

IMPLEMENTATION OF INTERNET OF THINGS SYSTEM FOR FAN AUTOMATION WITH MQTT AND NODE-RED

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ABSTRACT

Indonesia is a country located on the equator, so it has a tropical climate with a temperature range between 28°C and 32°C throughout the year. The Meteorology, Climatology, and Geophysics Agency (BMKG) stated that several cities in Indonesia, including Jakarta, often experience high temperatures of around 35°C during the day. With the unpredictable weather conditions, work productivity decreases. Fans are one of the tools used to relieve the heat caused by high air temperatures. Currently, fan operation is still done manually, so it is ineffective because many people forget to turn it off and waste electricity. As technology develops, it is necessary to develop a system capable of automating fans. The developed system is based on the Internet of Things (IoT) using ultrasonic HC-SR04 sensors used to detect the presence or absence of humans, DHT11 sensors used to detect room temperature, relays used as automatic switches, MIT App Inventor is used to create fan automation applications and the Node_RED dashboard is used to monitor fan conditions. The test results for the entire device were conducted 12 times with varying reading distances and temperatures. The HC-SR04 ultrasonic sensor detected reading distances ranging from 5 to 310 cm, and the DHT11 sensor detected temperatures ranging from 24.8 to 26.4° Celsius. When the HC-SR04 sensor detected a distance above 100 cm and a temperature below 25° Celsius, the system would not automatically turn on the fan. When the HC-SR04 sensor detected a distance below 100 cm and a temperature above 25° Celsius, the system would automatically turn on the fan.

Keywords: *DHT11, Ultrasonic, Fan Automation*