



IOT BASED SMART HEALTH MONITORING SYSTEM USING ARDUINO

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ABSTRACT:

An important part of our life, internet has enabled many machines and devices we use in lifestyle to be monitored and controlled remotely through Internet of Things (IOT) technology. Smart health applications became a rapidly growing sector. For people with heart condition, the center Rate (HR), blood heat (BT) and Respiration rate (RR) values are considered as vital signs that has got to be measured regularly. With the assistance of LCD interfaced with main processor designed with Arduino Uno MCU, all 3 parameter values are displayed. Since RR & HR values are time based, here start button is employed to live the values for one minute/60 seconds, when the beginning button is activated, these values are going to be counted in increment mode and can be clutched after 60Seconds, If the HR or BR is quite the desired, alarm are going to be energized automatically. The system designed here will be employed in hospitals and individual houses where message to mobiles is send through Wifi module such concern doctor can monitor the patient condition continuously wherever he/she is.

KEYWORDS: - Wifi module, Arduino uno, LCD, HR sensor, RR sensor and BT sensor.

INTRODUCTION:

IOT is also communication network during which physical objects are interconnected with each one other or with larger systems. This network collects billions of Knowledge from the very different devices we use in lifestyle and transforms them into usable information.

Today, there are about 20 billion devices within the planet that interact with one another, and by 2025 it's estimated to travel up to 75 billion devices. This shows that within the approaching year's cities that we put up IOT will become smart cities which can keep pace with the more paced and planned life.

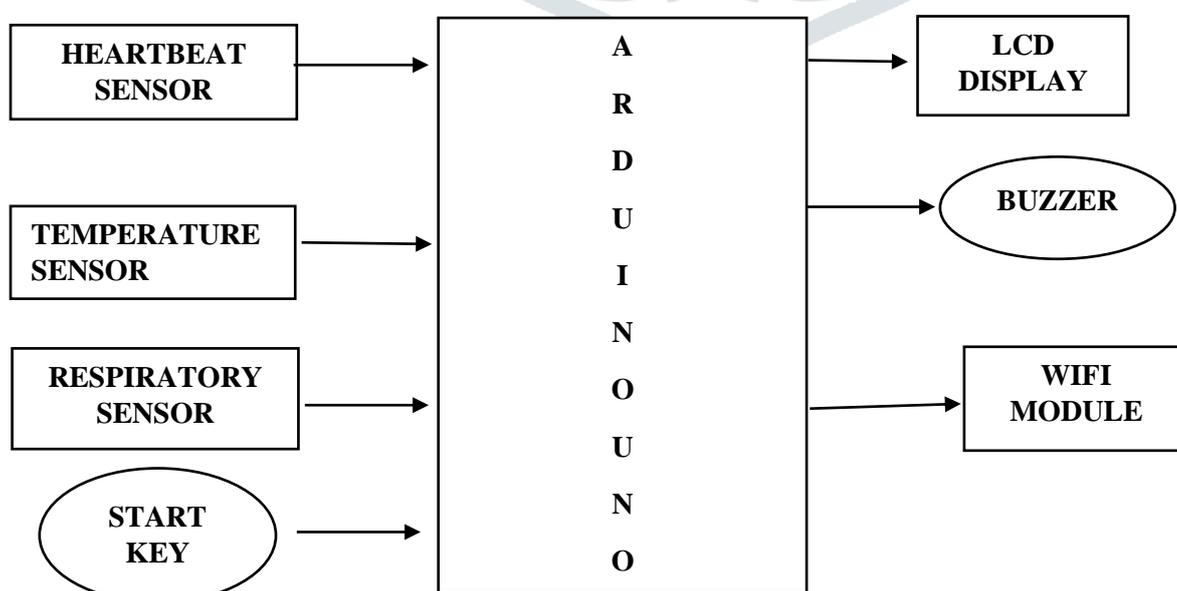
Devices that provide continuous monitoring of these patients are very expensive and sensitive and want trained personnel to use them.

It is possible for such patients to be followed up continuously with wearable health devices while maintaining their daily lives within the social environment. These wearable devices continuously measure the patient's heart values and when a sign of a heart failure has occurred, may send information about the patient's health condition to the relations and therefore the doctor.

WORKING:

The IOT Based health monitoring system Here the Body temperature sensors, heartbeat sensors and respiratory sensor are used to detect the patient body check-up With the mechanism of C programming dumped in Arduino Uno the whole system will run by power supply and voltage regulator and the range of each sensor will display on LCD. The range for each sensor is fixed in the code given in Arduino.

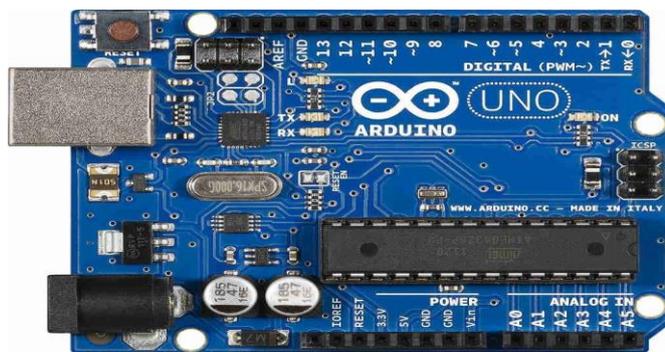
BLOCK DIAGRAM:



MODULES OF THE PROJECT:

ARDUINO UNO:

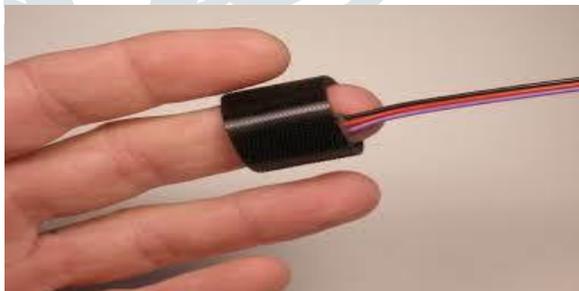
The Arduino Uno SMD may be a version of the Arduino Uno but uses a surface mount version of the Atmega328P instead of the through-hole version. It's 14 digital input/output pins (of which 6 is employed as PWM outputs), 6 analog inputs, a 16 MHz oscillator, a USB connection, an influence jack, an ICSP header, and a push.



HEARTBEAT SENSOR:

The amount of the blood in the finger changes with respect to time. The Sensor is designed based on IR molded technique, means the mechanical arrangement of finger clip consists of photo diode at one side and IR signal generator at other side.

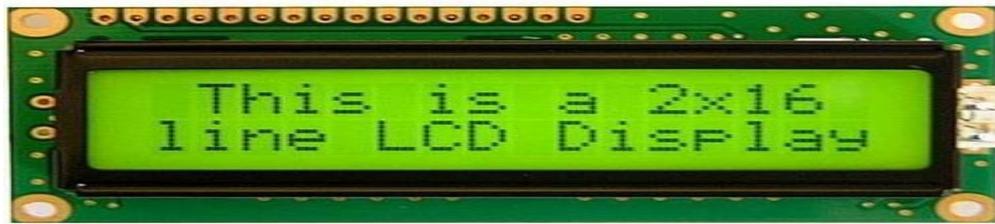
both will be placed parallel to each other such that when the clip is attached to the fingertip,



TEMPERATURE SENSOR

Reported values vary depending on how it is measured: oral (under the tongue): 36.8 ± 0.4 °C (98.2 ± 0.72 °F), internal (rectal, vaginal): 37.0 °C (98.6 °F). A rectal or vaginal measurement taken directly inside the body cavity is typically slightly higher than oral measurement, and oral measurement is somewhat higher than skin measurement. Other places, such as under the arm or in the ear, produce different typical temperatures.

The main benefits of using this module are inexpensive; simply programmable, animations, and there are no limitations for displaying custom characters, special and even animations, etc.



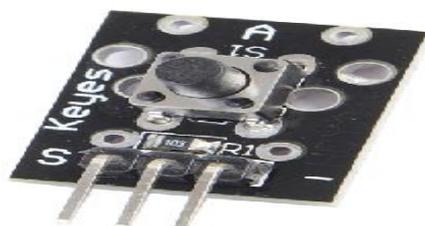
BUZZER

A **buzzer** is a small yet efficient component to add sound features to our project/system. It is very small and compact 2-pin structure hence can be easily used on breadboard, Perf Board and even on PCBs which makes this a widely used component in most electronic applications.

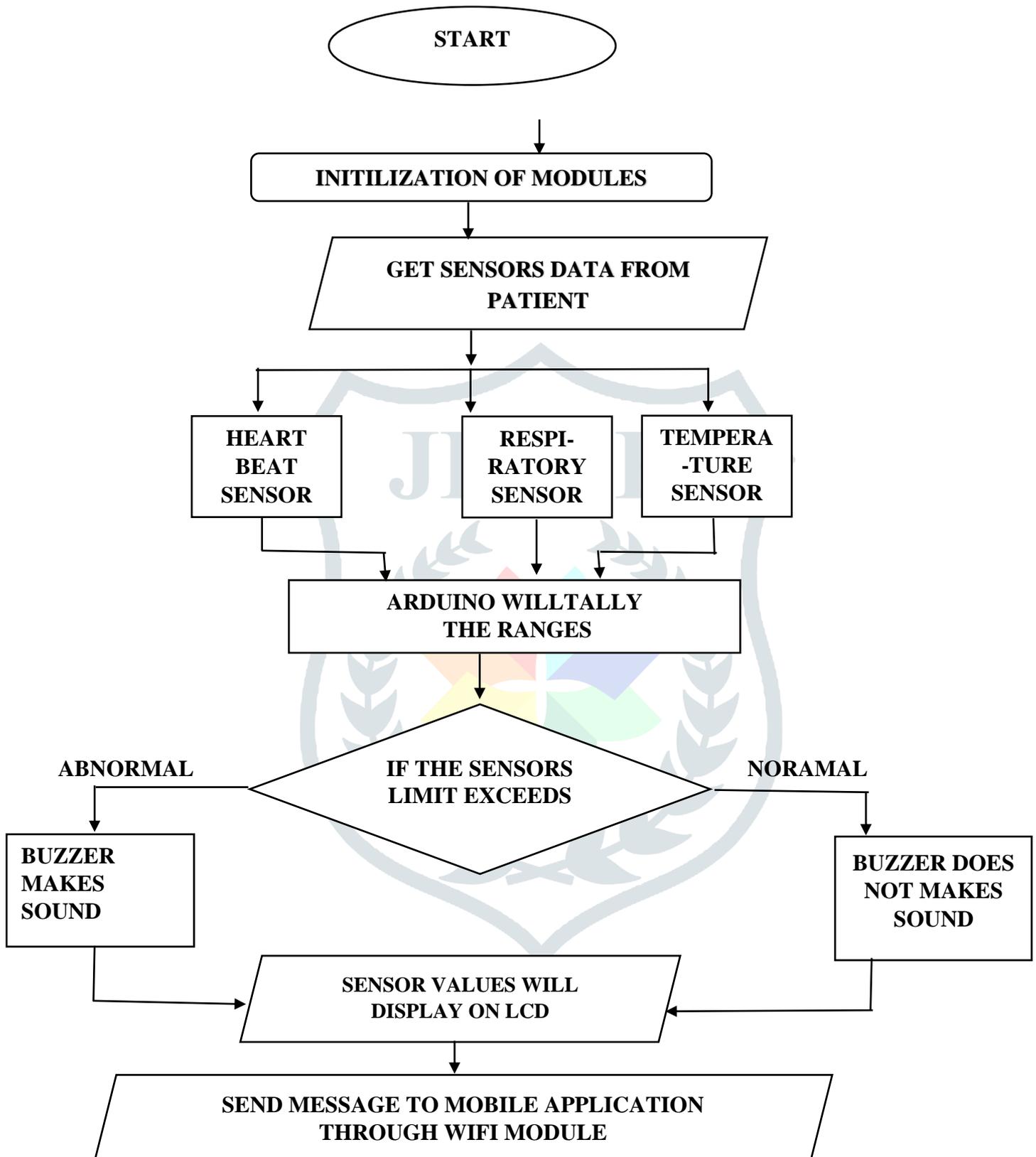


START KEY

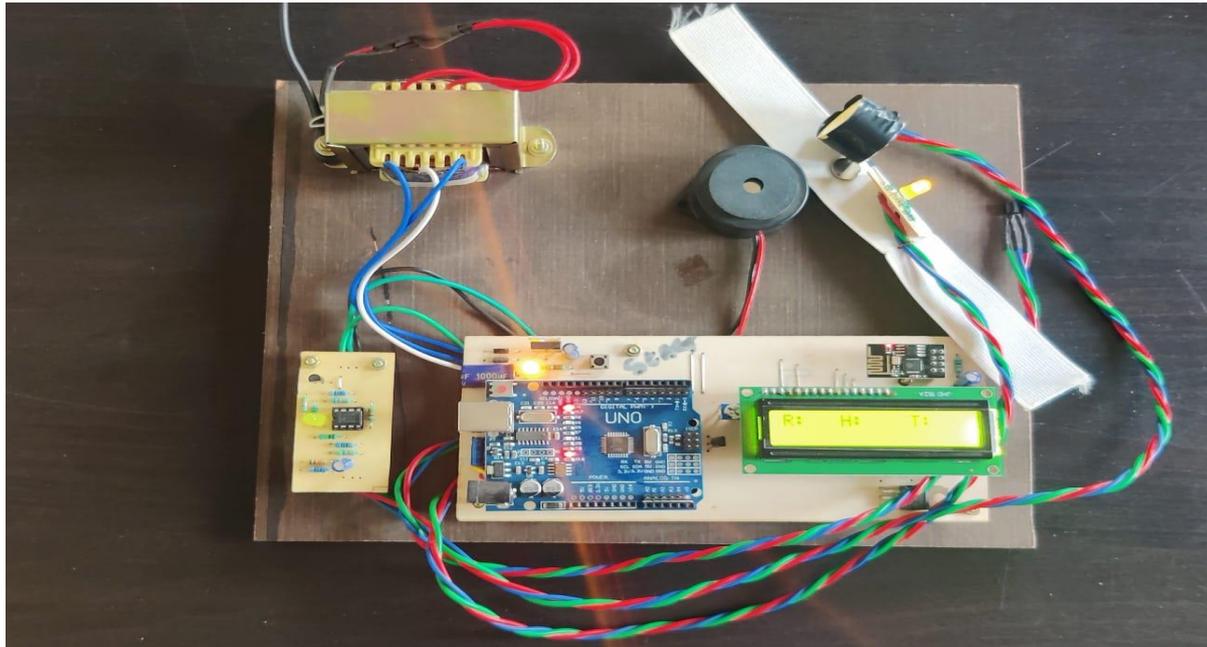
A switch is a component which controls the open-ness or closed-ness of an electric circuit. They allow control over current flow in a circuit (without having to get in there and manually cut or splice the wires). Switches are critical components in any circuit which requires user interaction or control.



FLOW CHART



POWER SUPPLY UNIT

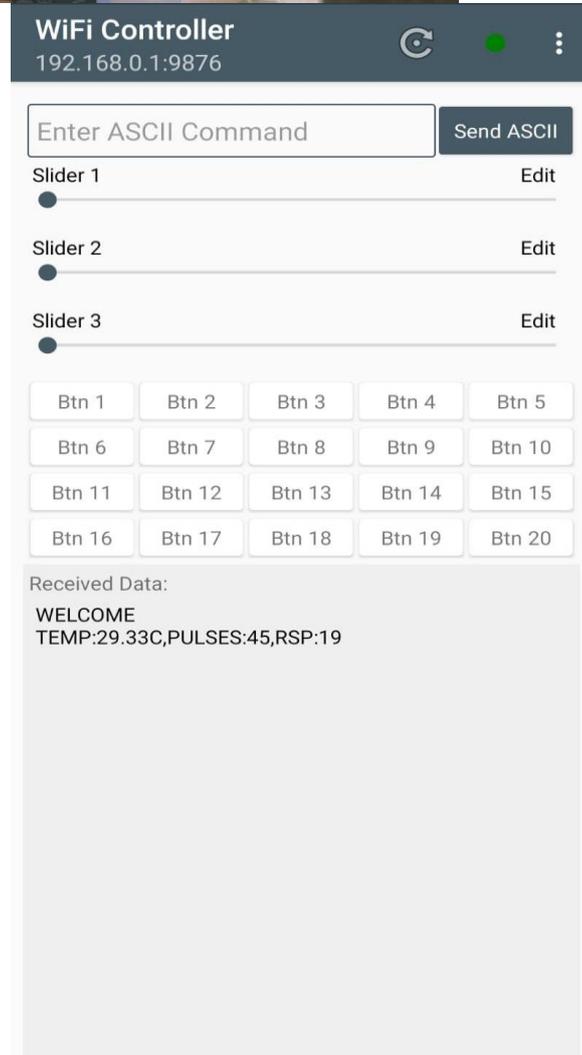
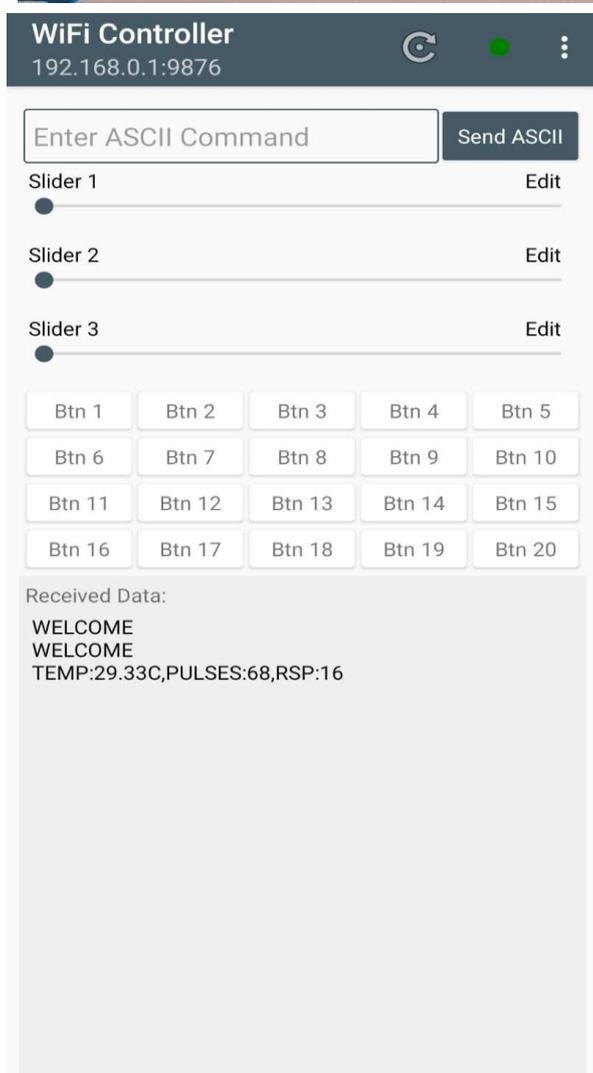


IOT Health care is the most demanding field in the medical area. This project is for, elderly person in our home. Also, for the senior citizen living alone or living with 1 or 2 members. This project really proves helpful when family members need to go out for some emergency work.

Disable patients can use this project. Disable patients who find it really difficult to go to doctors on daily. Self-Care Services.

RESULT





CONCLUSION

The result will be displayed in LCD display as Heartbeat rate, Respiration rate, Temperature range. Normal values are given as: 15-17, 60-80, 28-32C

Abnormal values are obtained when the values are less or more than normal range

And through wifi module values of patient is sent to mobile application. The project work “IoT based Smart health monitoring system” is completed successfully and results are found to be satisfactory. During our trail runs we found that, making respiration monitoring system is very difficult because we won’t get any sensors available readily. In this regard we have made our own using elastic belt, Hall Effect sensor and tiny magnet.

FUTURE SCOPE

In this project, we have presented and proved the prototype for an automatic system that guarantees a constant monitoring of various health parameters and prediction of any kind of normal or abnormal that prevents the patient from the emergency of paying frequent visits to the hospitals. The proposed system can be set-up in the hospitals and massive amount of data can be obtained and stored in the online database. Even the results can be made to be accessed from mobile through an application.

ACKNOWLEDGMENT

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