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# INTERNET OF THINGS BASED HEALTH MONITORING SYSTEM

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## ABSTRACT :

The project's goal is to routinely check on the health of the patients. When an elderly person sustains a major accident, this project assists us in routinely monitoring their health. In order to improve patient care and healthcare administration, this project suggests developing an Internet of Things (IoT) based healthcare monitoring system. The system seeks to provide real-time health data monitoring through the use of connected devices and sensors, guaranteeing prompt intervention and better patient results. The Internet of Things, or IoT, is the next technological revolution and a rapidly expanding field of study, particularly in the medical field. The development of remote health care monitoring has accelerated due to the rise in the use of smartphones and wearable sensors. These days, security is also an important concern. These days, security is also crucial, which is why we used several security-based technologies in this project. Proactive healthcare management, early intervention, better patient outcomes, and increased patient participation are just a few advantages of the Internet of Things-based health monitoring system. The method minimises needless hospital visits, eases the pressure on healthcare facilities, and fosters ongoing, individualised treatment by enabling remote patient monitoring. In addition, the system's flexibility and scalability make it ideal for a variety of healthcare environments, from private residences to huge medical facilities. The adoption of an Internet of Things-based health monitoring system has the potential to completely transform the healthcare industry. Doctors must continuously monitor their patients' health in order to treat them effectively. Therefore, the doctor may check the patient's health from their quarters by using this project, eliminating the need for them to physically visit the patient's bed.

Keywords— IOT, Thing-speak, Sensor, Esp-32, Health Internet of Things (IOT), Security, Healthcare Management System, and Health Monitoring System

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## Introduction

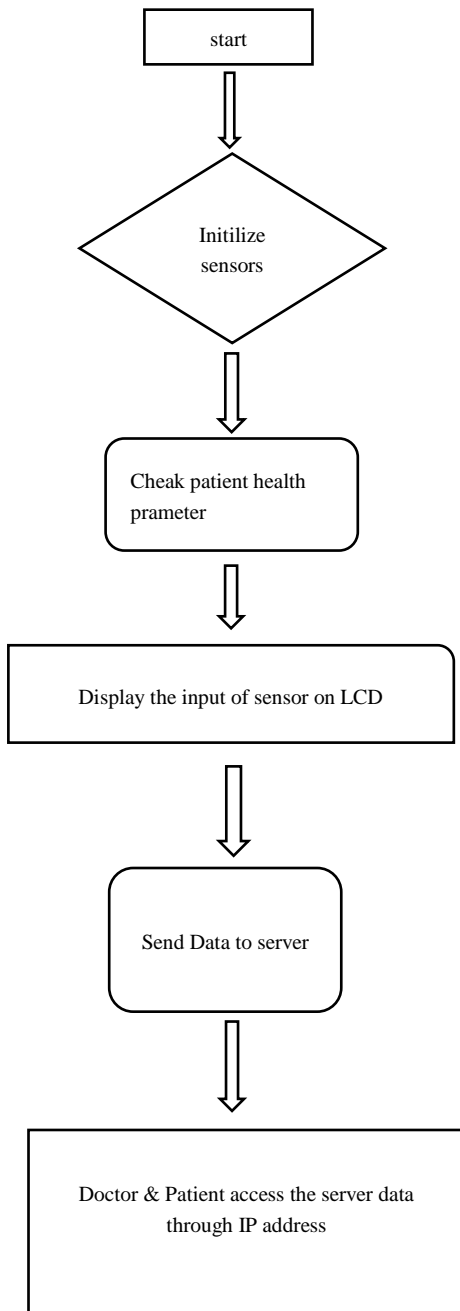
In the modern world, health monitoring is the main worry or problem. Patients experience severe health problems as a result of inadequate health monitoring. These days, there are several IOT devices available to track patients' health. In order to keep an eye on their patients' health, medical professionals also frequently review the characteristics of these smart devices. IOT is quickly transforming the healthcare sector with the emergence of new healthcare technology start-ups. Setting the scene, an Internet of Things (IoT)-based health monitoring system project addresses the growing significance of remote healthcare. It explains the need for continuous health monitoring, introduces the concept of connected devices, and highlights the ways in which prompt data gathering and analysis may enhance patient care. The goal of an Internet of Things (IoT)-based health monitoring system project is to transform healthcare by using networked devices to enable Continuous remote monitoring. This project investigates the integration of sensors, wireless communication, and data

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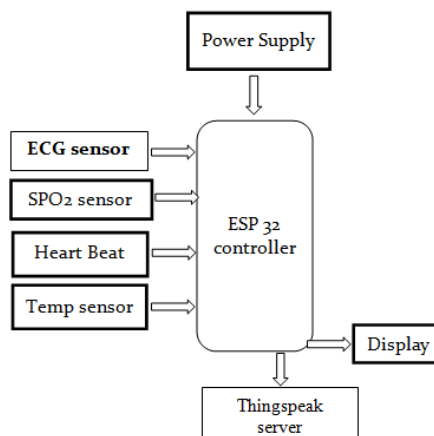
## PROBLEM STATEMENT

Because the patient cannot see the doctors when they are not present, an emergency scenario may also arise. Due to the increase in health issues in today's environment, it is thought to be extremely necessary for each individual to check their own health. Public health is suffering more and more from the high lifestyle and rising levels of stress. Physicians are unable to provide individualised care due to the growing wait times in hospitals and the growing number of patients. The project's goals are to build smart hospital services and monitors, use IOT as a communication tool, and solve this problem.

### III. FLOW-CHART



### IV. Block Diagram



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## V . SYSTEM HARDWARE

### ESP 32 CONTROLLER

- Technical Specification
- 32-bit LX6 microprocessor, single or dual core, with a clock frequency of up to 160 MHz.
- 448 KB of ROM and 520 KB of SRAM.
- Provides up to 150 Mbps of 802.11 b/g/n Wi-Fi connectivity.
- Classic Bluetooth v4.2 actions are supported.
- 34 GPIOs are programmable.
- Up to 16 channels of LED PWM and motor PWM.

### SENSORS

- 1) TEMPERATURE SENSOR (DS18B20)
  - Programmable digital temperature sensor with a 1-wire communication interface
  - 3 to 5 volt operating voltage
  - Temperature range of -55 to +125 degrees Celsius

### ECG SENSOR (AD8232)

- Only lead ECG is fully integrated into the front
- Single supply operation ranges from 2V to 3.5V.
- Integrated reference can be used to generate virtual ground
- Internal use of the RFI filter.

### SPO2 SENSOR (MAX30100)

- Photosensor, integrated LEDs, and high-performance analogue front end
- The heart-rate sensor and pulse oximeter solution as a whole simplifies the design process.
- Measures the absorbance of pulsating blood.
- This sensor is plug-and-play in nature
- It uses 4mA at the moment.

### HEART BEAT SENSOR

- This is a heart beat detecting and biometric pulse rate sensor.
- Its diameter is 0.625.
- Its thickness is 0.125.
- The operating voltage is ranges +5V otherwise +3.3V.

### 16\*2 LCD DISPLAY

- 4.7V–5.3V is the operational voltage of this LCD.
- .It has two rows, each of which can display 16characters
- One mA of current is used without a backlight
- Five by eight pixel boxes can be used to construct any character.
- Alphabetic and numeric LCDs

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## CONCLUSION

The Internet of Things (IoT)-based health monitoring system shows promise as a way to improve patient care and real-time data collection. It is a useful tool in the healthcare industry because of its easy connection with smart equipment, which provides convenience. We stored data using cloud computing mechanisms so that it could be retrieved whenever needed and kept safely over time. Moreover, cloud processing helps to maintain patient updates. When an emergency arises, doctors and specialists can quickly review the patient reports and take the necessary action.

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## Motivation:

Patients experience severe health problems as a result of inadequate health monitoring. IOT is quickly transforming the healthcare sector with the emergence of new healthcare technology start-ups. These days, everything is automated.

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