

## Android Based Health Care Monitoring System



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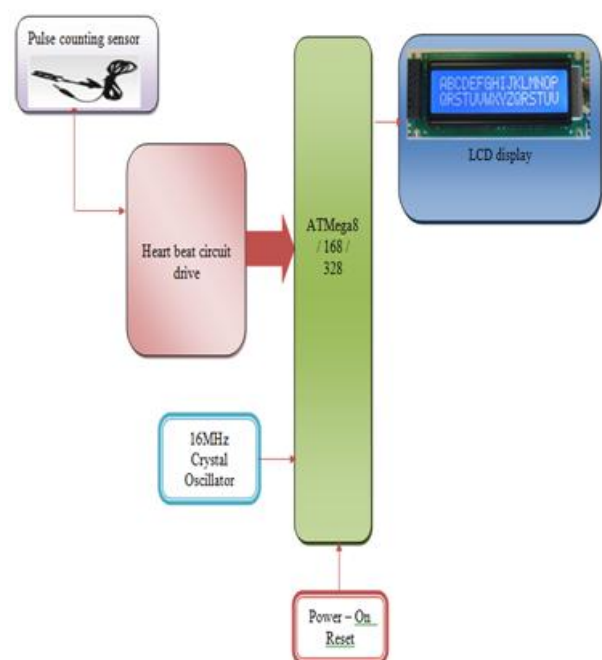
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### Introduction

Nowadays, the biomedical instrumentation holds a prominent position within medicine. Following this trend, the BPM (beat per minute) has become an important tool to elucidate about the functioning of the organism and wake up for anomalies by monitoring the heartbeat in the human body. These devices are mostly used in hospitals and clinics but are gradually finding their way into domestic use. This paper demonstrates on an approach to design a cheap, accurate and reliable device which can easily measure the heart rate of a human body.

### Existing system

This project describes the design of a simple, low-cost microcontroller based heart rate with LCD output. Heart rate of the subject is measured from the thumb finger using IRD (Infra Red Device sensors and the rate is then averaged and displayed on a text based LCD.).The device LCD displaying the heart beat rat and counting values through sending pulses from the sensor.



### Draw backs

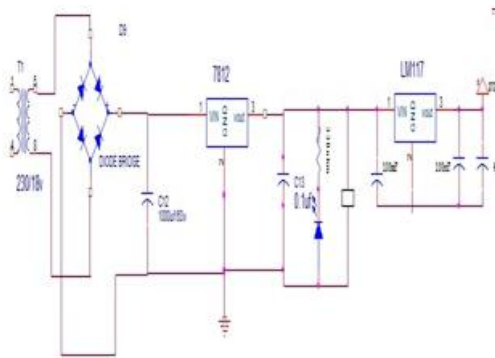
Only heart rate is being measured in the above experiment and there is LCD display.

Wireless communication is introduced in the proposed method.

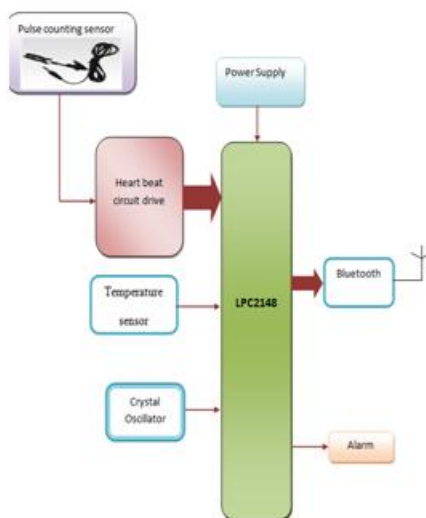
### Proposed system

This instrument employs a simple Opto electronic sensor, conveniently strapped on the finger, to give continuous indication of the pulse digits. The Pulse monitor works both on battery or mains supply. It is ideal for continuous monitoring in operation theatres, I.C.units, biomedical/human engineering studies and sports medicine. By reading pulse values continuously from pulse count sensor placed to the fore finger of patient.

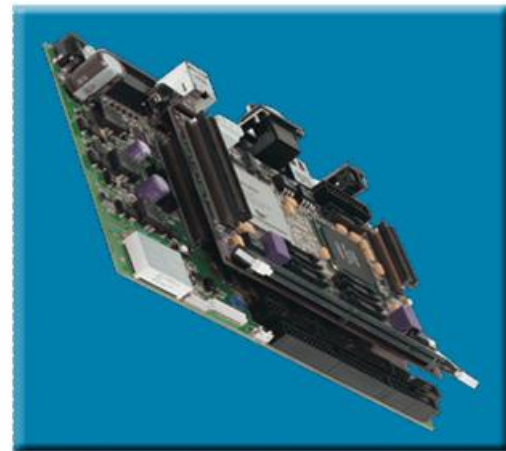
These values are encoded and sent to remote station using Bluetooth communication. In the android mobile we can easily get the details. The Temperature is measured using sensor and displays on LCD. This project uses regulated 3.3V, 750mA power supply. 7805 three terminal voltage regulator is used for voltage regulation. Bridge type full wave rectifier is used to rectify the ac out put of secondary of 230/12V step down transformer.



### Block diagram



### ARM PROCESSOR



### ARM7TDMI Processor Core

- Current low-end ARM core for applications like digital mobile phones
- TDMI
  - T: Thumb, 16-bit compressed instruction set
  - D: on-chip Debug support, enabling the processor to halt in response to a debug request
  - M: enhanced Multiplier, yield a full 64-bit result, high performance
  - I: Embedded ICE hardware
- Von Neumann architecture

### Pulse counting sensor

**Heart rate** is the speed of people's emotional state, exercise intensity and objective indicator of cardiac function. But most people are very difficult to accurately measure the time and his heart rate values. If the heart rate monitor with me, heart ECG electrodes will be detected by monitoring the signal processing device, the user can at any time that your heart rate changes, changes in heart rate, self-monitoring status.



Heart rate monitor for heart rate range (60 ~ 160) / min. Circuit by adjusting the relevant components, in the (60 ~ 160) / min within the audible alarm can

change the heart rate range. This heart rate range the width of the design center values  $\pm 20\%$  range. If central values such as emphasis on the 100 / exceptionally, the heart rate signal range (80 ~ 120) / min, if the heart rate exceeds this range, the lower limit, the instrument does not sound, if the heart rate in the range of the instrument ECG is the sound issue.



### LM35

#### Features description

- Calibrated Directly in ° Celsius (Centigrade)
- Linear + 10 mV/°C Scale Factor • 0.5°C Ensured Accuracy (at +25°C) • Rated for Full -55°C to +150°C Range
- Suitable for Remote Applications
- Low Cost Due to Wafer-Level Trimming
- Operates from 4 to 30 V
- Less than 60-μA Current Drain
- Low Self-Heating, 0.08°C in Still Air
- Nonlinearity Only  $\pm 1/4^\circ\text{C}$  Typical
- Low Impedance Output, 0.1  $\Omega$  for 1 mA Load

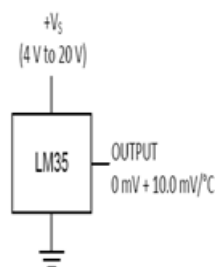
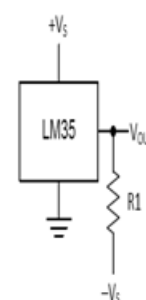


Figure 1. Basic Centigrade Temperature Sensor (+2°C to +150°C)



Choose  $R_1 = -V_S / 50 \mu\text{A}$   
 $V_{OUT} = 1500 \text{ mV at } 150^\circ\text{C}$   
 $V_{OUT} = 250 \text{ mV at } 25^\circ\text{C}$   
 $V_{OUT} = -550 \text{ mV at } -55^\circ\text{C}$

Figure 2. Full-Range Centigrade Temperature Sensor

#### Software tools

Keil compiler is a software used where the machine language code is written and compiled. After compilation, the machine source code is converted into hex code which is to be dumped into the microcontroller for further processing. Keil compiler also supports C language code.



#### Flash Magic

Flash Magic is a tool which is used to program hex code in EEPROM of micro-controller. It is a freeware tool. It only supports the micro-controller of Philips and NXP. It can burn a hex code into that controller which supports ISP (in system programming) feature. Flash magic supports several chips like **ARM Cortex M0, M3, M4, ARM7 and 8051**.



### Advantages

- Ease of operation
- Low maintenance cost
- Fit and forget system
- No wastage of time
- Durability
- Accuracy

### Applications

- Hospitals
- Remote heart rate monitoring applications
- Body temperature Monitoring
- Local monitoring applications
- Designed for Home and Clinical Applications

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