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# IOT Based Healthcare Monitoring System for ICU Patient

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**ABSTRACT:** As technology has developed and sensors have been miniaturized, there have been attempts to employ contemporary technology in a variety of fields to improve the quality of human life. One of the important areas of research that has been identified is the inclusion of technology in the healthcare business. People who require healthcare services find them unreasonably expensive, especially in developing countries. As a result, this effort aims to solve a current healthcare concern in society. The primary purpose of the project was to develop a remote healthcare system. It's broken into three parts. The first component entails using sensors to detect a patient's vitals, the second sending data to cloud storage, and the third delivering the observed data for remote viewing. The data may be seen remotely, allowing a doctor or guardian to monitor a patient's health state even while they are not in the hospital.

The Internet of Things (IoT) has been widely used to connect readily available medical resources and give patients with intelligent, dependable, and effective healthcare services. Health monitoring for active and supported living is one of the paradigms that may use IoT benefits to improve the patient's lifestyle.

**KEYWORDS:** Patient Monitoring, IoT, Smart Device, Smart Health Monitoring, Medical Services..

## I. INTRODUCTION

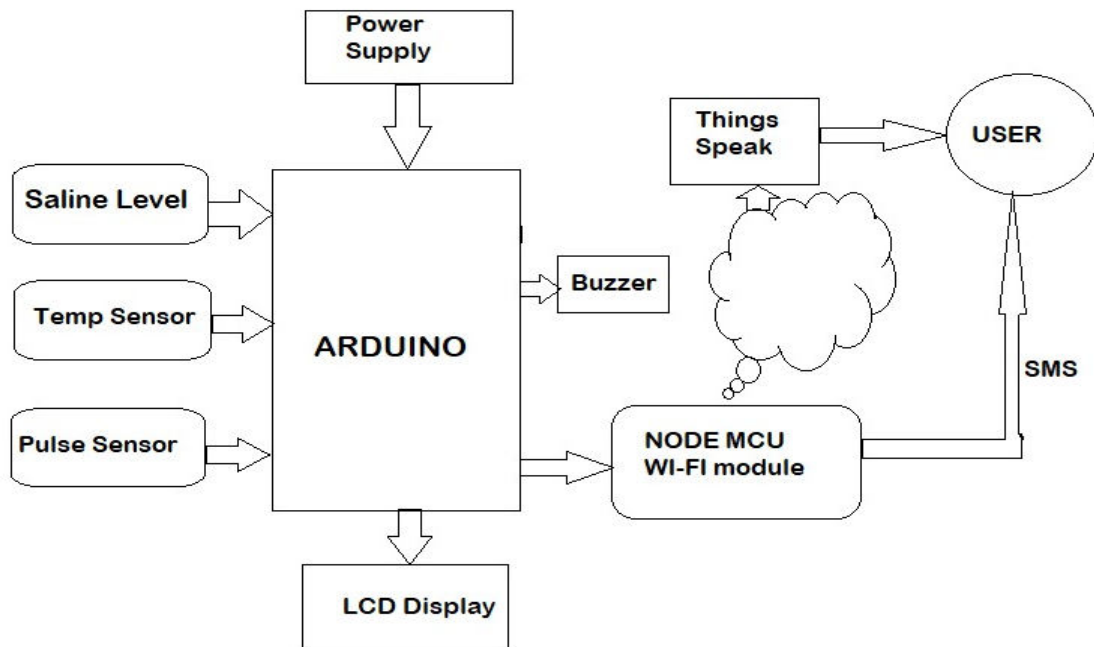
Nowadays, the health care sensors are playing an essential role in hospitals. The patient health monitoring system is one of the major developments because of its innovative technology.

An automatic health monitoring system is used to measure patient's body temperature, Pulse. Saline level detection using load cell for saline empty status indication and alert messages are sent using IOT technology (INTERNET OF THINGS).

Patients in critical conditions in hospitals are needed care and look after every minute. Sometime manual monitoring and operating creates delay in response or support so if there is dedicated system associated with patient to monitor health parameters and instrumental issues (saline Out or saline level), Body temp, Oxygen level or pulse, we can avoid some troubles the patient faces when in he/she is on bed for treatment.

The readings taken daily are sent to doctors and enable them to suggest the medicine and physical exercise routine that enable them to improve the quality of life and overcome such disease. Internet of Things applied to the care and watching of patients is more and more common within the health sector, seeking to boost the standard of life of individuals. The Arduino is a programmable device that can sense and interact with its environment. The combination of Internet of Thing with Arduino is the new approach of introducing IoT in healthcare monitoring system of patient. The entire concept of IoT stands on sensor, gateway and wireless network that modify user to communicate and access the information. IoT offer more guarantee within the health awareness. As a saying goes "Health is wealth" it's exponentially crucial to form utilisation of innovation for better well-being[4]. Arduino Uno collects the information from the sensor and transfers it to the IoT website.

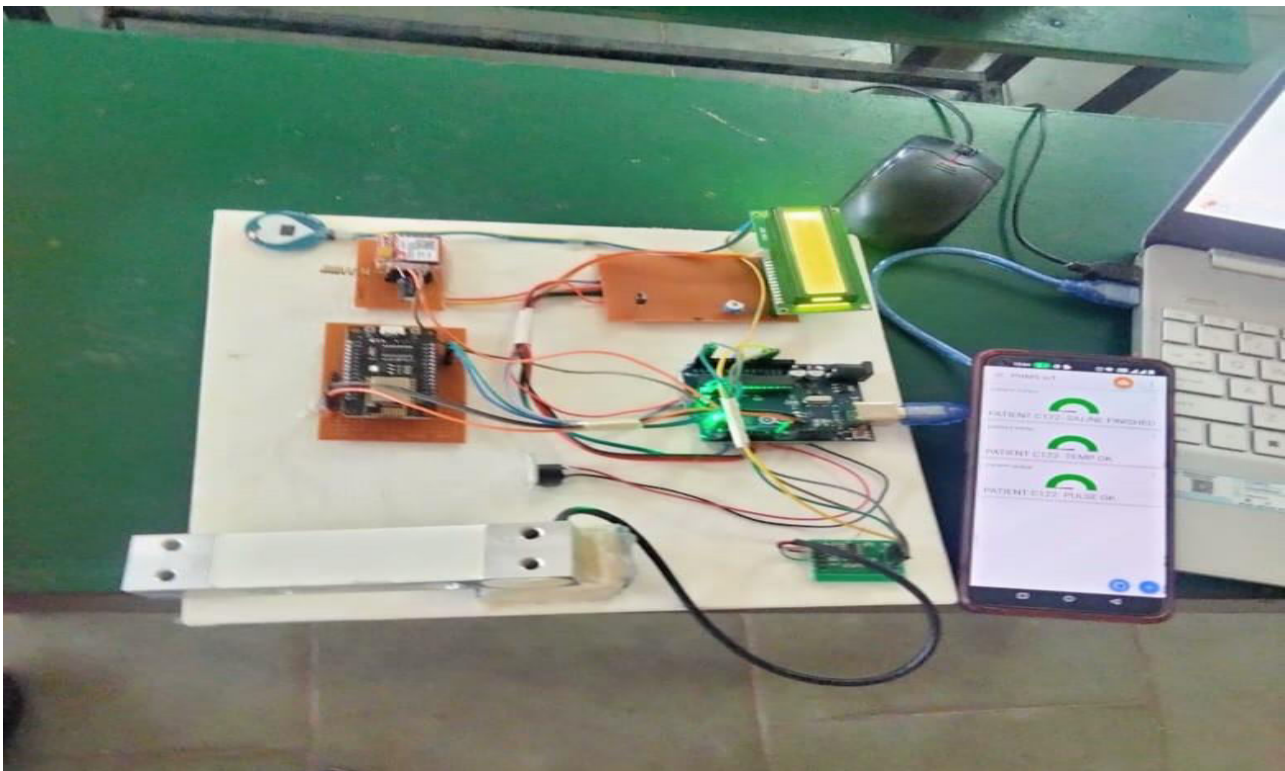
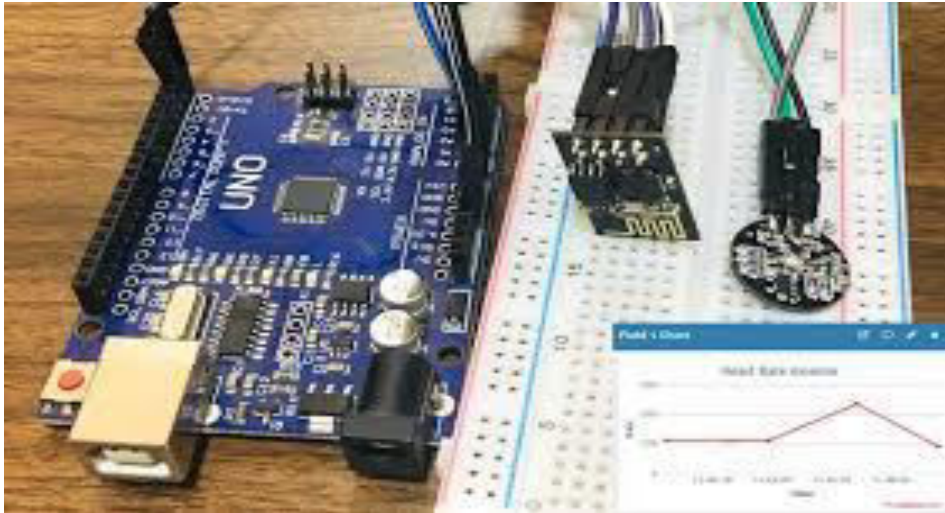
11. METHODOLOGY



IoT-based health observation system works on the patient's body observation system such as pulse rate and body temperature. Heartbeat device hooked up to the patient's fingers and temperature the sensing element is additionally hooked up to the patient's body. Temperature sensing element could be a sensing element supported resistance its resistance is set by dynamic the patient's vital sign, and pulse rate sensing element, vibration sensing element or flow in its price it's transmitted within the variety of associate signalling..2 the quantity of sensors An obtained by Arduino UNO, nice or wise management of this when receiving these values, these values are saved showed on the display and at a similar time sent to the IoT system exploitation the Wi-Fi module with Wi-Fi modules within the IoT display system these numbers area unit for various websites and applications Wi-Fi sources, and chat area unit used for this employing a web site or app, doctors will track pulse rate and their patients from anyplace. In this system two sensors are used for one heat sensor another heart rate sensor. Thingspeak IOT cloud platform can be used. To use this application user needs a Wi-Fi connection. Arduino board connects to Wi-Fi network functionality using Wi-Fi module. Arduino board learned sin from two senses. After that this installation is sent to IoT cloud with the help of WiFi module. Rated inputs displayed on LCD screen. At the same time this data is sent to the IoT cloud and the measured data is displayed on the screen when the application is opened. The limit value range is set to system. If the available value is greater than or below the limit value range a notification message will be sent to the smartphone screen.



### III. EXPERIMENTAL RESULTS



### IV. CONCLUSION

An efficient PHMS is developed to monitor the up to date status of the patient irrespective of the presence of the doctor. The system collects information like temperature, blood pressure and pulse rate of the patient and updates the same to the doctor. The system is evaluated experimentally and collected the sample data of ten patients to verify the status of patients. The doctor can monitor the progress of patients' health now and then to advise them about their health.



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