Model::Embedded System Project

Design Flow

Green House Control
- Specification
- Design Repository

Specification
- Application Knowledge
- Hard Ware Components
- System Software

Application Knowledge
- Controls should be manual and automatic.
- Devices are based on temperature and timing.
- System should be controlled by users via app or web.

Hard Ware Components
- ESP32 WROOM-32
- DHT11
- LCD 16x2
- x3 LED
- Power Source

System Software
- Arduino IDE
- Web Server
- Mobile App

Design Repository
- Application Mapping
- Optimization
- Evaluation And Validation
- Test

Application Mapping
- Temperature is read from DHT11 and sent to other parts.
- WiFi communications for data transfer.
- Temperature and time data will be displayed on LCD.
- data will be transfered into the web server via WiFi for user control.

Optimization
- Increasing LCD and temperature update rate.
- Reducing energy consumption for better battery functionality.
- Algorithm optimization for faster response.

Evaluation And Validation
- Checking the performance of sensors by comparing recorded data with real data.
- Testing data transfer from the server and application.

Test
- DHT and LCD test.
- LED on|off test.
- manual control via web test.
- manual control via app test.

Specification

User Interface
Soft Ware
1.Displaying parameters on the web and app.()
2.Sending orders by app and web.()

Server
Soft Ware
1.Receiving data from ESP32.()
2.Sending data to ESP32.()
3.Data transfer only. [can not process]()

ESP32
Hard Ware & Soft Ware
1.Receiving temperature data from DHT11.()
2.Sending time and temperature to LCD and server.()
3.Taking orders from user interface via WiFi.()

Server

LCD
Hard Ware
1.Displaying time and temperature.()

DHT11
Hard Ware
1.Temperature measuring and sending data to ESP32.()

WiFi

Can be controlled by app.

Server data are sent to app for user control via WiFi.

App can modify parameters on the server via WiFi.

Association

ESP32 reads data and receives new parameters from server via WiFi.

ESP32 sends data to server via WiFi.

ESP32 writes data to LCD via LCD pins

ESP32 reads data from DHT11 via sensor pins