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WIRELESS SYSTEM FOR MONITORING THE PHYSIOLOGICAL PARAMETERS OF THE PATIENT

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ABSTRACT: This paper presents a wireless sensing element network system that has the potential to observe physiological parameters from multiple. The system uses the medical implant patient body communication service band sensing element and also the respiration sensing element for remote observation and developed exploitation arduino because the system controller and process unit. This provides medical personnel and individual customer's chance of observation their important between the sensing element nodes and a distant Central Control Unit(CCU).During this paper, embedded pulse rate, temperature physiological parameters like pulse rate, body heat and respiration. The LCD will display the temperature, pulse rate and respiration range. If the temperature (100 deg cel) and pulse rate (100beats per min) increases above threshold it will indicate by the alarm sound for one minute.

I. INTRODUCTION

With the assistance of high performance and fault tolerance wireless device conditions like temperature, pulse and reparation will be taken mechanically from patients. A wireless body detector network in an exceedingly medical central ought to so be established to eliminate medical errors and scale back work load and increase the potency of hospitals employees and improve the comport of patients. There has been redoubled wireless among analysis, developing wireless recording and observance for real time physiological parameter from the abnormal patients [eg: coma, wheezing patients].Most of this impact has principally been centered on the devices that square measure observance detector signal solely from one patient body. A number of them as follow: reliable, communication by eliminating, collision of 2 patients, signals and interference from different external wireless device, low cost, low power consumption. Health care services will improve the living of patient, physically disabled, elders and inveterately unwell persons. Thus while not often visit to the doctor, anyone will get correct treatment and improve the his/her health condition. In recent years, several e-health system developed and that they are measure providing the remote observance of the patient. Within the health management system associate in nursing integrated patient display with low price and this fashion of technology is principally wont to endlessly monitor the patient health condition, for effectively and accurately activity the patient physiological parameters like pulse, temperature and respiration of the patient movement.

RELATED WORK

The figure 1 shows the entire procedure of this system is described in the following steps

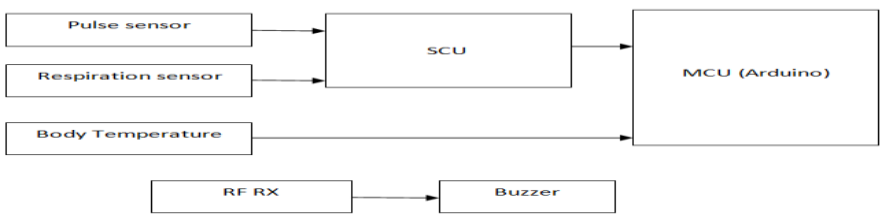

Figure 1: Block Diagram

- The temperature sensor is used to measure the body heat of the patient.
- LCD is used to display the range of body heat, acceleration of the body and pulse rate of the body.

II. IMPLEMENTATION

2.1 ARDUINO:

The figure 2.1 shows Arduino which is used in our project AT mega 328 has a few distinct highlights which make it most well known gadget in the present market. These highlights comprise of cutting edge RISC design, great performance, low power utilization, genuine clock counter having separate oscillator,6TWM pins, programmable sequential USART, programming lock for programming security, throughput upto 20 MIPS etc..

Figure 2.1: Arduino Controller

AT mega -328is for the most part utilized in arduino. AT mega 328 is a 8-piece and 28 pins AVR microcontroller, made by microchip, follows RISC engineering and has a blaze type program memory of 38Kilo Byte. It has EEPROM memory of 1Kilo Byte and its SRAM memory is 2Kilo Byte.

2.2 TEMPERATURE SENSOR:

The figure 2.2 shows Temperature which is used in our project. The normal body temperature of a person varies depending on gender, recent activity, food and fluid consumption, time of day, and in women, the stage of the menstrual cycle. Normal body temperature can range from 97.8 degrees F to 99 degrees F for a healthy adult.

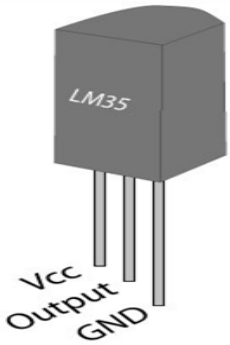

Figure 2.2: Temperature Sensor

2.3 RESPIRATION SENSOR:

The figure 2.3 shows Respiration which is used in our project. The respiration rate is the number of breaths a person takes per minute. The human body normally respiration rate will be low or high. At the time measures human breath. Normal respiration rates for an adult range from 12 to 16 breaths per minute.

Birth to 6 weeks: 30 -60 breaths per minute
6 months: 25-40 breaths per minute
3 years: 20-30 breaths per minute
6 years: 18-25 breaths per minute
10 years: 15-20 breaths per minute.

Figure 2.3: Respiration Sensor

2.4 PULSE SENSOR:

The figure 2.4 shows Pulse Sensor which is used in our project. The heart beat pulses causes a variation in the flow of blood to different regions of the body. In case of applications where heart pulse rate is to be monitored, the timing of the pulses is more important. When your pulse is high, sometimes you can feel your heart beating at a rapid rate. You might have the feeling of a pounding, forceful or racing heartbeat.

Figure 2.4: Pulse Sensor

2.5 RF TRANSMITTER AND RECEIVER:

The figure 2.5 shows RF Transmission and Receiver which is used in our project. This **RF module** comprises of an **RF Transmitter** and an RF-**Receiver**. The transmitter/receiver (Tx/Rx) pair operates at a frequency of **433MHz.** An RF transmitter receives serial data and transmits it wirelessly through RF through its antenna connected at pin 4.

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Figure 2.5: RF Transmitter and Receiver

The transmission occurs at the rate of 1Kbps-10Kbps. The transmitted data is received by an RF receiver operating at the same frequency as that of the transmitter. The RF module is often used along with a pair of encoder/decoder. The encoder is used for encoding parallel data for transmission feed while reception is decoded by a decoder. HT12E &HT12D are some commonly used encoder / decoder pair ICs.

2.6 LIQUID CRYSTAL DISPLAY:

The figure 2.6 shown Liquid Crystal Display which is used in our project Liquid crystal display (LCD) is the technology used for displays in notebook and other smaller computers as shown in figure 2.6. Like light-emitting diode (LED) and gas-plasma technologies, LCDs allow displays to be much thinner than cathode ray tube (CRT) technology. LCDs consume much less power than LED and gas-display displays because they work on the principle of blocking light rather than emitting it.

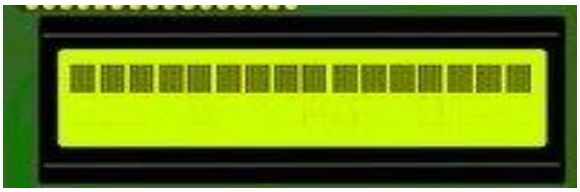

Figure 2.6: Liquid Crystal Display

An LCD is a small low cost display. It is easy to interface with a micro-controller because of an embedded controller(the black blob on the back of the board).This controller is standard across many displays which means many micro-controllers have libraries that make displaying messages as easy as a single line of code. LCDs with a small number of segments, such as those used in digital watches and pocket calculators, have individual electrical contacts for each segment. An external dedicated circuit supplies an electric charge to control each segment. This display structure is unwieldy for more than a few display elements.

III. PROPOSED SYSTEM

Patient care unit is such an environment, where replacing the wired connections wireless sensors can be used. Current diagnostic system accesses vital parameters through large amount of tangling wires. Doctor or nurse monitors those parameters manually and takes necessary action. Therefore, an alternative is required to monitor the critical parameters of the incubator. This device is mainly used to control the temperature; especially to prevent hypothermia of the new born .Radiant warmer provides an environment to keep the neonates body temperature in control. Temperature can be controlled by increasing or decreasing the intensity of the heat source. To replace these wired connections with wireless sensors to increase the freeness of work environment of health professionals. To design an automated system for observing the body temperature, body movement and heart rate of newborn at each time so that hypothermia, hyperthermia, abnormal body movement and cardiac problem can be detected as early as possible.

IV.IMPLEMENTATION RESULT

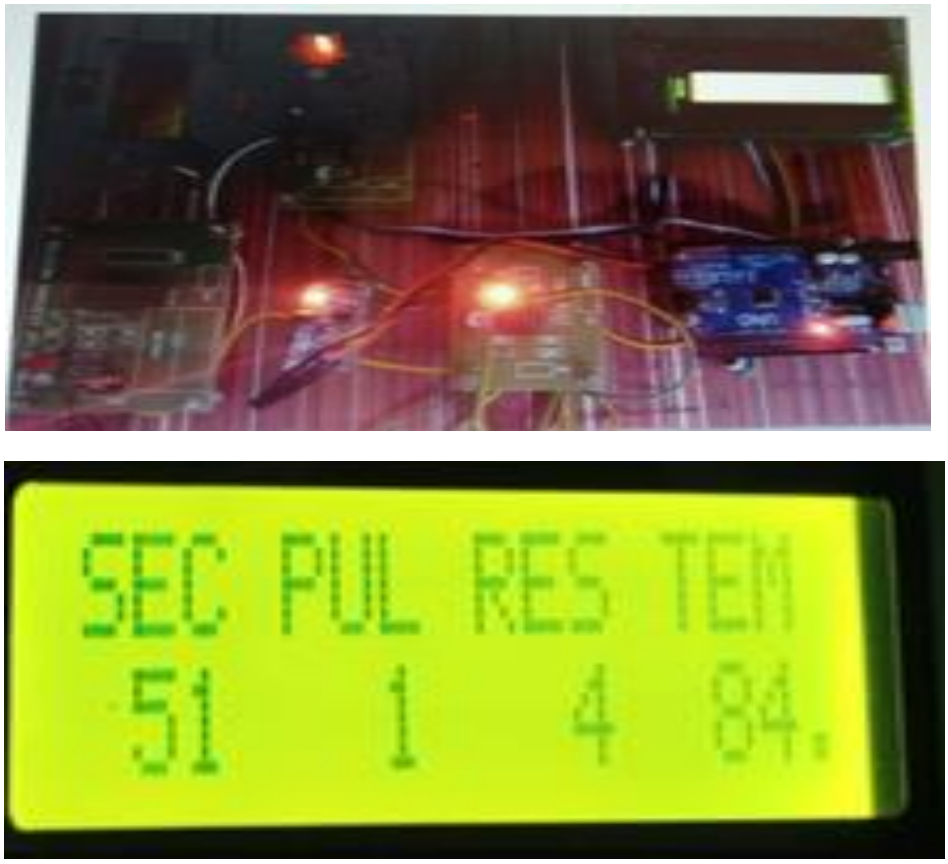

Figure 4: LCD display output

The figure 4 shows the output of the physiological parameters of the patient which include pulse, temperature of the patient.

V. CONCLUSION

This paper has been completed successfully and the results are in line with the expected output. It has been checked with both software and hardware testing tools. In this work "LCD, Microcontroller, Sensor and RF TX and RX" are chosen are proved to be more appropriate for the intended application. The project is having enough avenues for future enhancement. Thus the paper contributes a significant step forward in the field of **"ADVANCED AUTOMATION",** and further paves a road path towards faster development in the same field. This work can be applied to variety of industrial and commercial applications.

VI. REFERENCES

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