

# SMART PHONE USAGE FOR HEALTH MONITORING USING BLUETOOTH TECHNOLOGY

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## ABSTRACT

*With the event of technology and therefore the continuous improvement of people's living normal, individuals area unit in pursuit of machine-controlled, intelligent and convenient system to watch the parameters of body device conditions using MEMS sensor. At present, the laptop is employed because the device terminal for observation the various parameter conditions; but, there are a unit some issues within the laptop monitor terminal, like its nice bulk, inconvenience to hold, high cost, restricted observation vary and then on. Here in our system a decent option to style a terminal supported smart phone. The system consists of smart mobile phones, with the recognition of good phones, notably, the phone supported robot system is speedily developed. The system consists of various sensors like heartbeat, temperature and MEMS measuring system. Hence, we are able to simply monitor the human behavior conditions through robot system via mobile*

**Keywords:** *l pc2148, temperature sensor, heart beat sensor, mems sensor, bluetooth.*

## I. INTRODUCTION

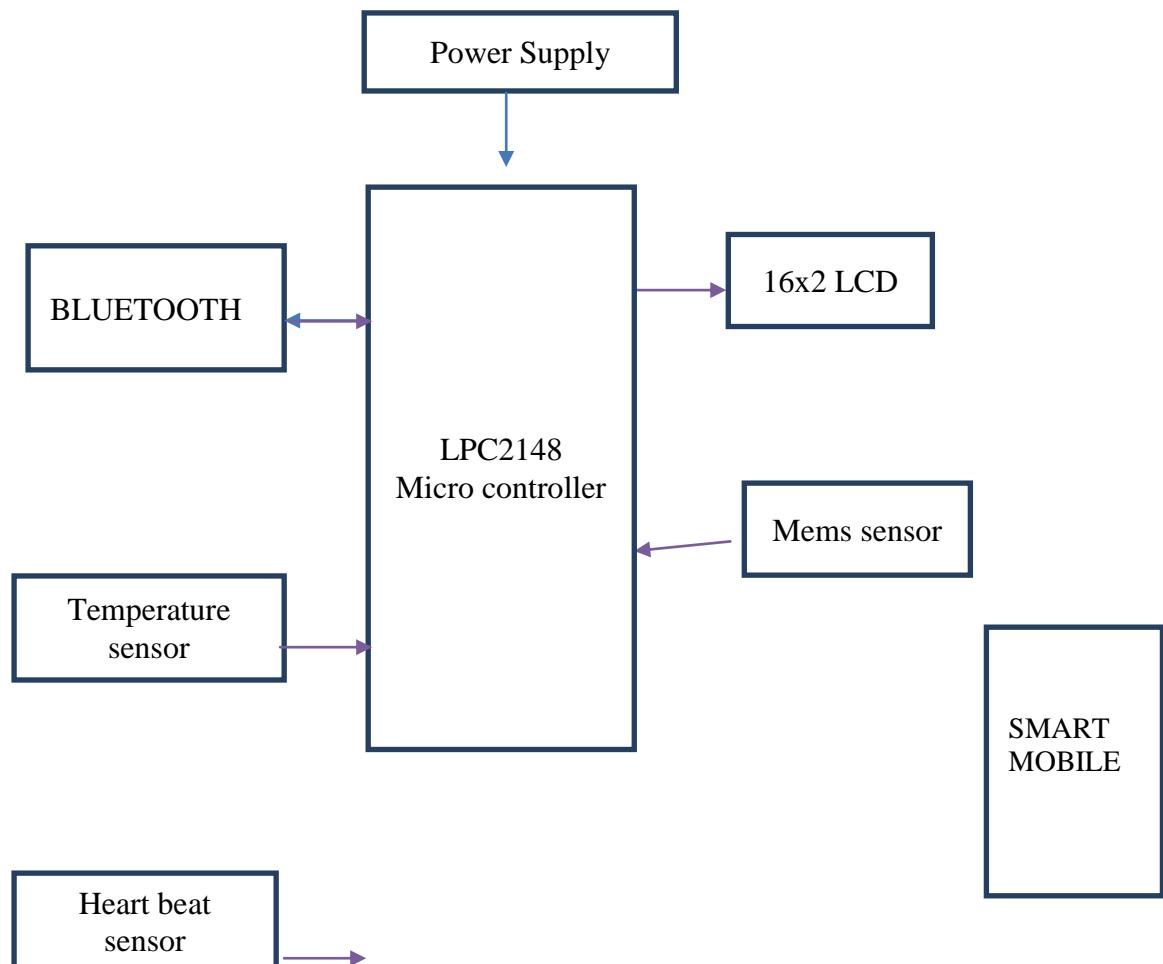
The proposed good sensing system is not restricted to BSN, but additionally will have applications for any crucial setting that needs fast and remotely accessible observance system. Pervasive health care is regarded as a key driver in reducing expenditure and enabling enhancements in illness management. Advances in wireless communication and sensor technologies allow the real time acquisition, transmission and processing of crucial medical info. In this paper, we examine completely different approaches of streaming physiological information from body sensors over a wireless network. Modern mobile phones give decent storage and process skills and give a versatile programming setting, making them ideal to method and store detected information from multiple sources. We compare the approach of victimization a central information server, against using a good phone, to store and process the medical information. The competing necessities of step-down of energy consumption versus the timely delivery of abnormal conditions square measure investigated victimization a simulated body detector network. The measurements show that when a patient is mobile, a smart phone is that the device best suited to perform the initial process of important signs and causation of medical alerts.

## II. LITERATURE REVIEW

The maximum of frame tool networking (BSN) are communicate with specific tool with constrained distance completely heart beat device temperature sensor and and many others.. Are linked to body and the end result

monitored via victimization unique equipment's entirely. Those device's presents totally analog values some high priced equipment's gives digital values. And one character want to monitor those values, if the patent fitness circumstance important there may be no alerting machine. In this machine we are able to keep away from the particularly issues. Body sensors networking(BSN) at once communicate with android cell, no need to monitor patents frequently, those gadget can offer particular and accurate health statues of the patent, and it could provide some alert as soon as the patent health circumstance going to important. Microcontroller compare predefined values with patents up to date values, when the patent condition important these device will alert, in this system consist Bluetooth so by means of connecting automaton cellular with gadget the standing of the patent will screen continuously.

## 2.1 Hardware design

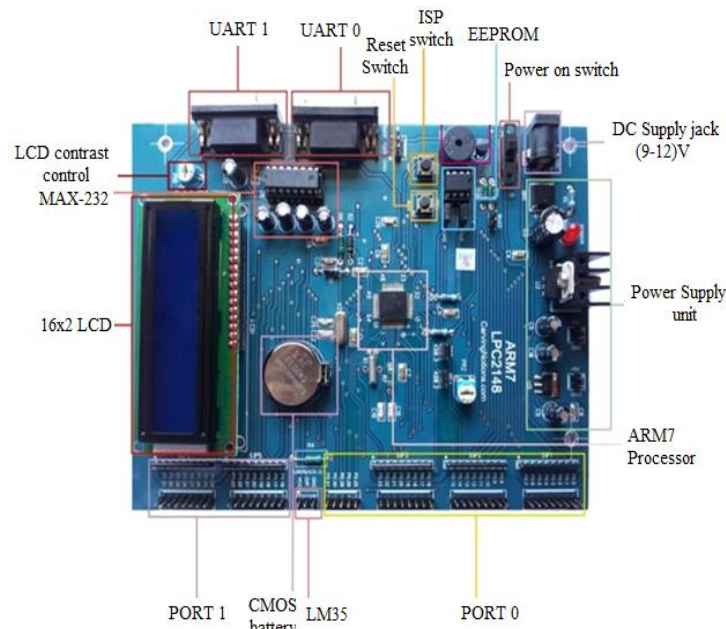


**fig1:Block Diagram**

## **LPC2148**

### **2.2 Microcontroller**

The LPC2148 microcontroller board primarily based totally on a 16-bit/32-bit ARM7TDMI-S CPU with real-time emulation, sixteen-bit/32-bit ARM7TDMI-S microcontroller in a tiny LQFP64 package deal, eight kB to forty kB of on-chip static RAM and 32 KB to 512 KB of on-chip flash memory; 128-bit large interface/accelerator permits high-tempo 60 MHz operation, In- tool Programming (ISP), unmarried 10-bit DAC affords variable analogue output, 32-bit timers/outside event counters (with 4 seize and 4 have a look at channels each), PWM unit (six outputs) and watchdog, Low strength actual-Time Clock (RTC), a couple of serial interfaces which includes two UARTs, speedy I2C-bus (400kbit/s), SPI and SSP with buffering and variable data length talents.



**Fig2:-LPC2148 controller board**

### **2.3 Bluetooth**

Basically, Bluetooth is that the term accustomed describes the protocol of a brief range (10 meter) frequency-hopping communicate gadget among devices. These gadgets implementing the Bluetooth technology area unit termed Bluetooth - enabled. Documentation on Bluetooth is cut up into 2 sections, the Bluetooth Specification and Bluetooth Profiles.

- The Specification describes however the technology works (i.e. the Bluetooth protocol architecture),
- The Profiles describe however the technology is utilized (i.e. however utterly completely different parts of the specification are usually accustomed fulfill a desired operate for a Bluetooth device).

### **2.4 Heartbeat Sensor**

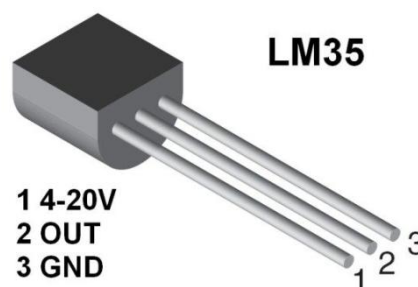
Heartbeat detector provides a straightforward thanks to study the perform of the center which might be measured supported the principle of psycho-physiological signal used as a input for the virtual- reality system.

The quantity of the blood within the finger changes with regard to time. The detector shines a light-weight lobe (a little terribly bright LED) through the ear and measures the sunshine that gets transmitted to the sunshine Dependent resistance. The amplified signal gets inverted and filtered, within the Circuit. So as to calculate the center rate supported the blood flow to the tip, a heart-rate detector is assembled with the assistance of LM358 OP-AMP for observance the heartbeat pulses.



## 2.5 Temperature sensor:LM35

The LM35 series are precision integrated-circuit temperature sensors, whose output voltage is linearly proportional to the Celsius (Centigrade) temperature. The LM35 consequently has an advantage over linear temperature sensors calibrated in ° Kelvin, as the user is not required to subtract a massive constant voltage from its output to reap convenient Centigrade scaling. The LM35 does not require any external calibration or trimming to offer well known accuracies of  $\pm 1/4^{\circ}\text{C}$  at room temperature and  $\pm 3/4^{\circ}\text{C}$  over a complete  $-55$  to  $+150^{\circ}\text{C}$  temperature variety. Low rate is assured via trimming and calibration on the wafer level. The LM35's low output impedance, linear output, and precise inherent calibration make interfacing to readout or control circuitry specifically easy. It can be used with unmarried strength materials, or with plus and minus materials. As it attracts simplest  $60\text{ }\mu\text{A}$  from its supply, it has very low self-heating, plenty much less than  $0.1^{\circ}\text{C}$  in however air.



## 2.6 Mems

The Free scale measuring machine consists of a MEMS electrical phenomenon sensing g-mobile and a image gaining knowledge of ASIC contained in a completely single bundle. The detector is sealed hermetically on the wafer level employing a bulk small machined cap wafer. The g-cell may be a mechanical structures from semiconductor substances mistreatment overlaying and etching strategies. The device are often sculptured as a movable beam that movements among 2 mechanically mounted beams (Figure 4). 2 gaps vicinity unit shaped;

one being between the movable beam and also the preliminary stationary beam and additionally the second among the movable beam and also the second one desk bound beam. The ASIC uses switched electric condenser techniques to live the g-cell capacitors and extract the acceleration understanding from the distinction between the two capacitors. The ASIC moreover sign conditions and filters (switched capacitor) the sign, imparting a digital output this is proportional to acceleration.



**Figure 19: Simplified electrical device Physical Model**

### **III. SOFTWARE DESIGN**

In this proposed gad get, as we used LPC2148 we want to use following software equipment to program for it.

1. Keil4 Vision
2. Flash Magic

The Keil4 Vision is an IDE for Embedded language. In this IDE, we want to import the utilities and libraries according to the controller we're the use of. This IDE is very less difficult and in user friendly way to apply. It consist so fall the C/C++ compilers, assemblers, and debuggers in it. It simplifies the manner of embedded simulation and trying out in conjunction with Hex file technology. The flash magic is a programming utility. The C/C++ software written in IDE may be processed Into Hex document i.e. in. hex layout. By using hex file we dump the code into micro controller and perform the task with respective application.

### **IV. WORKING DESCRPTION**

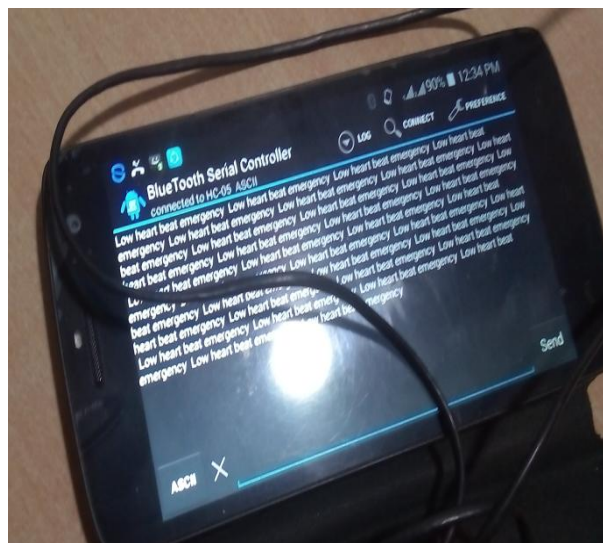
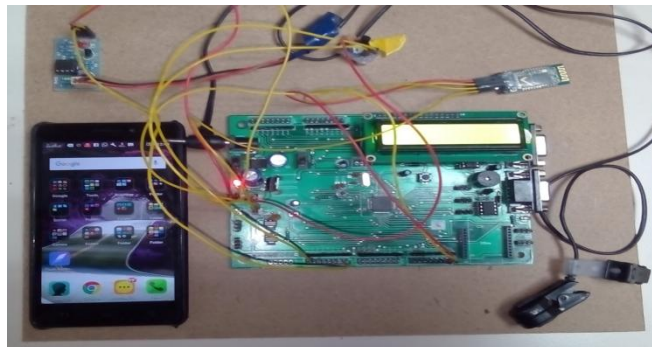
The most goal of the task is to take a look at the sensor information and collectively transmit the information via Bluetooth technology. Thus we have a tendency to can simply show the information from the detector in a surely predefined manner. In this venture the microcontroller performs an vital function to perform the desired mission. The microcontroller we use d on this challenge is ARM seven LPC2148 has many essential alternatives like ADC, SPI, I2C, PWM, and RTC. The sensors which area unit interfacing without delay with microcontroller and we have a propensity to write the code in such manner to speak with the microcontroller and carry out the proper task. The Bluetooth module is interfaced with microcontroller that is used to transmit the values of the corresponding detector knowledge and display the records thru messages.



The undertaking is designing of LPC2148 microcontroller its operative with Bluetooth and sensors, in this task an digital circuit we will be predisposed to vicinity unit mistreatment to examine patents temperature and heartbeat identity in hospitals for patents health observance purpose. Here we are a unit interfacing heartbeat and temperature sensors to our small controller, the sensors continuously transmit the understanding to sensible cellular through mistreatment Bluetooth generation. If the controller gets greater values then predefined values the system will offer the alert otherwise it unendingly transmits the sensors know-how to the microcontroller then the microcontroller ship the information to the practical mobile mistreatment Bluetooth .And some other feature of this venture is imparting vital conductivity detection of patent and with alert. Smart Mobile System for Body sensing detail Network evolved by means of applying WSN and Bluetooth generation is conferred. It can find out the body temperature, heartbeat and switch the facts unendingly.

## VI. RESULTS

Here the results are shown our undertaking “Smart Mobile System for Body device Network” whenever high/low temperature and excessive/low heart fee detects from the various device it provide alert in any other case it unendingly transfer the frame analyzing via Bluetooth. Here Bluetooth related to lpc2148 microcontroller it ship the facts from WSN to cellular



**VII. CONCLUSION**

In this project Bluetooth technology used for data receiving from WSN has with success designed and testing. In all hardware components it's developed by group action options area unit used. Presence of every elements reasoned placefastidiously checkout in outputs. It's as highly advanced lpc2148 microcontroller with facilitate of technology the project has been with success

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