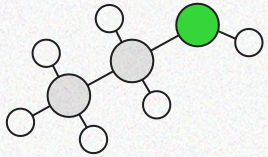


HTW wintersemester 23/24

Internet of Things

Lead by
Prof. Alexander Huhn

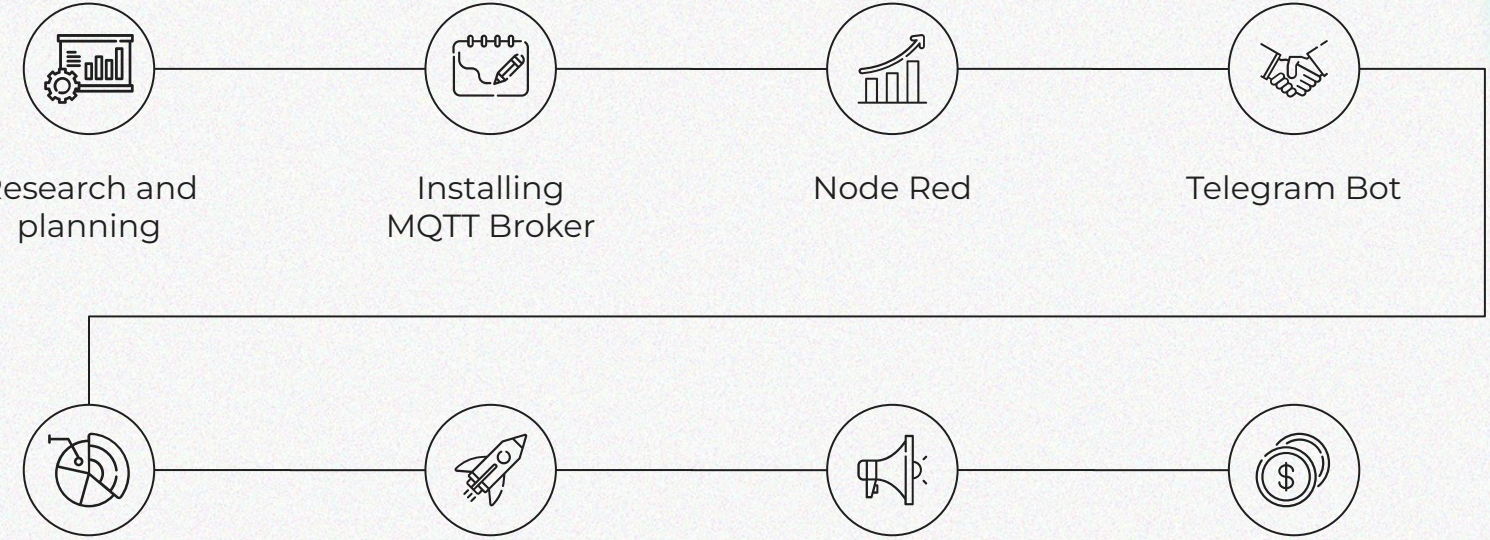
Ting Ting Yang (s0592188)

Summary

This project aims to **save energy bills** after the global natural gas crisis.

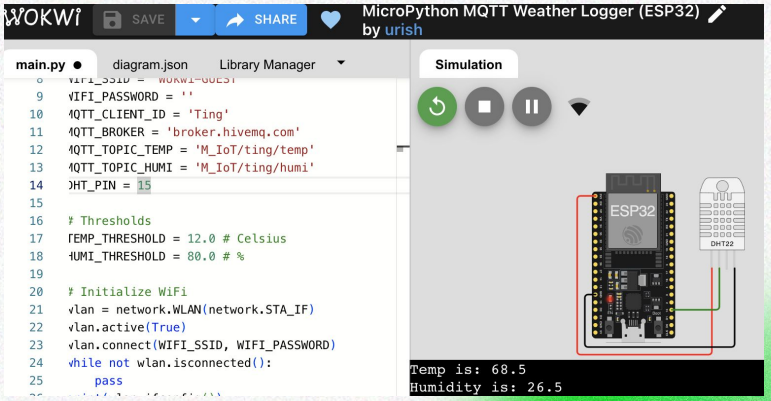
By using Micropython, Wokwi, MQTT, Telegram Bot API, and Node Red and equipped with devices such as microcontrollers, Raspberry Pis, and sensors. After a certain degree of humidity and temperature is detected, the user can decide whether the heating should be turned on.

Project Development

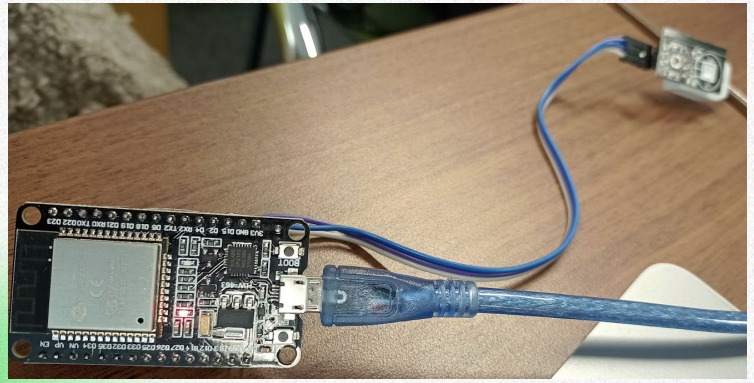


Actual Implementation

MQTT Weather Stimulator (ESP32)

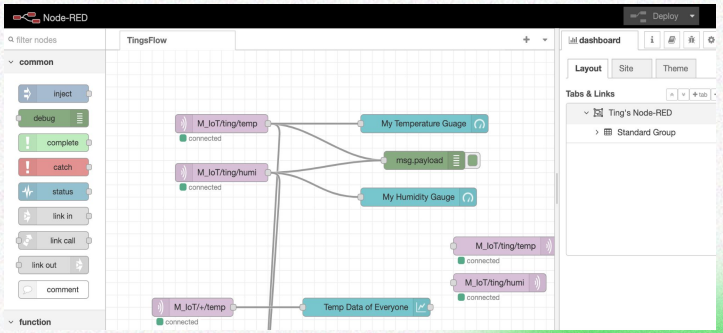


Microcontroller & Sensor (In Real Life)

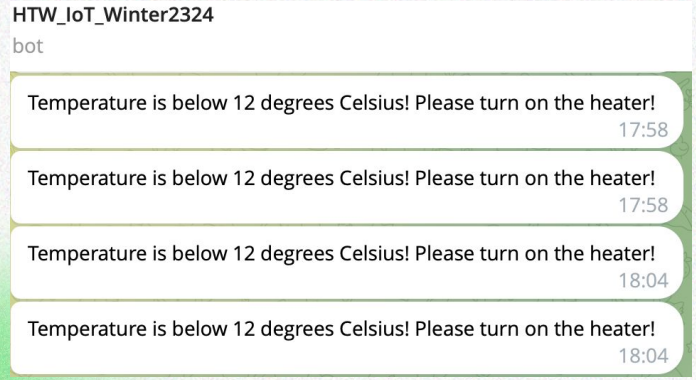


Actual Implementation

Node Red



Telegram Bot



Question -
How IoT application help us to save bills?

Problem base :
The heater switch is mostly controlled manually. Without any force, what stays on will continue. It would easily produce additional costs.

Solution :
By applying IoT technology and having a sensor to detect temperature to instruct user when to turn on/off heater to make heater running more efficiently and reduce unnecessary cost

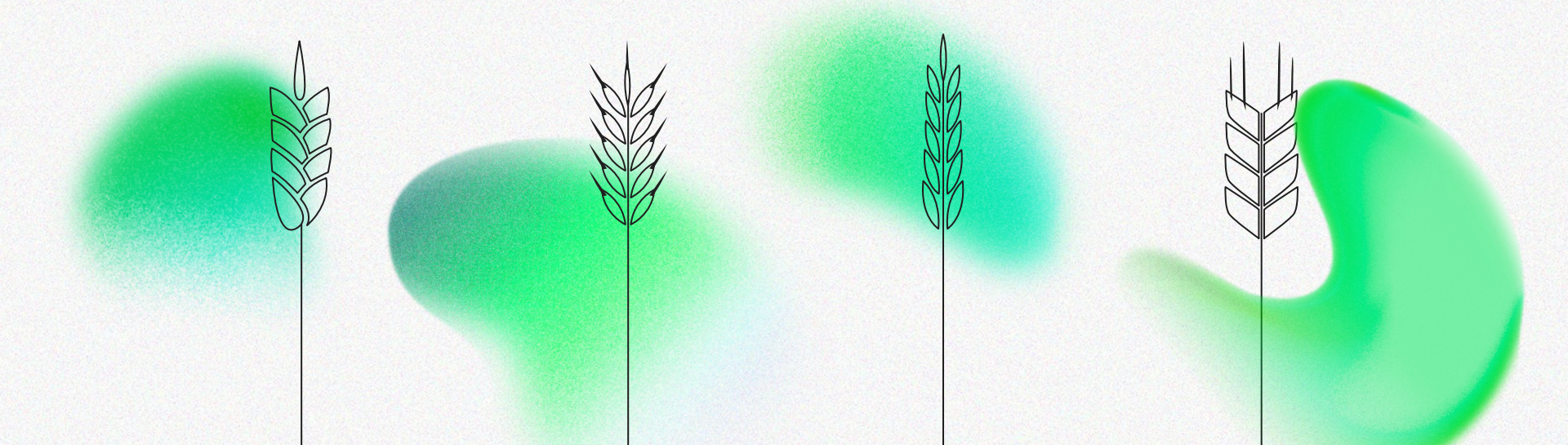
Step1

In your local terminal, start Node Red and connect your home device to the microcontroller to monitor changes in temperature.

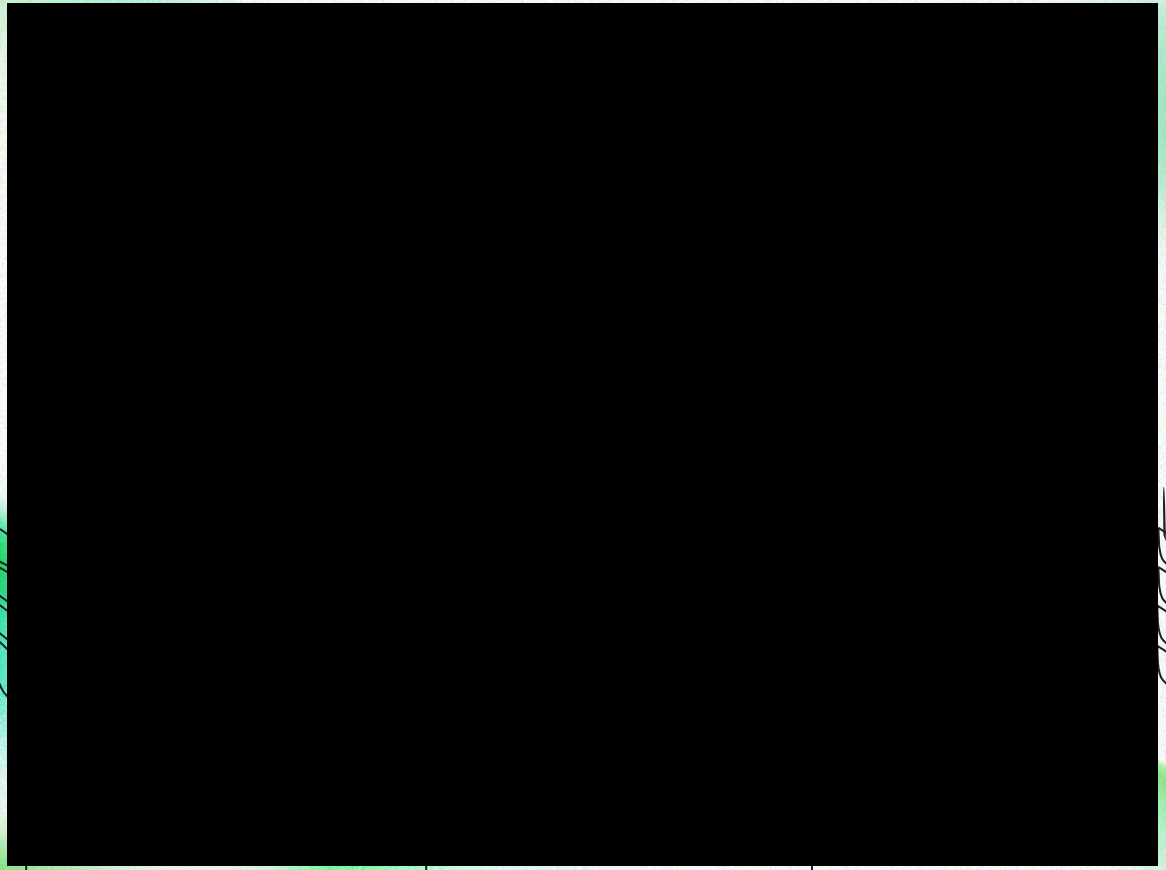
Here we have ESP 32 run by Python, for example.

Step2

Sensor detects temperature and sends a message to Telegram in order to adjust the heater.



Showcase



Documentation

- https://gitlab.rz.htw-berlin.de/huhn/proit-d_ws2324/-/tree/s0592188/Documentation

Resources

- www.freepik.com
- https://de.123rf.com/photo_168964803_thermostat-on-a-wall-reading-71-degrees-fahrenheit.-selective-focus,-background-blur-and-foreground-blur.html
- https://nodered.org/

Thanks!