Temperature monitoring and control system for Server Room

Andrei-Alexandru ULMAMEI

ACES

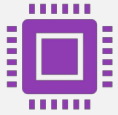# Project Overview

Project description

Hardware Implementation

Software Implementation

Results. Conclusions

Project Description

The main focus of this project was to create a system capable of logging temperature data for a server room and controlling the temperature in that room, by sending the appropriate IR commands to a A/C unit

Motivation – temperature fluctuations can lead to reduced equipment lifespan, increased energy consumption, and even system failures;
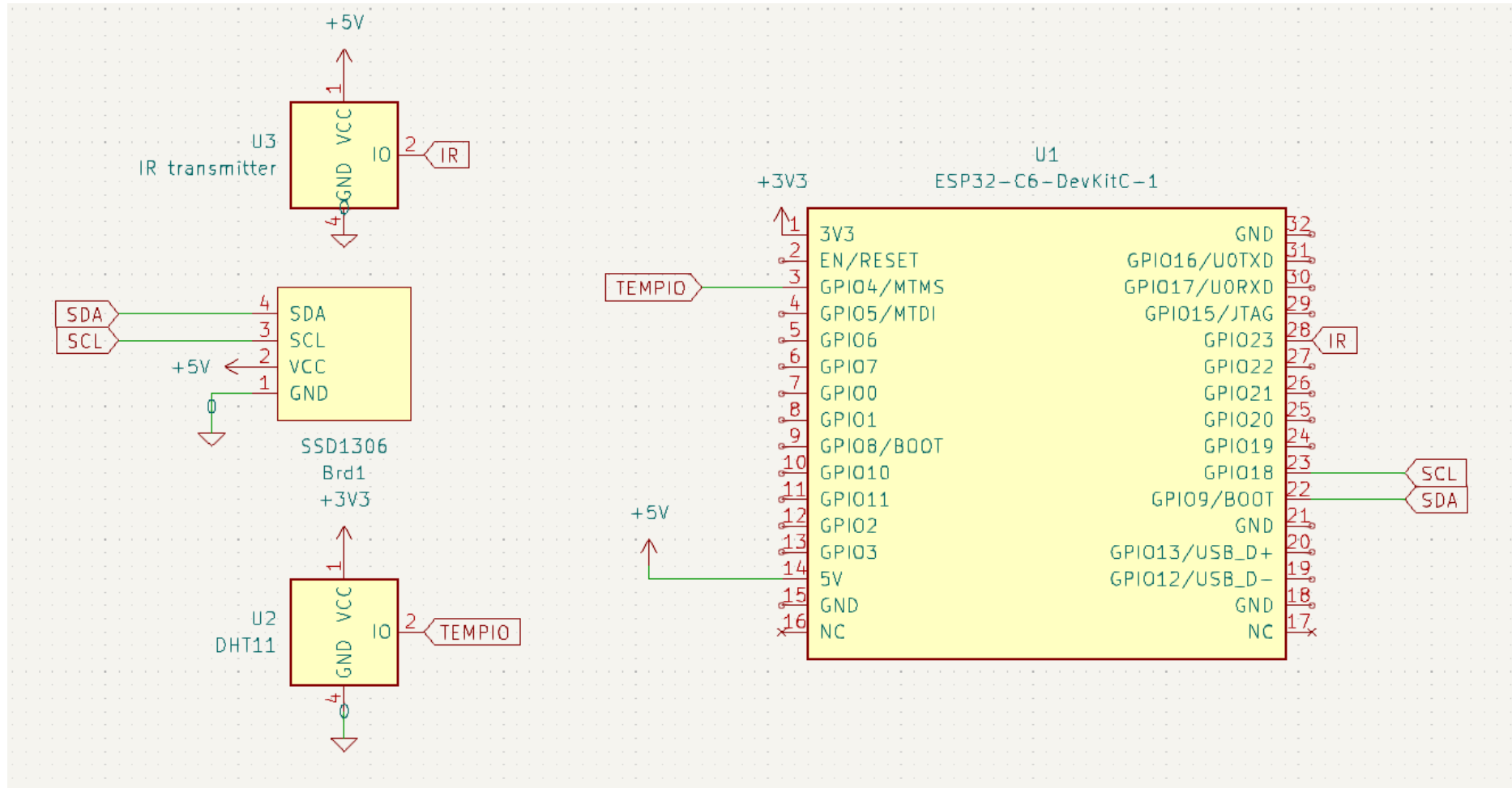
Hardware Implementation

+ Components used:

- ESP32 WROOM V3
- SSD1306 OLED I2C display
- IR Transmitter
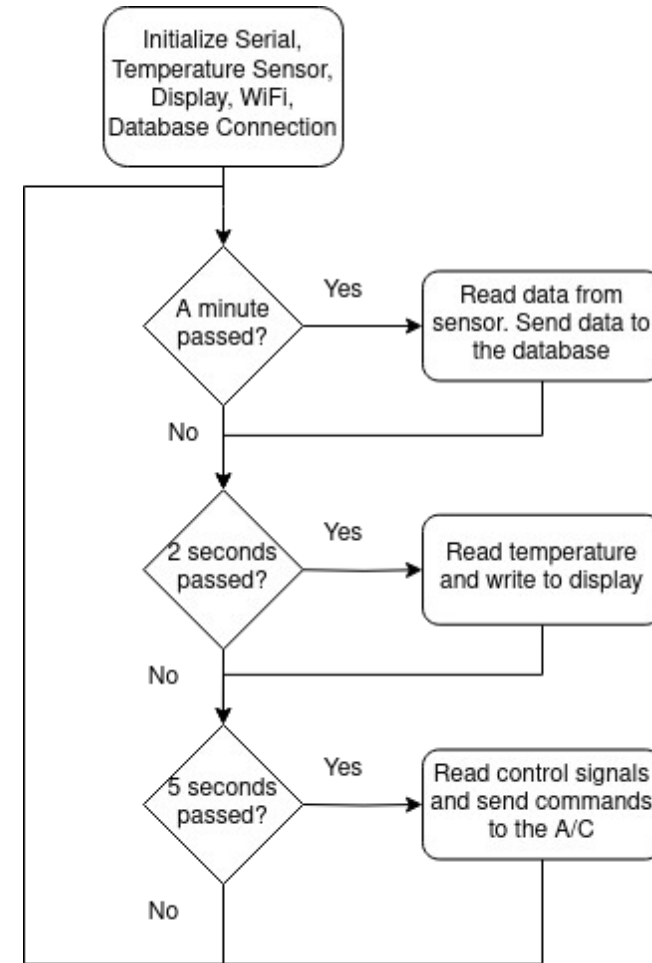- DHT 11 Temperature and Humidity Sensor

Schematic

Software Implementation

+ Software architecture:

  - Embedded software – Arduino

  - Web component – HTML & CSS + Javascript

  - Realtime Database from Firebase

  - Grafana Dashboard

Embedded Software

+ Initialization – Serial, Temperature Sensor, Display, WiFi, Realtime clock, Database Connection

+ Loop

Web Application

+ Database Connectivity & Login
+ Data Logging Page
+ A/C Control Page

Grafana Dashboard

+ Database Connectivity – Google Scripts
+ Creating the Dashboard & Graph
+ Change graph appearance

Results. Conclusion

+ Results – Video demonstration
+ Future improvements – Alert System