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Estimation of Human Health Parameters and Prevention System in Public Places

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ABSTRACT: In this system, we can find our body health parameters and prevent from some diseases like Obesity, Lung's disease, Major heart problems and Heavy fever. Those are integrated to give it in one single device. This device is placed in public places, it's mainly used for common peoples for checking their body health parameters. Then this health parameters are displayed, stored and shared based on the health level. And we provide an online consultation with doctor by using own Web Application to the user.

KEYWORDS: Arduino Uno, GSM Module

I. INTRODUCTION

“Everyone is busy with their own life. And they cannot maintain their health daily. Currently most people are may be affected by some diseases. So, we make this project and providing services for common people.”

This system is Arduino based health monitoring approach using GSM Module and various sensors. Which can measure various vital signs such as temperature of body, BMI, oxygen level and pulse rate. After that user can get health level in the form of notification through the LCD and can also get a message through the GSM. The main agenda of establishing this model is to alert the common people about the current health condition.

II. RELATED WORK

COMPONENTS & SPECIFICATIONS:

ULTRASONIC SENSOR:

- An ultrasonic sensor is an electronic device that measures the distance of a target object by emitting ultrasonic sound waves, and converts the reflected sound into an electrical signal. Ultrasonic waves travel faster than the speed of audible sound.
- In this project the ultrasonic sensor is used to measure the height of the human body. The height data is used to calculate the BMI (Body Mass Index).



Fig.:1 Ultrasonic

LOAD CELL:

- Load cells are sensors that detect force (mass, torque, etc.). When force is applied to a load cell, it converts the force into an electrical signal. Load cells are also known as load transducers, because they convert a load (force) into electrical signals.
- In this project the load cell is used to calculate the weight of our body. The weight data is used to calculate the BMI (Body Mass Index).



Fig.:2 Load Cell

PULSE OXIMETER:

- A pulse oximeter is a device that is usually placed on a fingertip. It uses light beams to estimate the oxygen saturation of the blood and the pulse rate. Oxygen saturation gives information about the amount of oxygen carried in the blood.
- In this project the pulse oximeter is used to find the oxygen saturation of the blood and the pulse rate of the body.



Fig.:3 Pulse Oximeter

MLX90614 INFRARED TEMPERATURE SENSOR:

Infrared (IR) temperature sensors enable accurate non-contact temperature measurement in medical applications. The most common applications for this type of temperature sensor is measuring ear temperature, forehead temperature, or skin temperature. But in this project, we are using skin temperature sensor. For measuring the body temperature.



Fig.:4 Temperature Sensor

ARDUINO UNO:

- Arduino UNO is a micro controller board based on the ATmega328P. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP header and a reset button.
- In this project the Arduino uno helps to calculate the health data and process the data for display and sending the data.



Fig.:5 Arduino Uno

16x2 LCD DISPLAY:

LCD Display It is a very basic module and it can display 16 characters per line. It is used to display the values from the Temperature sensor, Pulse sensor, BMI, Height and Weight.



Fig.:6 LCD Display

GSM MODULE:

- A GSM modem or GSM module is a device that uses GSM mobile telephone technology to provide a wireless data link to a network. GSM modems are used in mobile telephones and other equipment that communicates with mobile telephone networks. They use SIMs to identify their device to the network.
- In this project the GSM module is used to send the health data to the user. When the user enters their mobile number, they can receive their health details in SMS. The SMS is automatically stored in their phone. And it helps to feature reference.



Fig.:7 GSM Module

Fig.1, 2, 3, 4, 5, 6, 7 shows the components of Ultrasonic Sensor, Load Cell, Pulse Oximeter, Temperature Sensor, Arduino Uno, LCD Display, GSM Module

IV.METHODOLOGY

EXISTING SYSTEM:

Actually, nowadays many of the medical equipment and products are available in the market but it's not efficient one and normal people are not interested to buy those kinds of products. So, they need to go hospital for check their health. In this process also take more time and money.

PROPOSED SYSTEM:

But our proposed system is used for common peoples and above-mentioned devices are integrated and give it in one single device and it's placed in public places. So, peoples can check their health parameter easily and they can get online consideration with doctor by using our Web Application. Then they save their time and money.

V.PROPOSED ARCHITECTURE

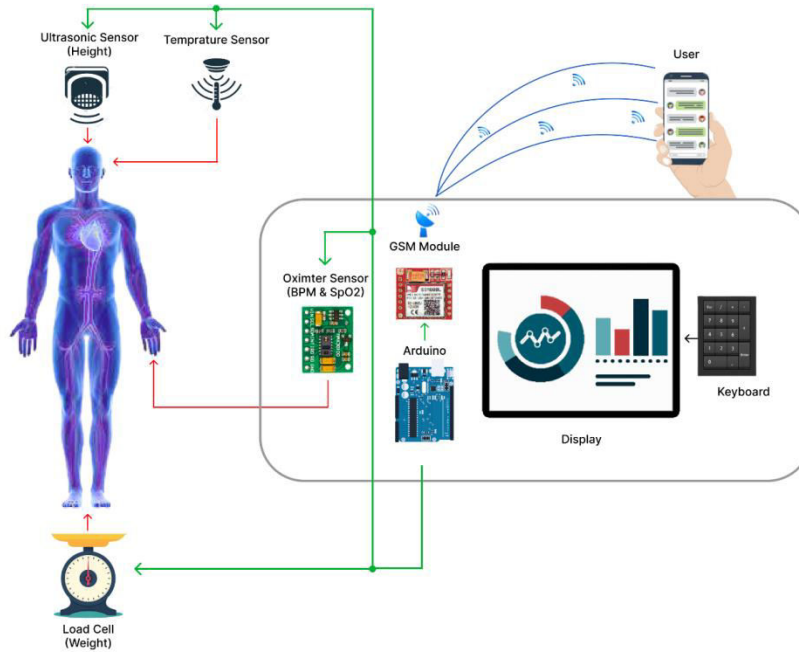


Fig.8 shows the architecture of this project.

ARCHITECTURE EXPLANATION:

- In the first step the person wants to stand above the load cell. Automatically Ultrasonic sensor and Load cell sensor are activated to measure the human body height and weight.
- Second step they shall put their finger on Oximeter sensor and Temperature sensor. Then Oximeter is used to measure the BPM (Beats per minute) and SpO2(Oxygen saturation). Temperature sensor is used to measure Temperature of the human body.
- After completing those process. The parameters are displayed on the LCD screen and shared to the user by using GSM module. This system suggests online consideration with doctor for abnormal persons. Then the all data will be stored in admin device also.



VI. EXPERIMENTAL RESULTS

PROTOTYPE:

Circuit

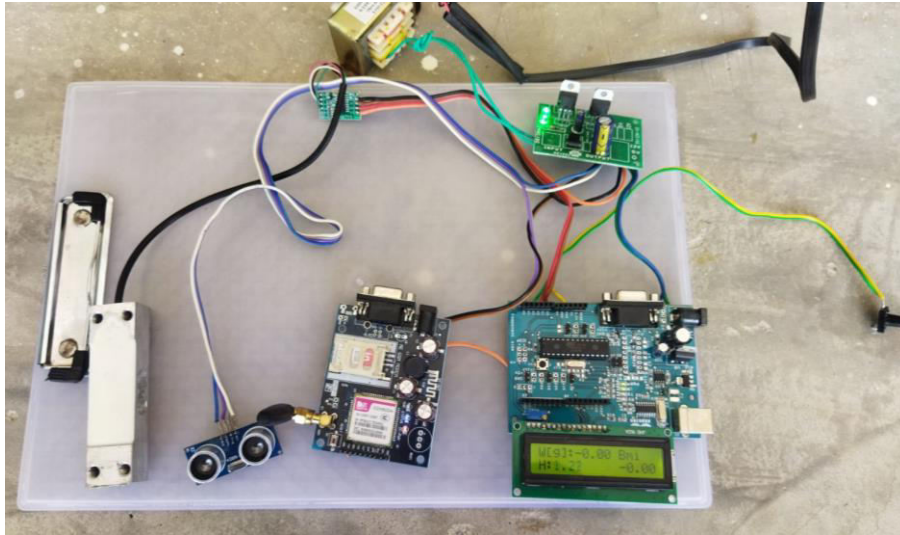


Fig.a shows the circuit and Fig. b shows the acknowledgement message

Fig. (a)

Acknowledgement Message

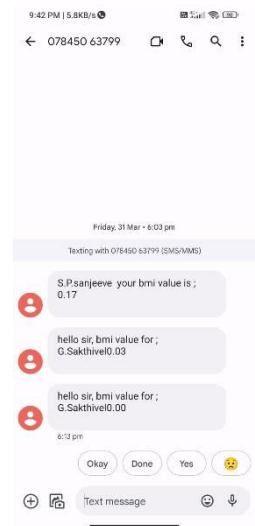
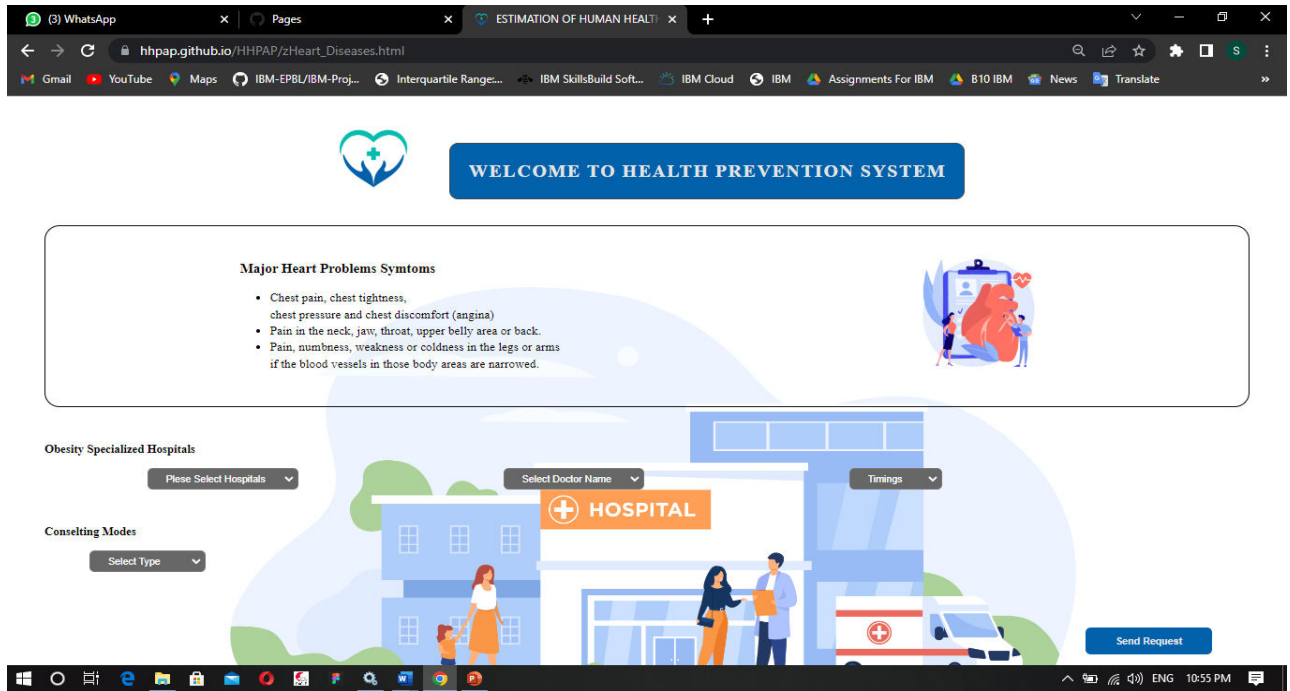


Fig. (b)

WEB APPLICATION & ACKNOWLEDGEMENT:



(a)



(b)

ACKNOWLEDGEMENT MAIL:



(c)

Fig:.a,b,c shows the web application and acknowledgement



VII. CONCLUSION

The Arduino based health monitoring approach using GSM Module and various sensors that can measure various vital signs such as temperature of body, BMI, oxygen level and pulse rate. Users also can get output in the form of notification through the LCD and can also get a message through the GSM. The main agenda of establishing this model is to alert the common people about the current health condition by the users via mobile phone. This system reduces emergency situations in various time. This system is applicable for Hospital, home, ambulance and also in public places.

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