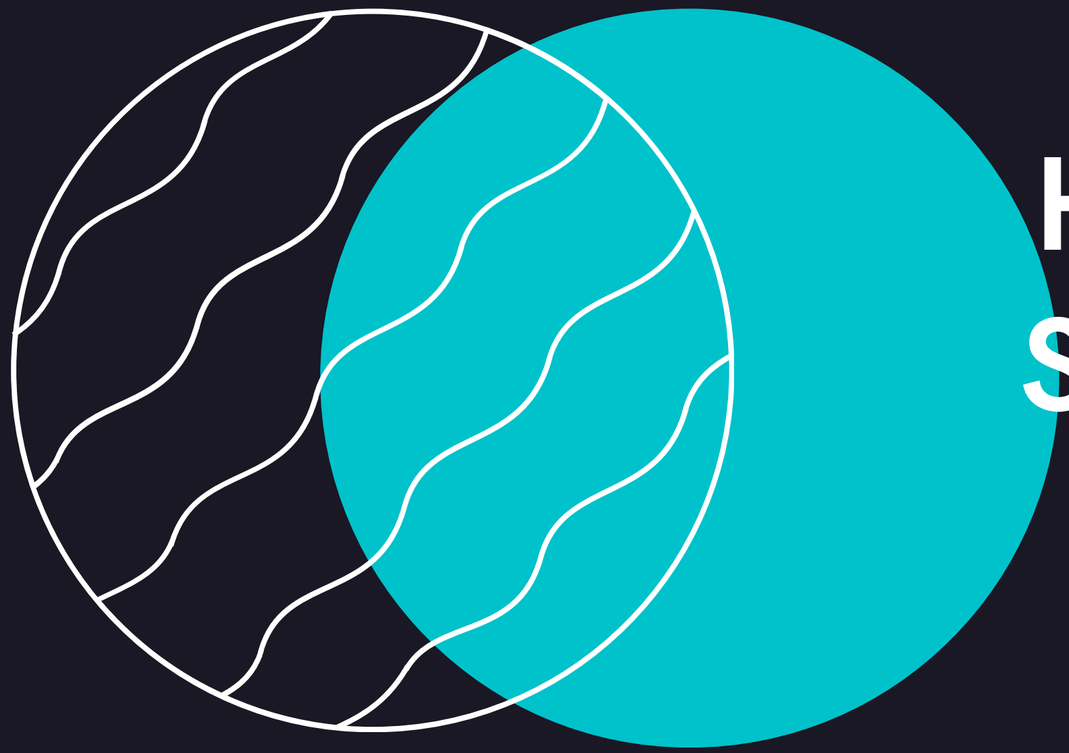
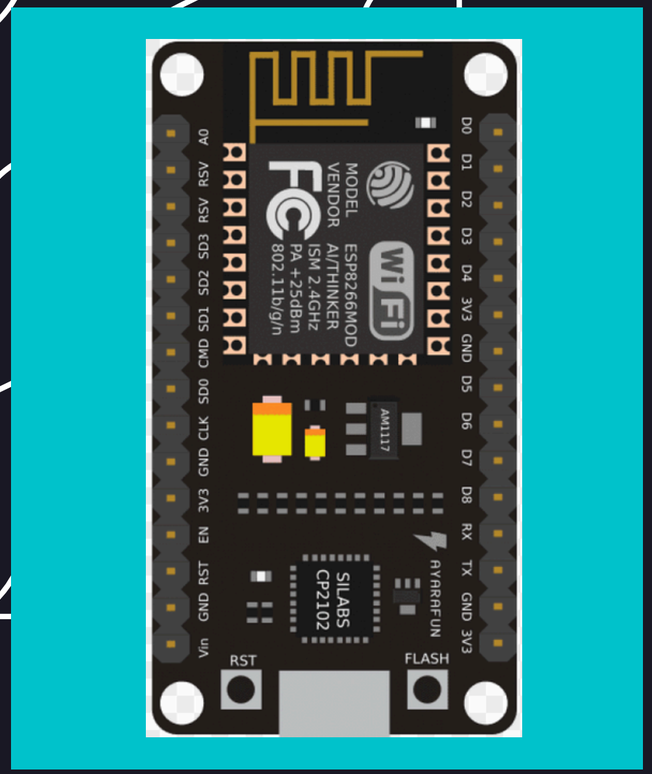


Home Automation System to Improve Sleep Quality

Microcontroller Applications
BME449
Course Project

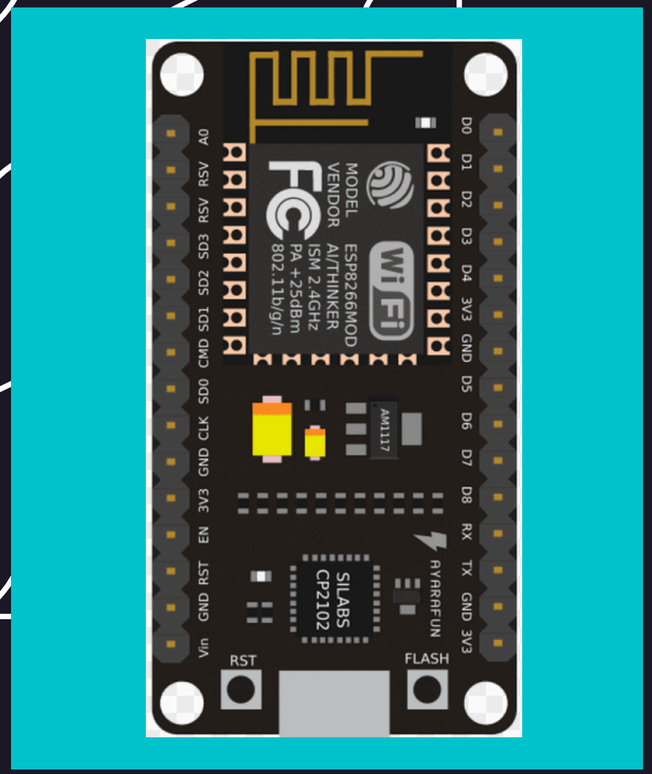
Ferhat KANGAL



PROJECT SUMMARY

This project is designed to increase the quality of sleep at night. When a person goes to bed, it automatically turns on the humidifier to bring the ambient humidity to the required level for sleep, using the information received from the humidity sensor.

NodeMCU ESP8266 is used in the project. Wireless communication is made thanks to this card. The humidifier is turned on as a result of wireless communication.



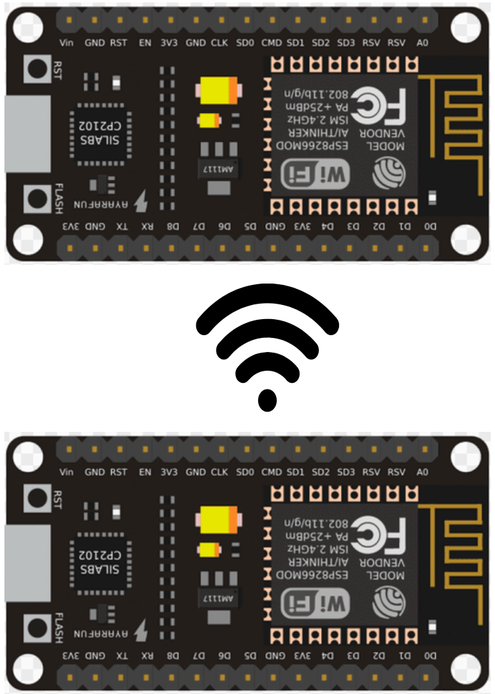
NODEMCU ESP8266

NodeMCU is an open source, small-sized electronic development board that has an ESP8266 module on it. It is a very stable board despite being cheap. Its usage area is quite wide.

It is used for two NodeMCU boards to communicate with each other.

The reason why NodeMCU ESP8266 board was chosen in this project is that it supports the ESP-NOW feature.

ESP NOW



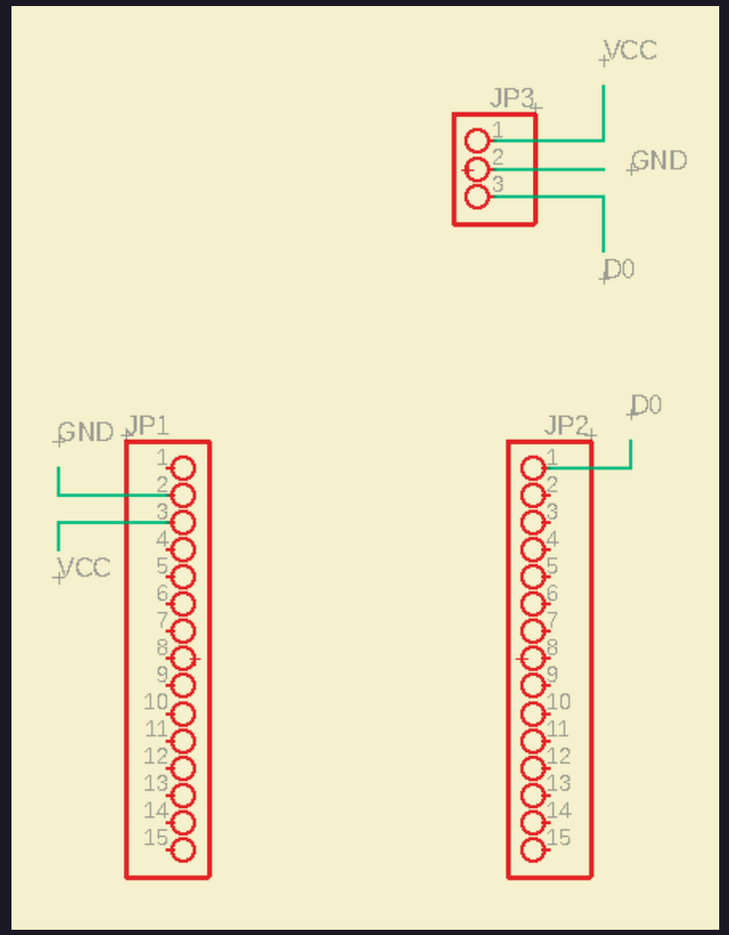
WHAT IS ESP-NOW?

ESP-NOW is a communication protocol that allows ESP devices to communicate independently of Wi-Fi. The protocol is similar to low-power 2.4Ghz devices. In order for communication to occur, pairing is required. After pairing, secure peer-to-peer communication that does not require a handshake can be achieved. It supports peer-to-peer communication as well as multi-device communication. Both one-way and two-way communication is possible with ESP-NOW.

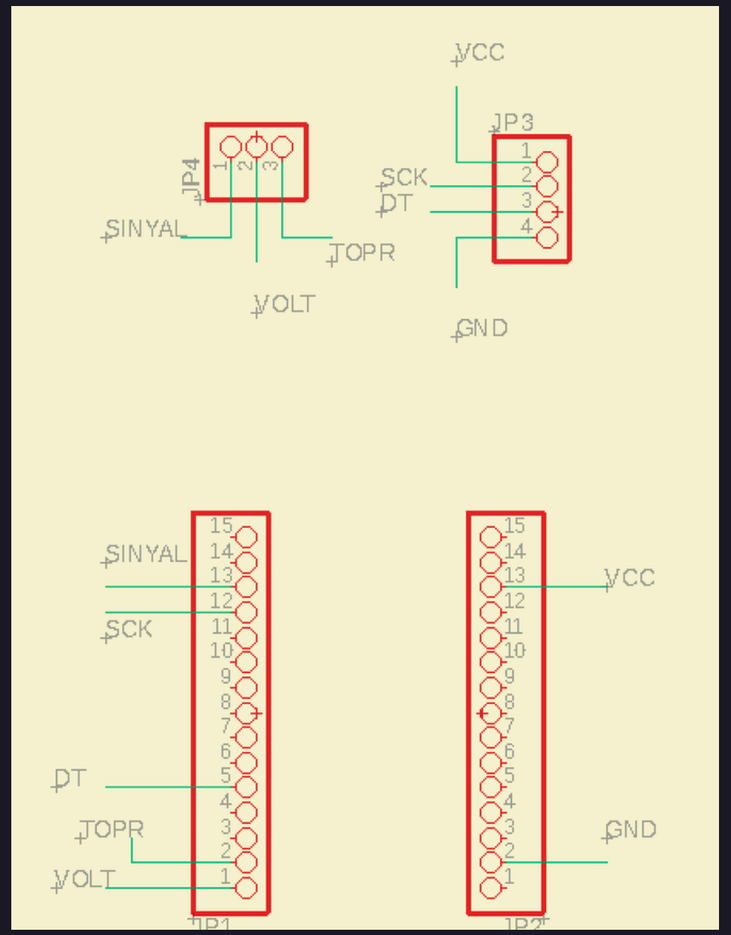
USED IN THE PROJECT

- 1 DHT11 Humidity and Temperature Sensor
- 1 HX711 Weight Sensor Amplifier
- 1 Load Cell
- 1 Single Channel 5V Relay
- 1 USB Ultrasonic Humidity Device
- 2 Power Banks
- 2 Jumper Male-Male Cables

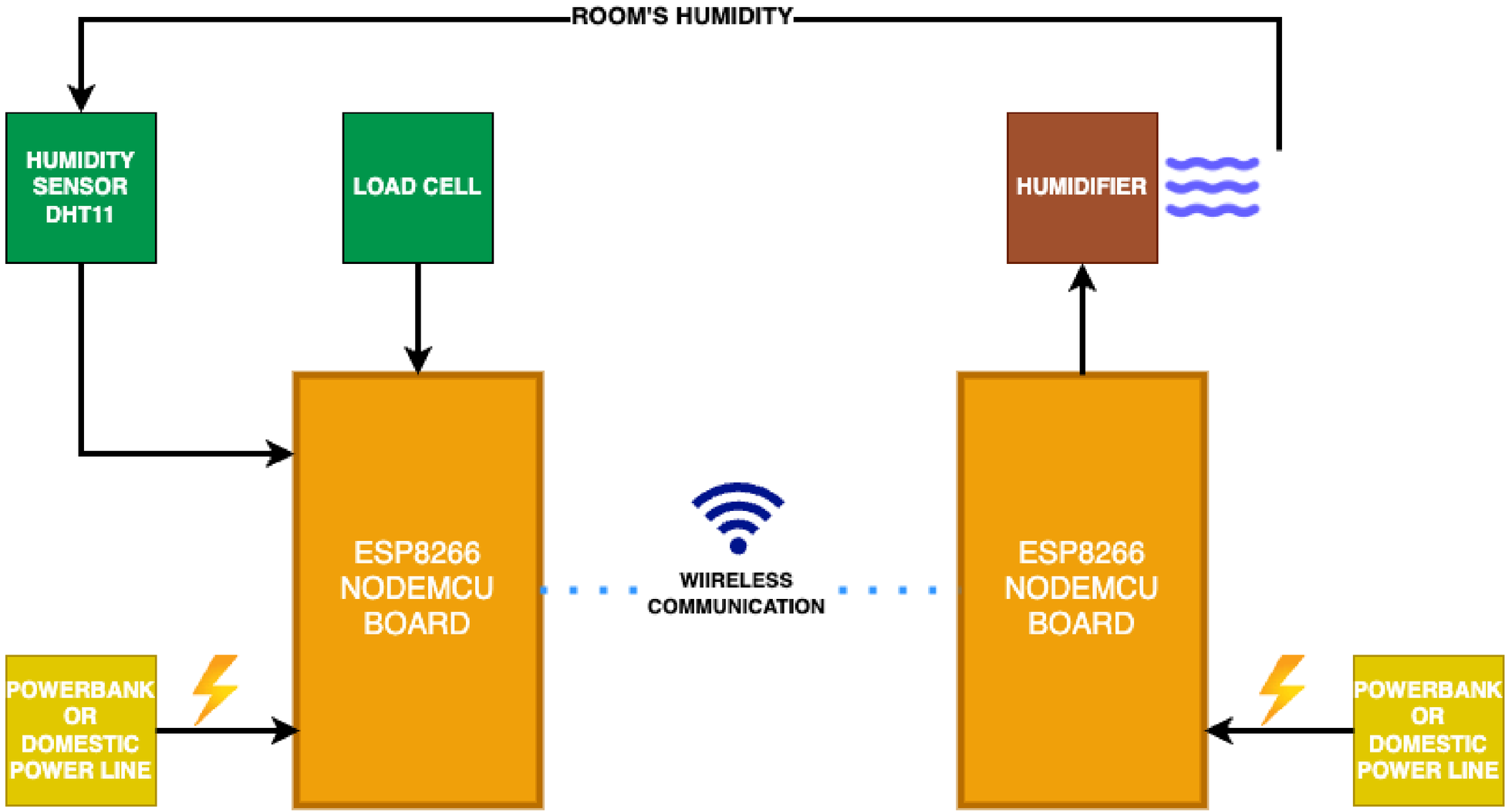
RELAY BOARD SCHEMATİC VIEW



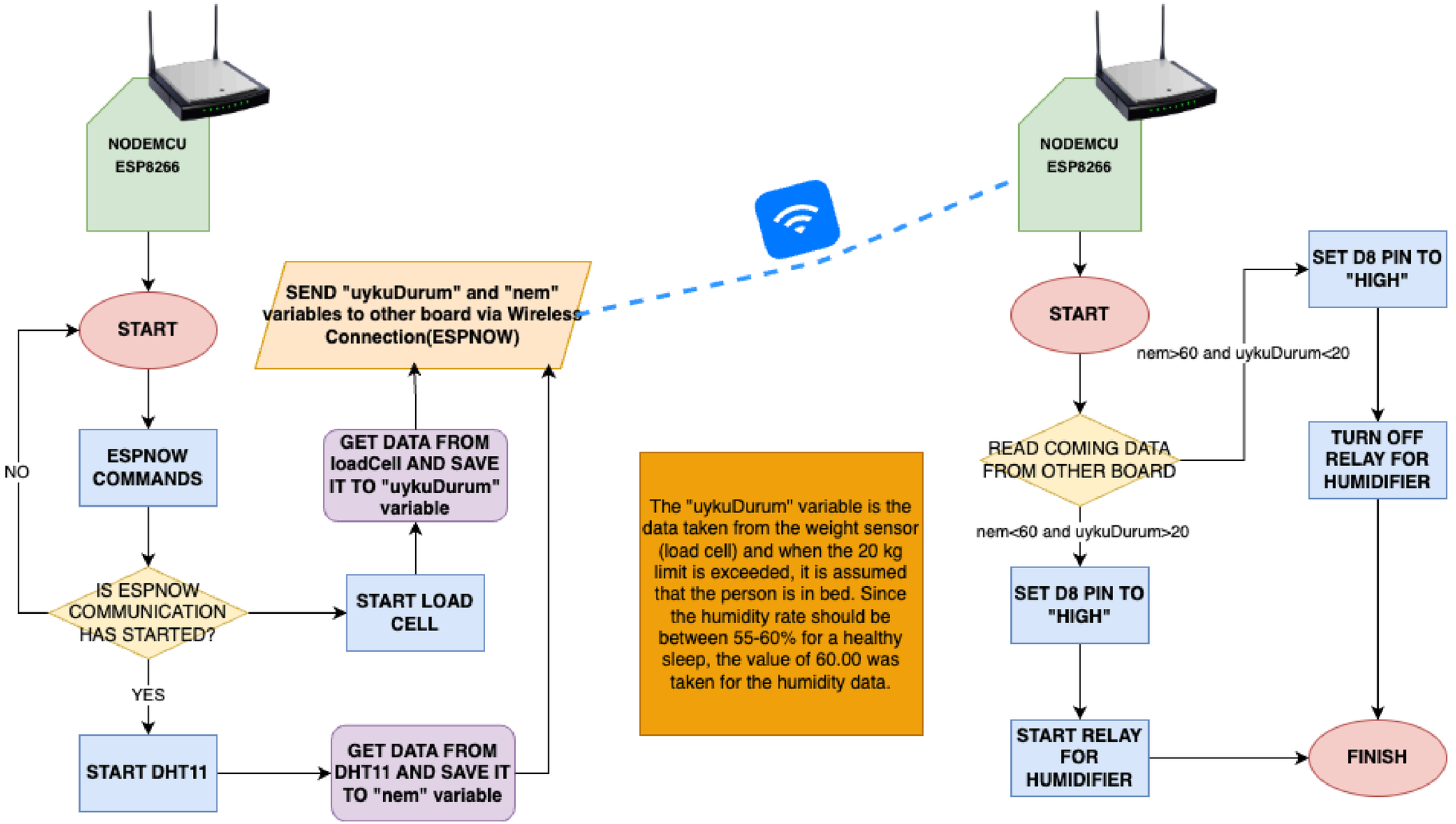
SCHEMATIC VIEW OF SENSOR BOARD

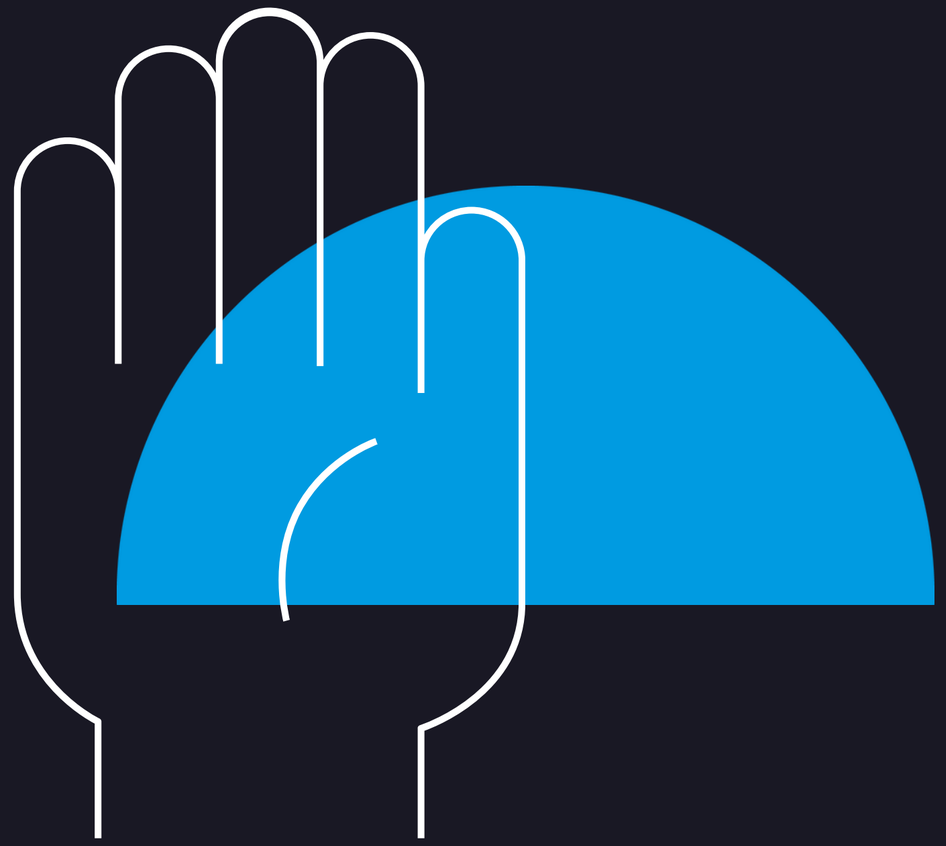


PROJECT BLOCK DIAGRAM



PROJECT CODE FLOW DIAGRAM





THANKS