GSM BASED HEART BEAT BIO MONITORING SYSTEM

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ABSTRACT

More than 2 million people are at high risk of having heart attack. It would be helpful if there was a way for these people to monitor their heart. So we have a problem that is the way our project focuses on how we can utilize this problem and find a solution.We in this project are measuring the heartbeat.

Keywords: 8051 Microcontroller Section, 7805 IC, Op-Amp, LCD Interfacing GSM Module

I .INTRODUCTION

The use of microcontroller is in every field even we can use it in the design and fabrication of biomedical equipment recently, the health care sensors are playing a vital role in hospitals. The patient monitoring systems is one of the major improvements because of its advanced technology. A wireless patient monitoring system to measure heartbeat of the patient by using embedded technology is developed.So we are here, just connecting the heartbeat sensor so that simultaneously we can monitor the patient's condition and hence ruling out the use of the thermometer and other devices to check the condition of the patient.

This project describes the design of a simple, low-cost microcontroller based heart rate measuring device with LCD output. Heart rate of the subject is measured from the index finger using heart beat module (the rate is then averaged and displayed on a text based LCD)

II.CIRCUIT DIAGRAMS

A. LCD INTERFACING

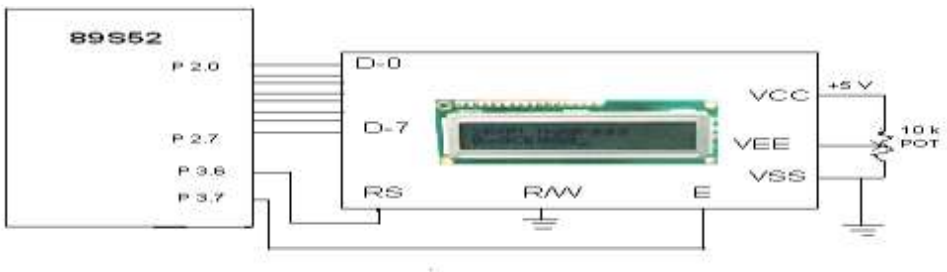

Fig. 1Circuit Diagram of LCD Interfacing

B. 8051 MICROCONTROLLER SECTION

A microcontroller is a single chip that contains the processor (the CPU), non-volatile memory for the program (ROM or flash), volatile memory for input and output (RAM), a clock and an I/O control unit. Also called a

"computer on a chip," billions of microcontroller units (MCUs) are embedded each year in a myriad of products from toys to appliances to automobiles.

The microcontroller at89s51 (8051) is here used to develop a heartbeat monitoring system. By placing your finger in between a LED and photo resistance, we can detect the pulses of heart.

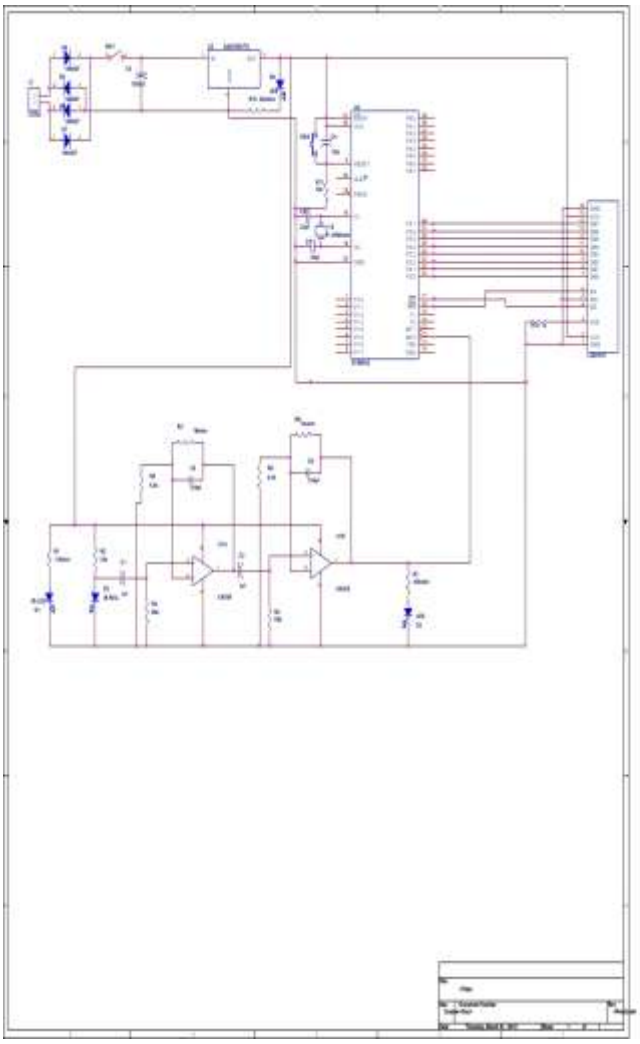

Fig. 2 Hardware Schematic of Microcontroller Section

C.GSM MODULE

In GSM Modem is used to develop a Interface between Mobile & Microcontroller by using GSM SIM.It connects Microcontroller to network provider to send the SMS.Power Supply – DC 12V .

It consists of LED (light emitting diode) and LDR (light detection resistor) which are placed parallel to each other. LED emits IR (Infrared) rays so that, when the finger is placed in between LED and LDR so that there exists some systolic pressure. LED emits IR rays which are travelled through finger and blood flows with arteriole pressure. Whenever systolic pressure is applied, normal pressure of blood flow is disturbed at fingertip

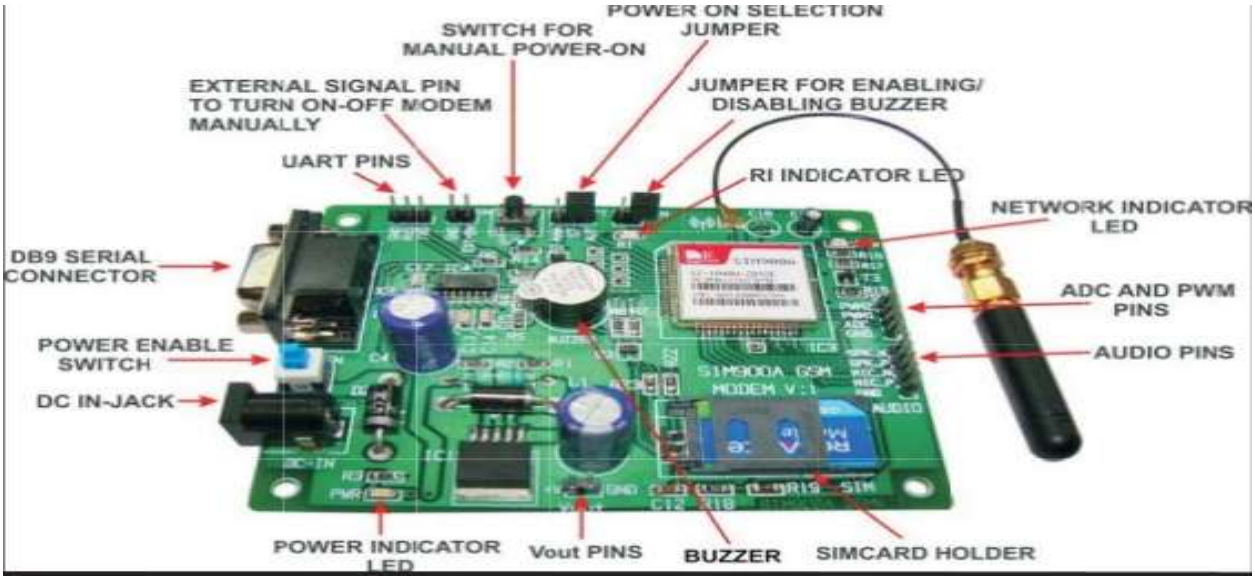

Fig. 3GSM MODULE

III. CONSTRUCTION & WORKING

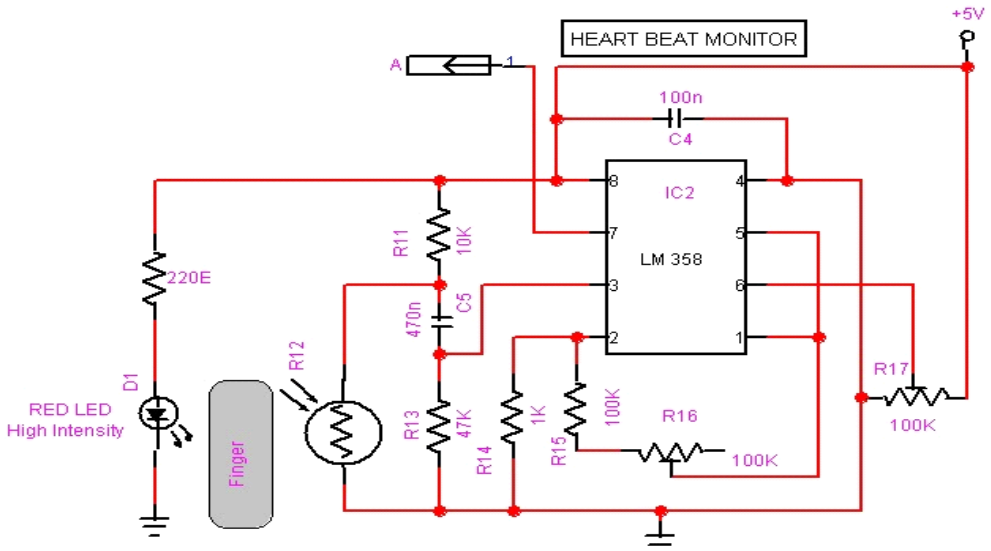

Fig. 3Circuit Diagram

Which is high and IR rays penetrate through blood and are received by LDR. The signals are analog which are converted into digital by ADC (Analog-Digital Converter), suitable for the Microcontroller unit.

The very small changes in reflectivity or in transmittance caused by the varying blood content of human tissue are almost invisible. Various noise sources may produce disturbance signals with amplitudes equal or even

higher than the amplitude of the pulse signal. Valid pulse measurement therefore requires extensive pre-processing of the raw signal. The new signal processing approach presented here combines analog and digital signal processing in a way that both parts can be kept simple but in combination are very effective in suppressing.

IV. APPLICATIONS

1. Have become a widely used training aid for a variety of sports
2. Hospitals / Dispensaries
3. Better and accurate method of measuring heat beat
4. At homes
5. A set point can help in determining whether a person is healthy or not checking his/her heart beat and comparing with set point.

V. FUTURE SCOPE

The device can be improved in certain areas as lie a graphical LCD can be used to display a graph of the change of heart rate over time. Sound can be added to the device so that a sound is output each time a pulse is received. Serial output can be attached to the device so that the heart rates can be sent to a PC for further online or offline analysis. Warning or abnormalities (such as very high or very low heart rates) can be displayed on the LCD or indicated by an LED or a buzzer. The Whole health monitoring system, which we have proposed can be integrated into a small compact unit as small as a cell phone or a wrist watch. This will help the patients to easily carry this device with them wherever they go. The VLSI technologies will greatly come handy in this regard. The project can be implemented as complete patient health monitoring system by measuring B.P, Tumors etc., which can be done by connecting corresponding sensors to the MCU.

VI. CONCLUSION

Heart rate sensor senses the heart rate of person by taking the average of ten readings by fixing maximum and minimum values (normal range of heartbeat is 60-100bpm) and the data is transferred to MCU. Crystal oscillator generates 11.0952MHz of signals used for operation and by enable input MUC works, stores the data in EPROM chip which is displayed on LCD. MCU stores the digital data after converting the analog data from sensor unit through ADC, for some delay unit of time and resets the reading in MCU as well as in LCD also. MAX232 receives the digital data and converts into serial form suitable for GSM communication so that data is received by the user (doctor) by verifying the IMEI number. The doctor advises precautions for the temporary observation of the patient from serious condition.

By using this prototype circuit containing AT89S52 MCU, GSM Modem, LCD and other hardware circuit so that the page messages can be transferred at fixed time intervals to the corresponding medical expert to give necessary precautions to take care about the patient. AT89S52 MCU consumes low power with suitable devices for interconnection. Auto alarm system is provided which sounds only when the reading exceeds or reduces than the normal level. Continuous monitoring of patients is done which is simple by using GSM network.

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