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## A REVIEW PAPER ON HEALTH MONITORING SYSTEM USING ARDUINO

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### ABSTRACT

Heart diseases are becoming a big issue for the last few decades and many people die because of certain health problems. Therefore, heart disease cannot be taken lightly. To record the electrical signal from 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 is also called an electrocardiogram or an EKG. The ECG is used to determine heart rate, heart rhythm, 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 sensor, Arduino and temperature sensor, wires and display analyzing or monitoring the ECG signal at the initial stage this disease can be prevented. So, we present this project i.e., ECG Monitoring with AD8232 ECG Sensor & Arduino with ECG Graph. The AD8232 is a neat little chip used to measure the electrical activity of the heart. This electrical activity can be charted as an ECG or Electrocardiogram. Electrocardiography is used to help diagnose various heart conditions. It also shows the body temperature and oxygen level on the screen. So, in this project, we will interface AD8232 ECG Sensor with Arduino and observe the ECG signal on a serial plotter or Processing IDE.

This sensor is a cost-effective board used to measure the electrical activity of the heart, time saving, easy to handle and required less and the main advantage is that it is portable we can carry it. ECGs can be extremely noisy, the AD8232 Single Lead Heart Rate Monitor acts as an op-amp to help obtain a clear signal from the PR and QT Intervals easily.

**Keyword:** AD8232 ECG Sensor, Arduino, Temperature Sensor, Wires, Display, Etc.

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### I. INTRODUCTION

Automation is also an important idea in IoT compared to cloud computing because it can automate various tasks such as compliance without any oversight. The 3 main service units in the cloud domain are infrastructure as a service, platform as a service and package as a service. Some of the services offered to them include Amazon Internet Services, Amazon Regional Unit, Google App Engine by Google, and Cloud Application Delivery by HP. and Windows Azure from Microsoft. Once I analyzed the IoT application, I actually used a lot of sensors to scan the patient's health details and store them in a very cloud-based setup. In this article, the system is used to observe human health with less power. Attention Intercept Device Heart Rate Device and Temperature Device, Vibration Device Area Unit is used to monitor patient's health condition. Whenever a parameter is abnormal, the controller mechanically sends information through the IOT module. RFID entry for patient door entry. The transmitted information is saved in the cloud server and can be viewed anywhere. The information is checked by a doctor (nursing staff).

Mainly based on the sensor entry price, the doctor will analyze the patient standing. The hardware used in the development of this technology is Arduino Uno, heart rate meter, instinct reflectometer, temperature meter, buzzer and vibration meter It helps in assessing the condition of patient's circulatory system. Human heart provides oxygen-rich blood to the muscles. As a result, he/she starts shivering associate degree it's a natural, fast abbreviation of the muscles. The process of implementing a injury detection and characterization strategy for engineering structures is observed as Structural Health observance (SHM).

## II. LITERATURE REVIEW

In the past, the grabbed his hand and monitored the patient's health by checking his pulse. The quality of health measurements and understanding has improved with time and the introduction of health monitoring techniques. technology has advanced so rapidly that today a patient's health is monitored by a carrying a small device. Figure below shows the evolution of medical devices. Several different research projects are investigating wireless sensor networks for around-the-clock monitoring of patient health. A small number of items are related to the development of wearable bracelets, while other items have been developed for the individual monitoring of patients during daily activities, at home or in the hospital. The authors propose a wireless sensor network application for continuous monitoring 24 without disrupting the daily activities of older adults and their caregivers. The system uses both fixed and mobile

## III. PROPOSED SYSTEM

An ECG sensor with disposable electrodes is attached directly to the chest to track each heartbeat. The electrodes of the ECG sensor convert the heartbeat into an electrical signal. The ECG sensor is very light, thin and precise, it measures heart rate continuously and provides heart rate data. This device should always be used by trained physicians and medical responders. The electrodes of the ECG sensor have 3 pins and are connected with a 30-inch-long cable. This allows the ECG sensor to be easily attached to the controller and placed on the waist or in a pocket. In addition, the cable plug is a male audio jack, which makes it easy to unplug the cable or plug it into an amplifier board. Sensors are attached to the pulse in the arms and legs. All sensor electrodes have a mounting method in the body. Therefore, users need training and tutorials. You can choose the type of electrodes to measure your heart rate. The sensors used in the project are:

### ECG Sensor:

The AD8232 module separates nine connections from the IC to which you can solder pins, wires, or other connections. SDN, LO+, LO, OUTPUT, 3.3V, GND provide the basic pins to make this display work with Arduino or other development boards. Also on this board are RA (right arm), LA (left arm), and RL (right leg) pins for connecting and using your own custom sensors. Plus, there's an LED light that pulsates in time with your heartbeat.

### Arduino UNO:

The open-source microcontroller on the Arduino board is based on the AT mega 328p microcontroller. It is one of the most popular development boards for experimental purposes, and the is used as an Internet of Things (IoT) link. The board contains other elements such as serial connections, a crystal oscillator, voltage regulators, etc. It contains 2 KB of RAM, 1 KB of ROM, 32 KB of Flash and can be easily formatted to using the open-source Arduino IDE software. There are many GND pins in the Arduino, any of them can be used to grind your circuit with 5V (4) & 3.3V (5): The has a 5V pin that supplies 5V to the Arduino UNO, and the 3.3V pin of the supplies 3.3V. Mosts are just components for use with an Arduino variant 5 or 3.

### Temperature Sensor:

The LM35 series is a well-integrated and heat-resistant Celsius temperature heat exchanger. The LM35 device is superior to direct Kelvin limit temperature sensors because the user can easily make Celsius measurements without having to transmit large continuous power outages. The LM35 device does not require any external measurement or adjustment to provide normal detail of  $\pm 1/4^{\circ}\text{C}$  at room temperature and  $\pm 3/4^{\circ}\text{C}$  over the entire temperature range of  $-55^{\circ}\text{C}$  to  $150^{\circ}\text{C}$ .

## IV. CONCLUSION

The system monitors the patient's health condition, such as graph records, heart rate and body temperature. If the value of any of these parameters exceeds a predetermined lifetime value, the position parameters of the connected GPS module are transmitted to a predetermined amount of area units as SMS using the GSM module. All graphics data obtained from the sensors and graphics recording filter circuits are then transferred as digital value to the microcontroller system. Values obtained from chart records, rates and temperatures, etc. are also displayed in alphanumeric form on the connected LCD screen. In conclusion, we tend to think about how this approach could be improved in the future, including adding new forms of sensors and new ways to go beyond victimization to protect and activate alerts.

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