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HEALTH MONITORING SYSTEM BY USING ARDUINO

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ABSTRACT

Heart conditions are getting a big issue for the last many decades and numerous people die because of certain health problems. thus, heart complaint cannot be taken smoothly. To record the electrical signal form the heart to check for different heart condition we used Electrocardiogram (ECG). An ECG is a paper or digital recording of the electrical signals in the heart. It's also called an electrocardiogram or an EKG. The ECG is used to determine heart rate, heart meter, and other information regarding the heart's condition. ECGs are used to help diagnose heart arrhythmias, heart attacks, pacemaker function, and heart failure. IN our Health Monitoring System, we used AD8232 ECG detector, Arduino and temperature detector, cables and display assaying or covering the ECG signal at the original stage this complaint can be averted. So, we present this design i.e., ECG Monitoring with AD8232 ECG Sensor & Arduino with ECG Graph. The AD8232 is a neat little chip used to measure the electrical exertion of the heart. This electrical exertion can be charted as an ECG or Electrocardiogram.

Electrocardiographyisusedtohelpdiagnosevariousheartconditions.Italsoshowsthebodytemperature and oxygen position on the screen. So, in this design, we will interfaceAD8232 ECG Sensor with Arduino and observe the ECG signal on a periodical plotter or Processing IDE. This detector is a cost-effective board used to measure the electrical exertion of the heart, time saving, easy to handle and needed lower and the main advantage is that it's movable we can carry it. ECGs can be extremely noisy, the AD8232 Single Lead Heart Rate Monitor acts as an op- amp to help gain a clear signal from the PR and QT Intervals fluently.

Keyword: AD8232 ECG Sensor, Arduino, Temperature Sensor, Wires, Display, etc.

I. INTRODUCTION

One of the leading reasons for deaths is the lack of timely backing. In addition, cardiovascular illness disables numerous people. The time between the onset of the first sign of any heart problem and the need for medical help varies vastly between individuals and can be fatal. The deployment of coffers for early identification and treatment of heart illness has a better eventuality for reducing casualty linked with cardiac complaint than bettered care after hospitalization, according to epidemiological statistics. As a result, new strategies are needed to reduce the quantum of time between opinion and treatment. Monitoring cases is one possible result. Also, the trend toward an independent life has increased the demand for substantiated non-hospital-based care. twinkle has been linked to the threat of a heart attack in studies of cardiovascular illness. In numerous countries, heart complaint, including heart attacks, coronary heart complaint, congestive heart failure, and natural heart complaint, is the leading cause of death for both men and women. utmost of the time, heart complaint problems harm senior people. frequently, they live on their own and no bone. is willing to cover them for 24 hours a day. The heart rate and temperature of cases are measured using detectors as an analog signal after it's converted into digital data using an analog to digital motor (ADC) which is suitable for wireless transmission using SMS dispatches through a GSM modem. The data employed for transmission is temporarily stored on a microcontroller device. A case's heart rate must be constantly covered if they've preliminarily been diagnosed with fatal heart problems. This design proposes and focuses on the design of the twinkle examiner that can cover the twinkle rate condition of the case continuously, in addition to this body temperature monitoring is also an important parameter. therefore, this signal is reused using the microcontroller to determine the twinkle rate per nanosecond and temperature. also, it sends a short communication service (SMS) alert to the mobile phone of medical experts or cases' family members, or their cousins about the condition of the case and abnormal details via SMS. therefore, croakerscan cover and diagnose the case's condition continuously and could suggest earlier preventives for the cases themselves. This will also warn the family members to snappily attend to the case.

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II. METHODOLOGY AND OBJECTIVE METHODOLOGY

A smart device holding all the sensors that can be used to measure and monitor all the biometrics/vitals of the wearer such as heart rate, temperature and oxygen levels in the blood and send an SOS to the family in case of emergency.

The typical range for the human body (Threshold Values) -

1. The temperature may be 97.8°F (36.5°C)–99°F (37.2°C) for a healthy adult. 2. The heart rate of a healthy adult can range from 60 to 100 beats per minute. 3. Normal blood oxygen saturation levels range from 94 to 100% in adults.

Objective

Developing a smart device using sensors for monitoring health conditions and GSM for transmission of the information in the form of SMS in emergency conditions. The objective of the project is to build a system that can monitor the health conditions of the patient continuously and then proceed to alert by an SMS sent to the phone of a medical expert or family members so that someone can quickly attend to the patient.

III. BLOCK DIAGRAM

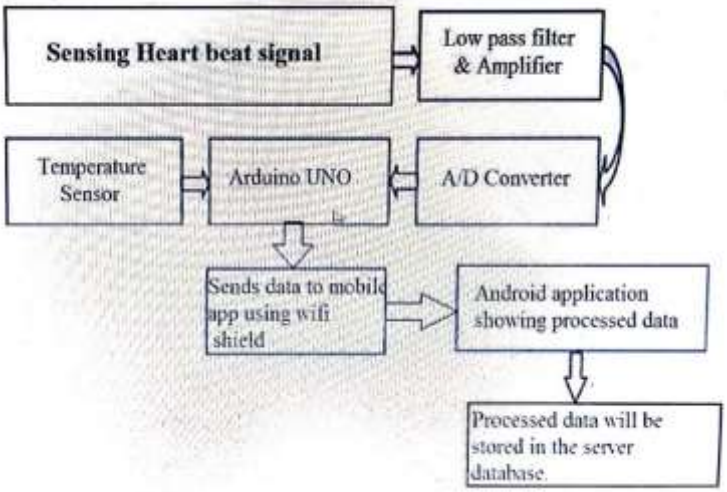

Fig1.: Block Diagram of the system

CIRCUIT DIAGRAM

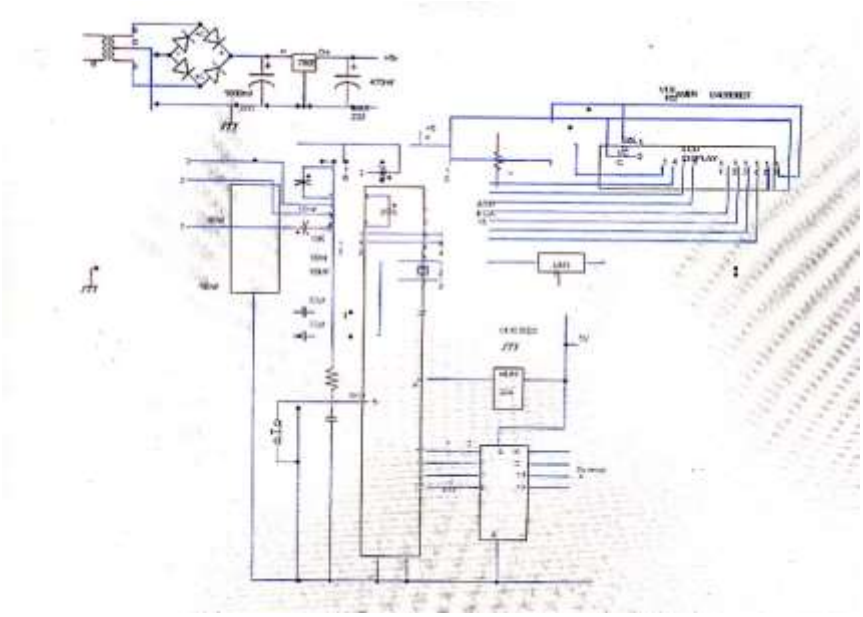

Fig2 : Circuit diagram of the system

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IV. IMPLIMENTATION AND RESULT ANALYSIS

First, we need to connect the string to our body as seen in the picture. It's recommended to crack the tapes of the cinch onto the cables before applying them to the body. The nearer the electrodes are to the heart, the better the dimensions. Cables are color enciphered to help identify the correct position. It'll display the ECG picture on the examiner. Patient health monitoring is one of the major enterprises in the health care assiduity. Telemedicine is one which would be intriguing to everyone because of its amazing factors. Multiple jobs can be done by a single health operation with stoner " s intervention. The system has been designed to take several inputs to measure physiological parameters of mortal similar as temperature, heart rate and discovery of any fall.

Red: RA (Right Arm Yellow: LA (Left Arm) Green: RL (Right Leg)

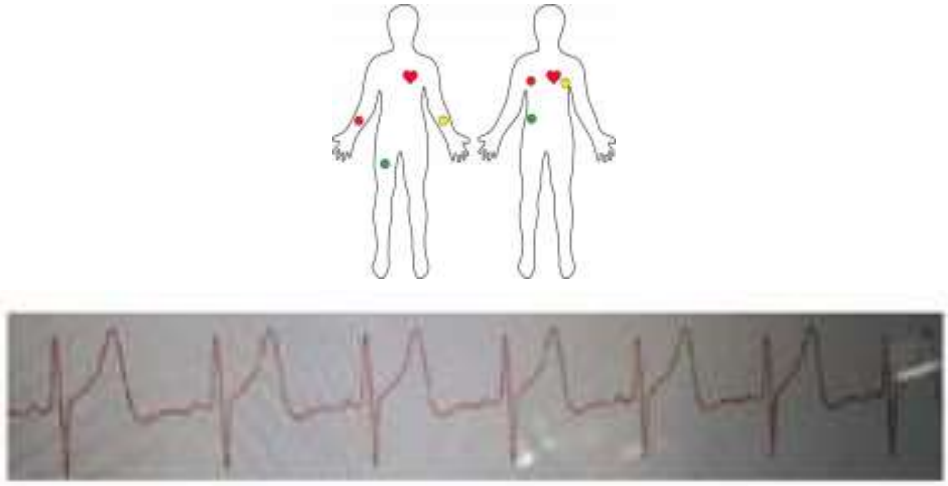

Fig 3: ECG Graph Generated by Proposed System

The design is divided into two corridors. First the tackle design and alternate the software design. The design exertion must be done step by step. It begins with searching and collecting information from scientific perspective. The review is about mechanical structure design and electronic circuit design also software programming perpetration. The design was begun by chancing the conception and idea related to this title. The information transmitting and viewing will act according to the module programmed using the software. It should apply all the required gets like seeing. Research is done on the mechanical design, where how a wearable device should be made. The software designing thresholds when the mechanical and the electronic designs are erected. The software design substantially comprises of the law/ program of the operation of the system.

Working Steps

1. The patient would place the ECG sensor connections by proper manner.
2. The sensors would sense the heartbeat and the vitals with body temperature.
3. The sensed data rates are sent to Arduino Uno in the form of signals.
4. The Arduino processes the same data and would transmit the data to be process.
7. Processing Data through Arduino UNO.
8. Then will show the graph on monitor screen.

The AVR core provides a rich instruction set with 32 comprehensive function registers. All 32 registers are directly connected to the arithmetic logic unit (ALU), allowing two registers to enter a single instruction in one clock cycle. The net result is better code performance while executing the program ten times faster than traditional CISC microcontrollers.This system is very useful for the persons, who have heart issues. It shows the result at that point whenever we want. It's a portable device we can handle it very easily by connecting the points on right manner so that it gives best result. It needs somewhat educated/skillful person to work on it.

V. CONCLUSION

The system monitors the patient's health, such as graphical data, heart rate and body temperature. If the value of one of these parameters exceeds the previous life value. All graphical data obtained from sensors and image recording filter circuits are sent to the microcontroller system as numerical results. These values are derived from the data sheet, value and temperature etc. and are also displayed in alphanumeric form on the attached LCD screen.As a result, we want to consider how this approach can be improved in the future, including adding new information about sensors and new ways to go beyond victimization to avoid blocking and explicit notifications.

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