen level in blood and heart beat rate for sensing the health condition and the results are analyzed under normal conditions and abnormality conditions to be

VI. REFERENCES

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