SERVER TEMPERATURE MONITORING SYSTEM USING INTERNET OF THINGS (IOT)-BASED MQTT PROTOCOL

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ABSTRACT

Uncontrolled server temperatures can lead to performance degradation and even hardware damage. Therefore, real-time and accurate temperature monitoring is crucial for maintaining the stability of information technology systems. This study aims to address this issue by developing a server temperature monitoring system based on the Wemos D1 R2 microcontroller and the DHT11 sensor. This system is designed to transmit temperature data in real-time to the user interface, which includes an LCD screen and a WhatsApp bot, via the MQTT (Message Queuing Telemetry Transport) protocol. With this integration, administrators can efficiently and responsively monitor server temperature conditions remotely. The test results indicate that the developed system can measure temperature with a commendable level of accuracy, exhibiting an average measurement error of 6.4%. The temperature data displayed by the system closely aligns with the reference values of a conventional thermometer. This result demonstrates that the system can serve as an effective solution for real-time server temperature monitoring and support optimal temperature management.

Keywords: MQTT, Wemos D1 R2, DHT11, IoT, Temperature Monitor