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SMART PHONE USAGE FOR HEALTH MONITORING USING BLUETOOTH TECHNOLOGY

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ABSTRACT

This paper presents a smart mobile system for a body detector network (BSN) that collects, displays, analyzes and streams multiple sensor knowledge to a centralized computing server. Multiple wireless protocols including the Bluetooth and close to Field Communication (NFC) are used to transmit detector knowledge. An Intelligent Personal Communication Node (IPCN) victimization associate degree humanoid good phone is introduced consisting of detector knowledge assortment, processing, analysis and transmission by the smart phone. Various detected knowledge's tested together with acceleration, temperature and electrocardiography (ECG) knowledge to demonstrate system extensibility. Particularly for cardiogram detector knowledge, a QRS detection algorithm for heart beat rate (HBR) calculation is enforced to demonstrate humanoid system computation practicableness for period signal process. A major advantage of the Android system is that the ability to speak with detector nodes on-demand and to amass real times multiple detector knowledge at the same time.

Key Words: Lpc2148, Temperature Sensor, Heart Beat 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.

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II. LITERATURE REVIEW

The most of body device networking (BSN) are communicate with explicit device with restricted distance solely heart beat device temperature sensor and etc..are connected to body and the result monitored by victimization special equipment's solely. Those equipment's provides solely analog values some pricey equipment's gives digital values. And one person need to monitor these values, if the patent health condition critical there is no alerting system.

In this system we will avoid the in particular problems. Body sensors networking(BSN) directly communicate with android mobile, no need to monitor patents frequently, these system can provide precise and correct health statues of the patent, and it can provide some alert once the patent health condition going to essential. Microcontroller compare predefined values with patents updated values, when the patent condition essential these system will alert, in this system consist Bluetooth so by connecting automaton mobile with system the standing of the patent will monitor continuously.

III. HARDWAREDESIGN

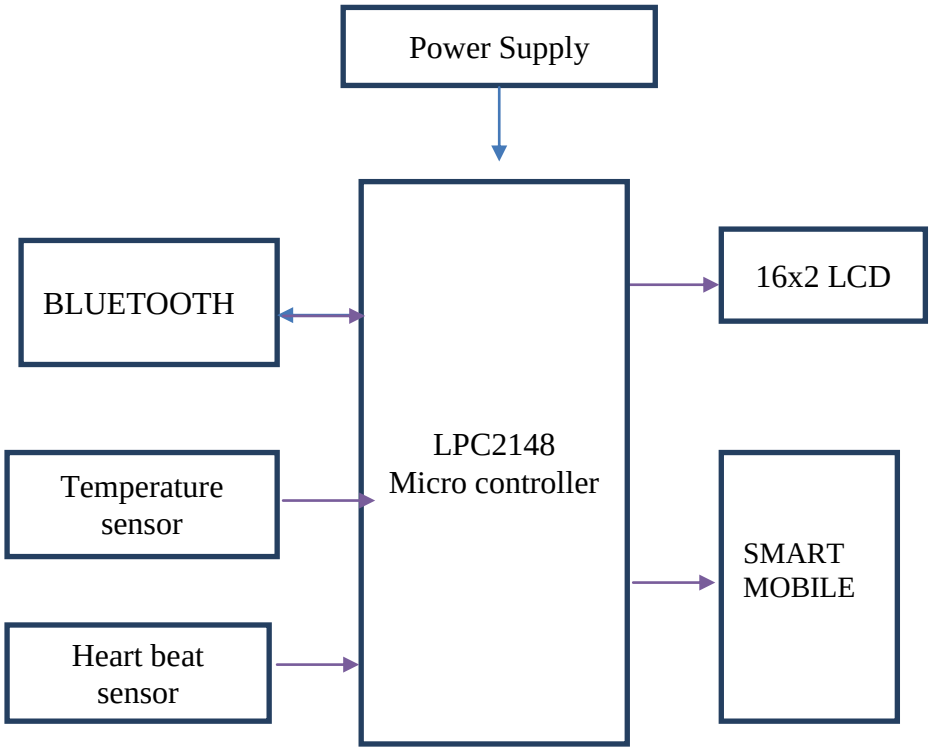

Fig1: Block Diagram

3.1lpc2148 Microcontroller

TheLPC2148microcontroller board based tot allyona sixteen-bit/32-bitARM7TDMI-S CPUwithreal-timeemulation,sixteen-bit/32-bitARM7TDMI-Smicrocontroller inatinyLQFP64packagedeal,8kBto40kBofon-chipstaticRAMand32KBto512KBofon-chipflashmemory;128-bithugeinterface/accelerator allows high-pace60MHzoperation, In-system Programming (ISP),unmarried10-bitDACaffordsvariableanalogue output, 32-bittimers/outsideeventcounters(withfourcaptureand4examinechannelsevery),PWMunit(sixoutputs)and watch

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dog,Low strength actual-Time Clock(RTC),more than one serial inter faces which includes two UARTs ,rapid I2C-bus (400kbit/s), SPI and SSP with buffering and variable information length competencies.

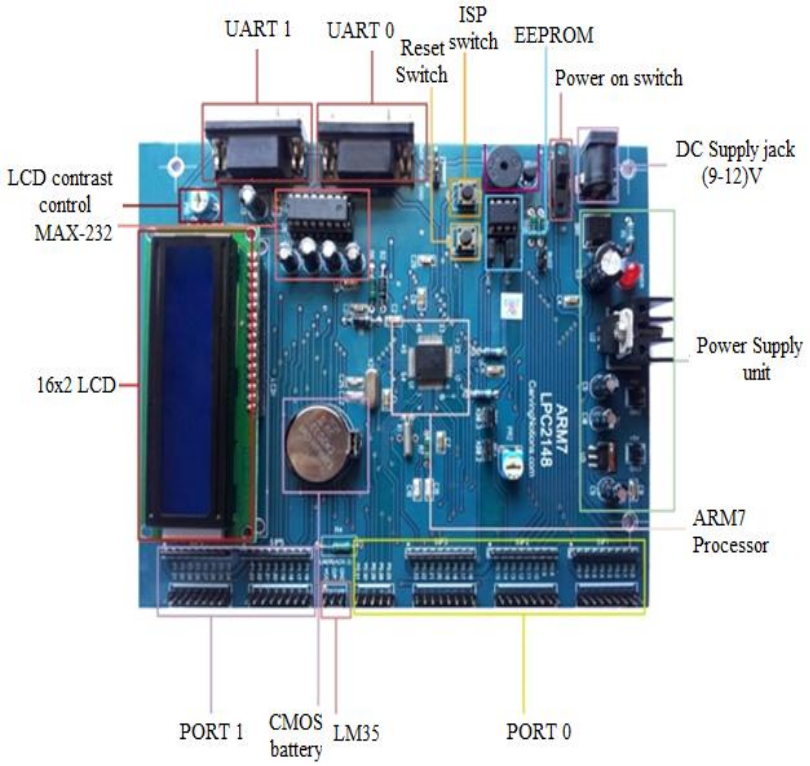

Fig2:-LPC2148 controller board

3.2 Bluetooth

Basically, Bluetooth is that the term accustomed describes the protocol of a brief vary (10 meter) frequency-hopping communication system between devices. These devices implementing the Bluetooth technology area unit termed Bluetooth - enabled. Documentation on Bluetooth is split 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).

3.3 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.

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3.4 Temperature Sensor

The DS1621 Digital measuring instrument and Thermostat provides 9-bit temperature readings that indicate the temperature of the device. The thermal alarm output, TOUT, is active once the temperature of the device exceeds a user-defined temperature TH. The output remains active till the temperature drops below user printed temperature atomic range eighty one, providing any physical phenomenon necessary. User-defined temperature settings area unit hold on in non-volatile memory therefore components is additionally programmed before insertion throughout a system. Temperature settings and temperature readings area unit all communicated to/from the DS1621 over an easy 2-wire serial interface.

The DS1621 measures temperature employing a band gap-based temperature device. A delta-sigma analog to digital convertor (ADC) converts the measured temperature to a digital price that is tag in °C; for °F applications, an operation table or conversion routine should be used. The temperature reading is provided during a 9-bit, two's complement reading by supplying the scan TEMPERATURE command. Table a pair of describes the precise relationship of output data to measured temperature. The info is transmitted through the 2-wire serial interface, MSB first. The DS1621 will live temperature over of -55_C to +125_C in zero.5_C increments.

IV. SOFTWAREDESIGN

In this proposed gadget, as we used LPC2148wewantto use following software equipment to program form

- Keil4 Vision
- Flash Magic

TheKeil4 Vision is an IDE for Embedded c 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 program in 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.

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V. WORKING DESCRRIPTION

The most objective of the project is to look at the sensor data and collectively transmit the info through Bluetooth technology. Thus we have a tendency to can merely monitor the data from the detector in an exceedingly predefined manner. In this project the microcontroller plays an important role to perform the specified task. The microcontroller we used in this project is ARM seven LPC2148 has many integral options like ADC, SPI, I2C, PWM, and RTC. The sensors which area unit interfacing directly with microcontroller and we have a tendency to write the code in such manner to speak with the microcontroller and perform the precise task. The Bluetooth module is interfaced with microcontroller which is used to transmit the values of the corresponding detector knowledge and monitor the data through messages.

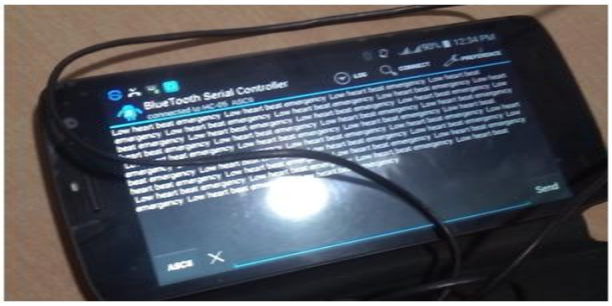
VI. WORKING PROJECT

The project is designing of LPC2148 microcontroller its operative with Bluetooth and sensors, in this project an electronic circuit we have a tendency to area unit mistreatment to observe patents temperature and heartbeat identification 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 knowledge to sensible mobile by mistreatment Bluetooth technology. If the controller gets more values then predefined values the system will provide the alert otherwise it unendingly transmits the sensors knowledge to the microcontroller then the microcontroller send the knowledge to the sensible mobile mistreatment Bluetooth .

And another feature of this project is providing critical conductivity detection of patent and with alert. Smart Mobile System for Body sensing element Network developed by applying WSN and Bluetooth technology is conferred. It can discover the body temperature, heartbeat and transfer the data unendingly.

VII. RESULTS

Here the results are shown our project “Smart Mobile System for Body device Network” whenever high/low temperature and high/low heart rate detects from the various device it offer alert otherwise it unendingly transfer the body reading through Bluetooth. Here Bluetooth connected to lpc2148 microcontroller it send the data from WSN to mobile.



VIII. 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

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reasoned place fast odiously checkout in outputs. It's as highly advanced lpc2148 microcontroller with facilitate of technology the project has been with success

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