



Smart Greenhouse.

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Materials.

Name	Quantity	Description
DHT11 + 10k Ω resistor	1	Monitor temperature/humidity
Photoresistor + 10k Ω resistor	1	Monitor the light amount
Soil Humidity Detection Module	1	Monitor the soil moisture
Push Button	1	Control information displayed on the LCD
LEDs (Red/Green)	2	Visualize system status
LCD Display 16x2	1	Show the sensor details

Method.

Temperature

- If temperature is outside the 22°C–26°C range, adjust the temperature (turn on the red led).
- Temperature can be adjusted manually through a web interface.

Humidity

- Monitors the ambient humidity.

Light

- Monitors the ambient light amount.

Terrain Moisture

- If **moisture** < 30%, water the terrain (turn on the green led).
- Watering can be forced through a web interface.

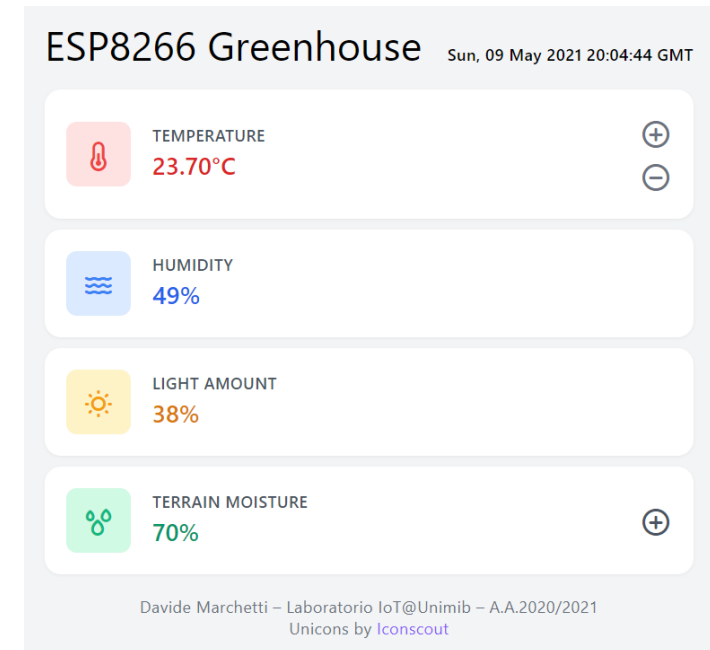
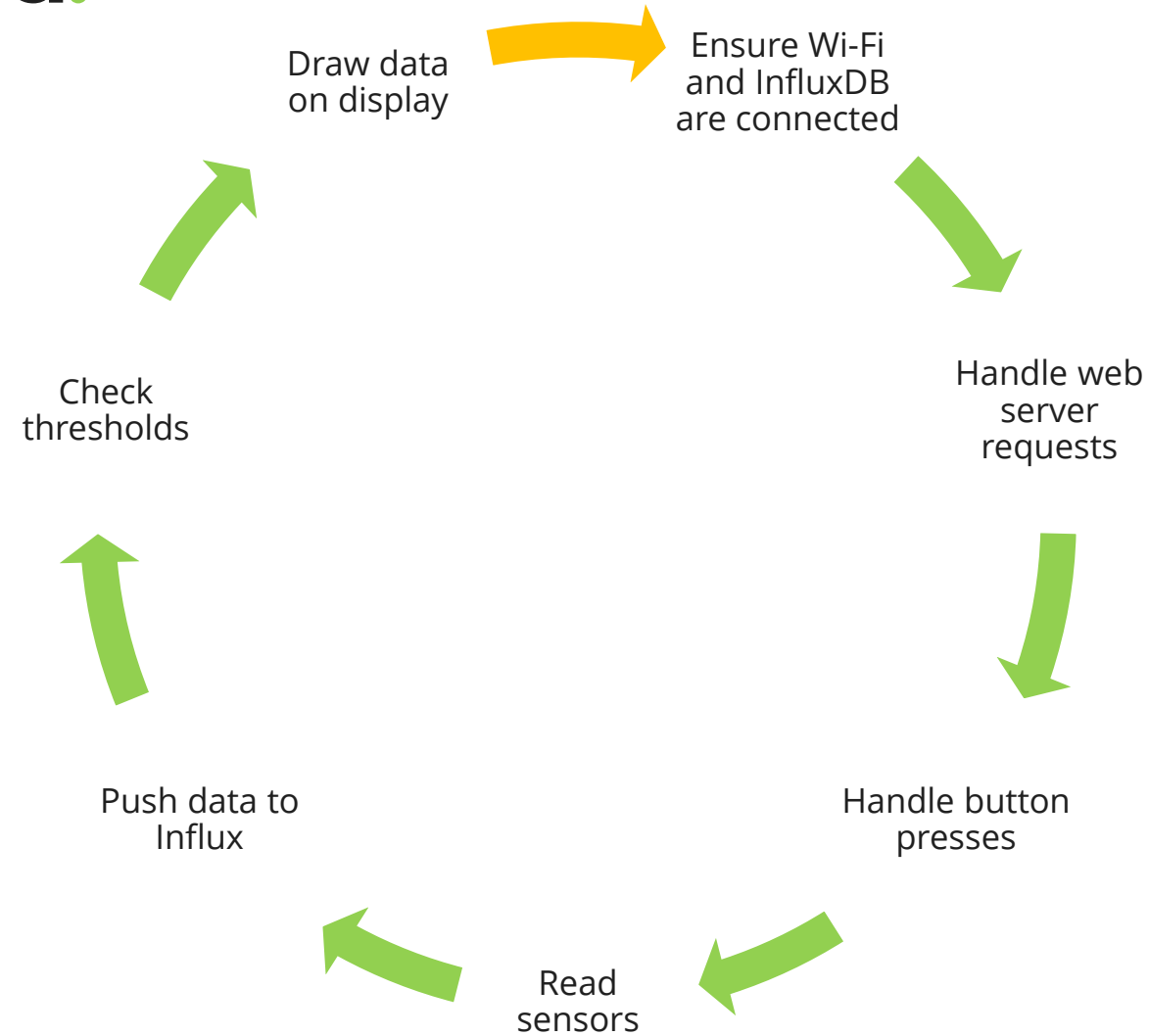


Fig.1: Smart Greenhouse web interface

ADDITIONAL INFORMATION:

- LCD Display is organized in pages, one for each sensor reading. The push button allows to loop through the pages.
- Sensor readings are stored in InfluxDB every two seconds.
- The MCU exposes a web interface (implemented in Vue.js) through an HTTP server to monitor and control the system.

Method.



Final Remarks.

- Soil Moisture Detector Sensor is not always accurate and responsive.
- Smart Greenhouse system works as designed, despite the limited number of analog and digital pins of the ESP8266.
- Future extensions:
 - Adjustment of humidity and light amount.
 - Monitoring of more parameters.
 - Settings customization without firmware modifications.
 - Use capacitive soil moisture detection sensors instead of resistive ones.

Final Remarks.

