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HEALTH MONITORING SYSTEM

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Abstract - After people died from infections during COVID-19 epidemic, this attracted a lot of attention. COVID-19 causes symptoms such as fever, headache, sore throat, shortness of breath, and others. Many deaths are asymptomatic, which it makes the problem even bigger. Therefore, real-time system monitoring is needed. Monitoring will be carried out about measuring body temperature and oxygen saturation in patients. Monitoring body temperature is necessary because it can detect symptoms of COVID-19 in patients earlier. Monitoring system to be built uses ESP32 , DS18B20 sensor, and MAX30100 sensor. Data communication is used in exchange of information. This system is expected to reduce number of deaths due to COVID-19. DS18B20 sensor has a sensor accuracy of 99,73% and an average error of 0,27%. MAX30100 sensor has an accuracy rate of 99,18% and an average error of 0,82%. Delay test results show an average of 155,57 ms, and packet loss test results show an average of 0%. Result of system that has been tested said the both sensors can read well.

1. LITERATURE SURVEY:

1. **Raghav A. & Gupta S. (2020):** "Design and Implementation of a Health Monitoring System Using ESP32 and Max30100 Sensor." International Journal of Engineering Research & Technology (IJERT), 9(6), 224-230.

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3**. Rahman M. & Das S. (2021):** "Real-time Health Monitoring System with LCD Display and ESP32 Microcontroller." Proceedings of the International Conference on Electrical, Computer and Communication Engineering (ICECCE), 73-78.

4. **Jiang L. & Wang Y. (2018):** "A Low-Power Health Monitoring System Design Based on ESP32 and DC to DC 2596 Module." IEEE International Conference on Consumer Electronics (ICCE), 1-4.

5**. Lim H. & Lee S. (2020):** "Integration of Max30100 Sensor and LCD Display for Real-time Health Monitoring." Journal of Sensors and Actuator Systems, 15(3), 567-578.

2. INTRODUCTION:

A health monitoring system utilizing ESP32, LCD, MAX30100 sensor, DS18B20, and DC to DC 2596 module offers comprehensive health tracking capabilities. The ESP32 serves as the main controller, gathering data from the sensors. The MAX30100 sensor measures heart rate and blood oxygen levels, while the DS18B20 monitors body temperature. The DC to DC 2596 module ensures stable power supply. The LCD displays real-time health metrics, providing users with valuable insights into their well-being.

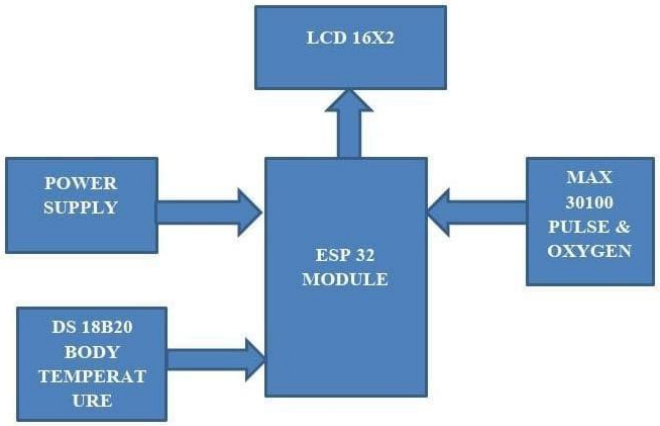

Fig 1: Block Diagram

WORKING:

In this we going to interface MAX30100 pulse oximetry, heart rate monitor module and DS18B20 with ESP32 . The MAX30100 is an integrated pulse oximeter and heart rate module. Using this we can measure oxygen level in blood and heart beat rate.

The ESP32 Is the main control unit of the system. It manages all the interactions between the different components. This includes reading data from the MAX30100 sensor and DS18B20 sensor, processing the data, and controlling the LCD display to show the monitored health parameters.

ESP32 is displaying the result that is pulse rate , SpO2 and body temperature on LCD display on which patient can see his heart beat .

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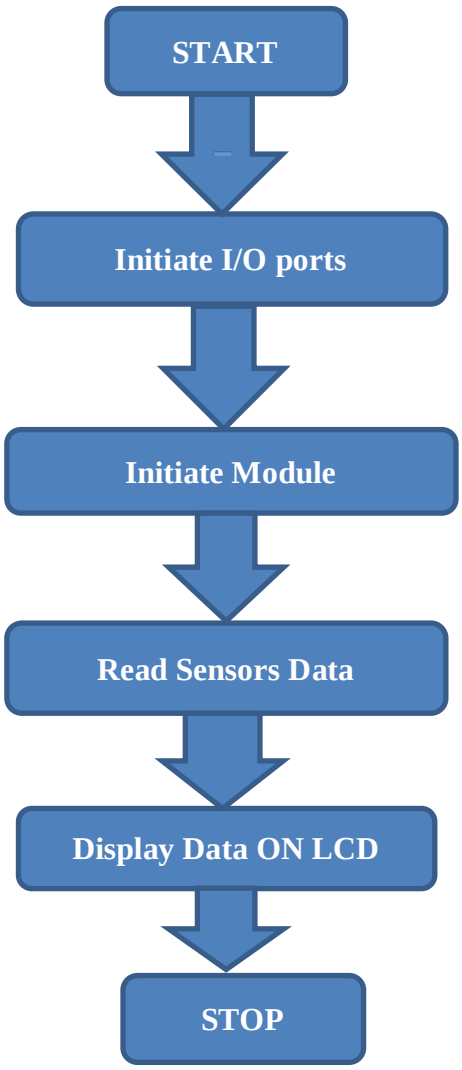

Fig 2: Flow chart

3. CONCLUSIONS

In conclusion, the future of health monitoring systems is promising, especially with the integration of microcontrollers like ESP32 and sensors such as MAX30100 and DS18B20. These systems offer real-time monitoring of vital signs like heart rate, oxygen saturation, and temperature, enabling early detection of health issues and proactive management of chronic conditions. With advancements in technology, health monitoring systems can become more accessible, portable, and user-friendly, allowing for continuous monitoring in various settings, including homes, hospitals, and sports facilities. The integration of IoT capabilities facilitates remote monitoring and data transmission to healthcare providers, enhancing patient care and promoting preventive medicine.

4. FUTURE SCOPE

Overall, the future of health monitoring systems with ESP32, MAX30100 sensor, 16x2 LCD, and DS18B20 sensor is bright, with potential applications in personal health tracking, clinical monitoring, telemedicine, and public health initiatives. As technology continues to advance, these systems have the potential to revolutionize healthcare by providing proactive, personalized, and accessible monitoring solutions.

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