

ABSTRAK

PERANCANGAN ALAT PENGUKUR BERAT, TINGGI DAN SUHU BADAN MANUSIA SECARA OTOMATIS BERBASIS IOT

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Penelitian ini bertujuan untuk merancang alat pengukur berat, tinggi dan suhu badan manusia secara otomatis berbasis IoT. Perangkat ini dapat memberikan hasil yang tepat, menyimpan data pasien, membantu pemantauan kondisi medis, dan membantu pengembangan langkah-langkah pencegahan untuk penyakit potensial. Oleh karena itu perawat dan dokter bisa memantau pasien dari jarak jauh selama proses melakukan rawat jalan. Alat ukur ini menggunakan Arduino Uno dan ESP32 sebagai otaknya, sensor ultrasonik HC-SR04 sebagai pengukur tinggi badan, sensor Load cell sebagai pengukur berat badan, dan sensor suhu MLX90614 sebagai pengukur suhu badan. Data dari ketiga sensor tersebut diolah oleh Arduino Uno untuk mendapatkan indeks massa tubuh (IMT), Tinggi badan akurat (TBA) dan suhu badan akurat (SBA). Nilai tinggi, berat dan suhu badan yang telah terekam akan ditampilkan di LCD dan platform blynk lalu akan tersimpan secara otomatis ke google sheet. Berdasarkan pengujian dan analisis data didapatkan hasil bahwa pengukuran tinggi badan memiliki rata-rata presentase error 0,82 %, pengukuran berat badan memiliki rata-rata presentase error 0,44 % dan pengukuran suhu badan memiliki rata-rata presentase error 0,50 %

Kata Kunci: alat ukur digital, tinggi badan, berat badan, suhu badan, Arduino

ABSTRACT

DESIGN OF MEASURING DEVICE FOR WEIGHT, HEIGHT AND HUMAN BODY TEMPERATURE AUTOMATICALLY IOT BASED

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This study aims to design an IoT-based automatic measurement tool for measuring weight, height and human body temperature. This device can provide precise results, store patient data, aid in the monitoring of medical conditions, and aid in the development of preventive measures for potential illnesses. Therefore, nurses and doctors can monitor patients remotely during the outpatient process. This measuring instrument uses an Arduino Uno and ESP32 as its brain, the HC-SR04 ultrasonic sensor as a measure of height, a load cell sensor as a measure of body weight, and a temperature sensor MLX90614 as a measure of body temperature. Data from the three sensors is processed by Arduino Uno to obtain body mass index (BMI), accurate height (TBA) and accurate body temperature (SBA). The recorded height, weight and body temperature values will be displayed on the LCD and the Blynk platform will then be automatically saved to the google sheet. Based on testing and data analysis, the results show that 1) the data contained in the load cell sensor trial shows that body weight measurements have an error rate of 0.82 %, 2) the data contained in the Ultrasonic sensor trial showed that the height measurement has a percentage error rate of 0.44 %, 3) the data contained in the MLX90614 temperature sensor trial shows that body temperature measurements have an error rate of 0.50 %, 4) the results of the system response test can be seen that the length of time to turn on the monitoring device from the off state takes 7.36 seconds from the average of the test. Then for the system response experiment with the device off until it is connected to the Blynk Website, it takes 8.11 seconds.

Key words: digital measurement tools, height, weight, body temperature, Arduino