

ABSTRACT

REAL-TIME COMPARISON OF THE USE OF ESP8266 AND ESP32 MICROCONTROLLERS FOR IOT-BASED SERVER ROOM MONITORING SYSTEMS (CASE STUDY: DINKOMINFO OF PURBALINGGA REGENCY)

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Server rooms play an important role in institutions or organizations that rely on information and communication technology for daily operations. Servers cannot be turned off because they must continue to operate at all times to support data needs. However, continuous server operation can cause problems such as increased temperature, high humidity, and other problems. In addition, the physical distance of the server room can be an obstacle to conducting regular monitoring. Therefore, a tool is needed that can monitor the condition of the server room automatically. This study aims to develop a device that can monitor the server room environment automatically and allows access from anywhere and anytime, so that users do not need to be physically present in the server room to monitor. This study applies the prototyping method combined with black-box testing. This system uses the ESP8266 and ESP32 microcontrollers as the main processor, with a DHT11 sensor to detect temperature and humidity, a fire sensor to detect fire, an MQ-2 sensor to detect smoke as an indicator of potential fire, and a voltage sensor to detect electric current. This application is used to display sensor data stored in an online database and accessed in real-time through the application of the Internet of Things (IoT). The test results that have been carried out show that both microcontrollers function well in monitoring the condition of the server room. However, the Esp8266 shows better performance in terms of data throughput and delay, making it more effective for real-time monitoring applications with an esp8266 throughput value of 3.166kbps and an esp8266 delay value of 91ms and an esp32 throughput value of 2.239kbps and a delay of 148ms.

Keywords: Esp32, Internet of Things, Monitoring, NodeMCU Esp8266, Server