

Smart room monitor on the ESP32

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Course: Introduction to Robotics

Design

The main purpose of the project was to use all of the components we had not used yet. The four main components are:

- ESP32 board – the brain of the project.
- 4-digit 7-segment display – used as a real-time clock to display the current time.
- 8-bit shift register – used for the above-mentioned display to reduce pin usage.
- DHT11 temperature and humidity sensor – used for monitoring the surroundings and turning on the relay module once the temperature gets high enough.
- Photoresistor with LED and a transistor – used to light up the board when it gets dark.

Reflection

The most fun part of the project was setting up the web server and figuring out how the shift register and 7-segment display work. I decided to run the clock display on a separate thread because otherwise, the display appeared flickery. Overall, I am glad I used an ESP32 since it made the project more enjoyable.

Tests

I tested this project in all the ways I could think of, and the only problem I found is listed below.

Known Issues

After testing my project, the main problem is with the ESP32 website's relay control — it can get a little glitchy.