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PATIENT HEALTH MONITORING SYM USING ZIGBEE RFID GSM WITH WIRELESS AUTOMATIC DOCTOR DETECTION THROUGH SMS

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ABSTRACT:

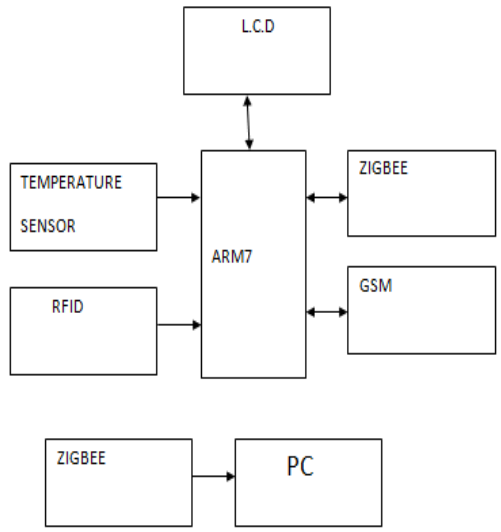
In this project we are implementing and introducing a new method of take caring a patient even from the remote areas. In this the main aim is to monitor the patient condition and serving him according to his/her condition, here we monitor some basic biomedical parameters like temperature. RFID is used for patient information and patient number.Based on these measured values using the sensors we or doctor take care about the patient and we install a circuit which consists of zigbee, GSM at patient's bed to transfer the data to the doctor and concerned care taker. At the doctor's side we have a PC in which we program with HYPERTERMINAL software to observe the patient's data that was received through the zigbee device according to that data doctor will respond. With this we are automating the way of take caring a patient when he was in trouble.

Keywords: Temperature Sensor, Zigbee, Gsm, Arm7, Rfid.

INTRODUCTION:

In some situations the patient may suffer seriously due to the absence of the doctor. Even though there will be a nurse near the patient she can treat the patient to some extent only and further she may not proceed further. TO overcome this we are going to design this project which is aimed at providing treatment to the patient even by the nurse by taking the proper instructions from the doctor over LCD or mobile using ZIGBEE . This project also provides flexibility to the patient relatives through SMS and they can know whether the patient is going to treat properly or not. So that the patient is treated properly. Here in this project initially the normal values of Temperature are stored in LCD and the values of these parameters at are transmitted to the LCD through micro controller, to which a ZIGBEE wireless communication device is connected. In doctor side LCD hyperterminal programmer is written to check the values. If there is any problem in the patient condition a remedy is shown in the LCD. So, even if doctor is not present the nurse can take the necessary action.

BLOCK DIAGRAM:



ZIGBEE COMMUNICATION:

ZigBee is a specification for a suite of high level communication protocols using small, low-power digital radios based on an IEEE 802 standard for personal area networks. Applications include wireless light switches, electrical meters with in-home-displays, and other consumer and industrial equipment that requires short-range wireless transfer of data at relatively low rates. The technology defined by the ZigBee specification is intended to be simpler and less expensive than other WPANs, such as Bluetooth. ZigBee is targeted at radio-frequency (RF) applications that require a low data rate, long battery life, and secure networking. ZigBee has a defined rate of 250 kbps best suited for periodic or intermittent data or a single signal transmission from a sensor or input device. ZigBee based traffic management system have also been implemented. The name refers to the waggle dance of honey bees after their return to the behave.

TEMPERATURE SENSOR LM35:

A temperature is a type of resistor used to measure temperature changes, relying on the change in its resistance with changing temperature. Temperature is a combination of the words thermal and resistor. The Temperature was first invented by Samuel Ruben in 1930, and has U.S. Patent #2,021,491.If we assume that the relationship between resistance and temperature is linear (i.e. we make a first-order approximation), then we can say that:

$\Delta R = k\Delta T$

WhereΔR = change in resistance

ΔT = change in temperature

k = first-order temperature coefficient of resistance

Temperature can be classified into two types depending on the sign of k. If k is positive, the resistance increases with increasing temperature, and the device is called a positive temperature coefficient (PTC) temperature,If k is negative, the resistance decreases with increasing temperature, and the device is called a negative temperature coefficient (NTC) temperature. Resistors that are not temperature are designed to have the smallest possible k, so that their resistance remains almost constant over a wide temperature range.

GSM/GPRS MODULE:

A GSM/GPRS module assembles a GSM/GPRS modem with standard communication interfaces like RS-232 (Serial Port), USB etc., so that it can be easily interfaced with a computer or a microprocessor / microcontroller based system. The power supply circuit is also built in the module that can be activated by using a suitable adaptor.

AT COMMANDS:

AT commands are used to control MODEMs. AT is the abbreviation for Attention. These commands come from Hayes commands that were used by the Hayes smart modems. The Hayes commands started with AT to indicate the attention from the MODEM. The dial up and wireless MODEMs (devices that involve machine to machine communication) need AT commands to interact with a computer. These include the Hayes command set as a subset, along with other extended AT commands.

RFID (Radio-Frequency Identification)

RFID chip next to a grain of rice. RFID chips contain a radio-frequency electromagnetic field coil that employs a magnetic field to emit a coded identification number when queried by a reader device. This small type is incorporated in consumer products, and even implanted in pets, for identification.

Radio-frequency identification (RFID) is the use of a wireless non-contact system that uses radio-frequency electromagnetic fields to transfer data from a tag attached to an object, for the purposes of automatic identification and tracking. Some tags require no battery and are powered by the electromagnetic fields used to read them. Others use a local power source and emit radio waves (electromagnetic radiation at radio frequencies). The tag contains electronically stored information which can be read from up to several metres (yards) away. Unlike a bar code, the tag does not need to be within line of sight of the reader.

ARM PROCESSOR:

The LPC2141/2/4/6/8 microcontrollers are based on a 32/16 bit ARM7TDMI-S CPU with real-time emulation and embedded trace support, that combines the microcontroller with embedded high speed flash memory ranging from 32 kB to 512 kB. A 128-bit wide memory interface and unique accelerator architecture enable 32-bit code execution at the maximum clock rate.

FEATURES OF ARM PROCESSOR:

• 16/32-bit ARM7TDMI-S microcontroller in a tiny LQFP64 package.

• 8 to 40 kB of on-chip static RAM and 32 to 512 kB of on-chip flash program memory.

128 bit wide interface/accelerator enables high speed 60 MHz operation.

• In-System/In-Application Programming (ISP/IAP) via on-chip boot-loader software.

Single flash sector or full chip erase in 400 ms and programming of 256 bytes in 1 ms.

• Embedded ICE RT and Embedded Trace interfaces offer real-time debugging with the

on-chip Real Monitor software and high speed tracing of instruction execution.

• Single 10-bit D/A converter provides variable analog output.

• Two 32-bit timers/external event counters (with four capture and four compare

channels each), PWM unit (six outputs) and watchdog.

• Low power real-time clock with independent power and dedicated 32 kHz clock input.

RESULT:

This technique presents a system to upgrade existing health monitoring systems in the hospitals by providing monitoring capability and a thus a better cure. This system is based upon wireless technology i.e. Zigbee IEEE 801.15.4 providing low cost effective solution. As it is wireless device, the cost of cables is reduced here. It provides continuous monitoring of the vital signs of the patient over long periods of time until an abnormal condition is

captured and hence critical situations can be overcome. This intelligent monitoring system provides long term monitoring capability useful for the staff in the hospitals and reduces their workload. Future work may include more number of sensors in a single system to provide flexibility. Hence the main goal of this paper is to develop a patient health monitoring system to alert the staff in the hospitals so that immediate care is provided to patients.

The Proposed Technique Has The Following Advantages:

Easy an Reliable for Doctors: In a hospital, either the nurse or the doctor has to move physically from one person to another for health check, which may not be possible to monitor their conditions continuously. Thus any critical situations cannot be found easilyunless the nurse or doctor checks the person‟s health at that moment. This may be a strain for the doctors who have to take care of a lot number of people in the hospital.

1. Increase efficiency: The number of nurses required for keeping a check on patients in ICU can be reduced to a large extent.

2. More Accurate: Chances of human error in checking different health parameters is also reduced, also the database can be updated time to time.

CONCLUSION:

From the above designed project we can conclude that we are able to transmit the data which is sensed from remote patient to the doctor's ‟PC by using wireless transmission technology, Zigbee. Using Zigbee at receiver the data is received and displayed on the PC. Also, if doctor is not present in campus, he will receive a SMS on his mobile phone in case any of the parameter goes beyond the normal range. The leads of to the patient, which is nearest to the chest side of patient. So that we get more and more efficency.All other sensors should also be calibrated properly for precise measurement of parameters and in order to facilitate immediate action by the doctor to provide proper medication and treatment to the patient in case of any emergency situation.

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