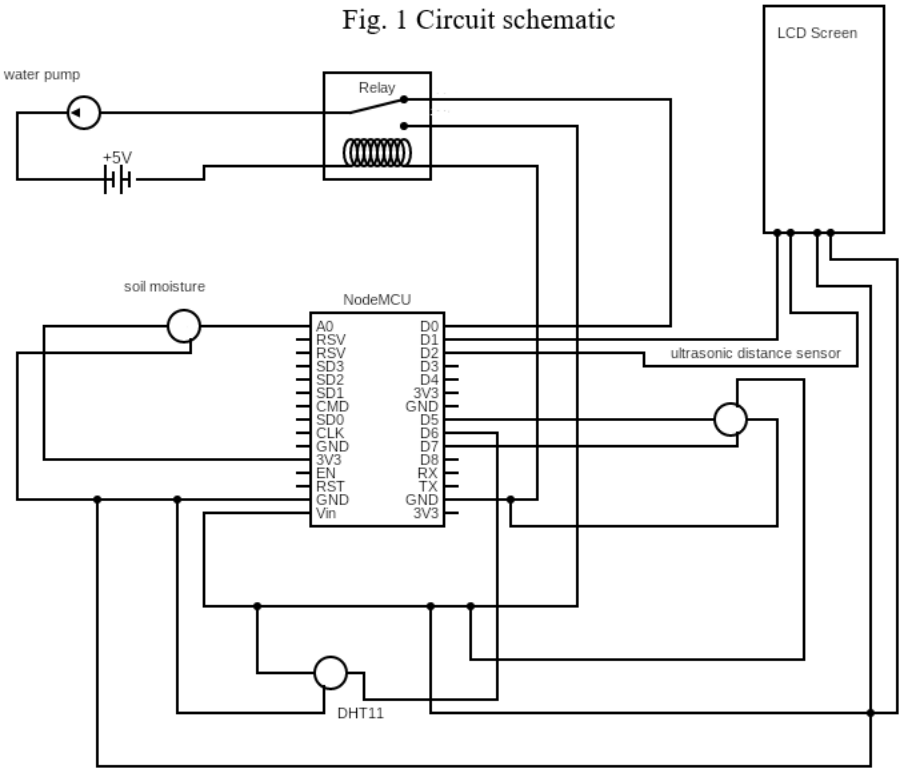
Circuit Diagram



Pin Connections

Soil Moisture Sensor => [A0, GND, 3V3]

Ultrasonic Distance Sensor

Trig => D7

Echo => D5

5V pin => Vin pin of microcontroller

GND pin of device => GND pin of microcontroller

DHT11 => [D6, GND, Vin]

LCD

SCL => D1

SDA => D2

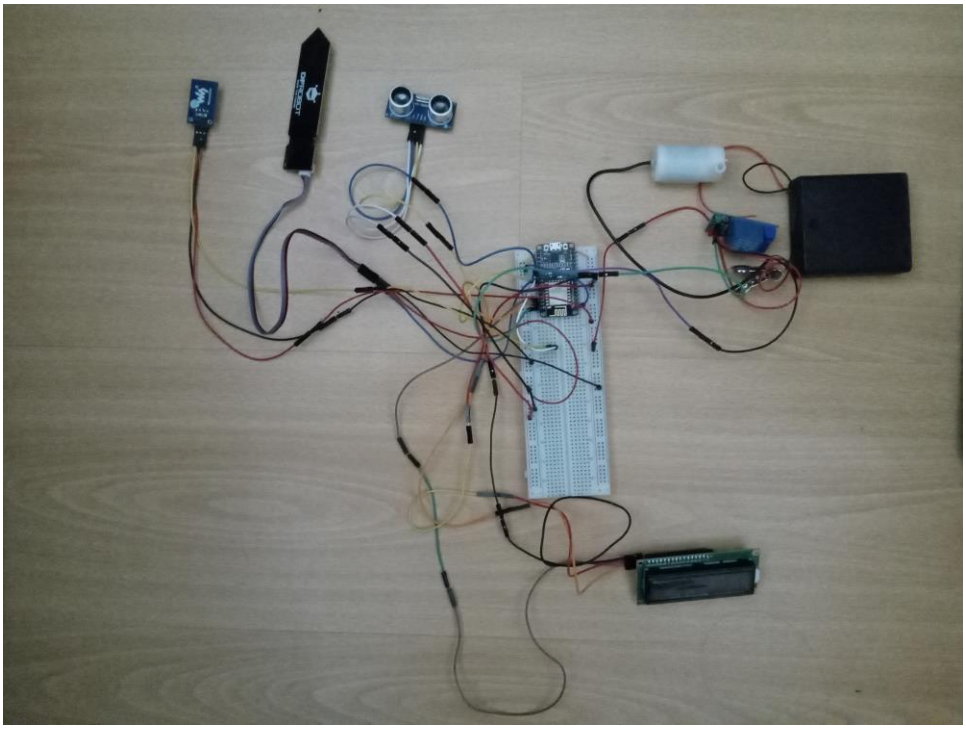
GND => GND

VCC => Vin pin of microcontroller

Relay

The relay is connected to pin **D0** of the microcontroller. The pump is connected to the relay and a battery pack.

Image of Physical Circuit



Component List

1. Capacitive Soil Moisture sensor
2. DHT11 Temperature and Humidity sensor
3. HC-SR04 Ultrasonic Sensor
4. Water pump
5. 12C 16x2 LCD screen
6. ESP8266 microcontroller

Other Components

- Relay
- Breadboard
- Micro USB cable
- Jumper wires
- Battery pack
- Power bank
- Resistors
- Water container
- Plastic tubing
- Humidity tray
- Pot plant

Dependency Libraries

- Arduino.h
- ESP8266WiFi.h
- Hash.h
- ESPAsyncTCP.h
- ESPAsyncWebServer.h
- LiquidCrystal_12C.h
- AsyncElegantOTA.h
- EmailSender.h
- ArduinoJson.h
- Adafruit_Sensor.h
- DHT.h

Dashboard

Plant Care Dashboard

Current Sensor Readings

Current Soil Moisture(%):

-38

Current Temperature(degree Celsius):

28.50

Current Humidity(%):

55.00

Notifications

Water Pump:

ON

Water Reservoir:

Water reservoir is sufficient

Temperature:

The air temperature surrounding the plant is too low. Please move the plant to a warmer area

Humidity:

The air humidity is too low. Place a humidity tray next to the plant

---

Requirements Set By User

Soil moisture level set by user(%):

10

Temperature set by user(degree Celsius):

40

Humidity set by user(%):

Humidity set by user(%):

60

Distance set by user between the top of the reservoir and the water level (cm):

9

Enter Plant Requirements

Set the minimum soil moisture level required by your plant

Soil Moisture Level:
Submit

Set the minimum temperature required by your plant

Temperature:
Submit

Set the minimum humidity required by your plant

Humidity:
Submit

Set the maximum distance(cm) between the top of the reservoir and the water level

Distance:
Submit

JSON Web page

Not secure | 192.168.3.16/json


```
{
  "Content-Type": "application/json",
  "Status": 200,
  "Current Sensor Data": {
    "Current Soil Moisture Value": -40,
    "Current Temperature Value": 0,
    "Current Humidity Value": 0
  },
  "Notifications": {
    "Water Pump Status": "ON",
    "Reservoir Level Status": "Water reservoir is sufficient",
    "Temperature Status": "The air temperature surrounding the plant is too low. Please move the plant to a warmer area",
    "Humidity Status": "The air humidity is too low. Place a humidity tray next to the plant "
  },
  "Plant Requirements  Set by User": {
    "Minimum Soil Moisture Level": 10,
    "Minimum Temperature": 40,
    "Minimum Humidity": 60,
    "Maximum Distance": 9
  }
}
```


OTA Web page

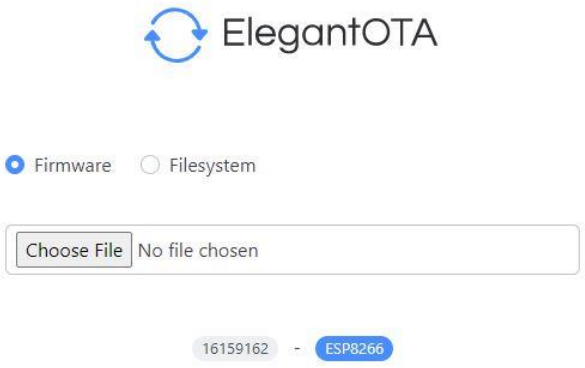
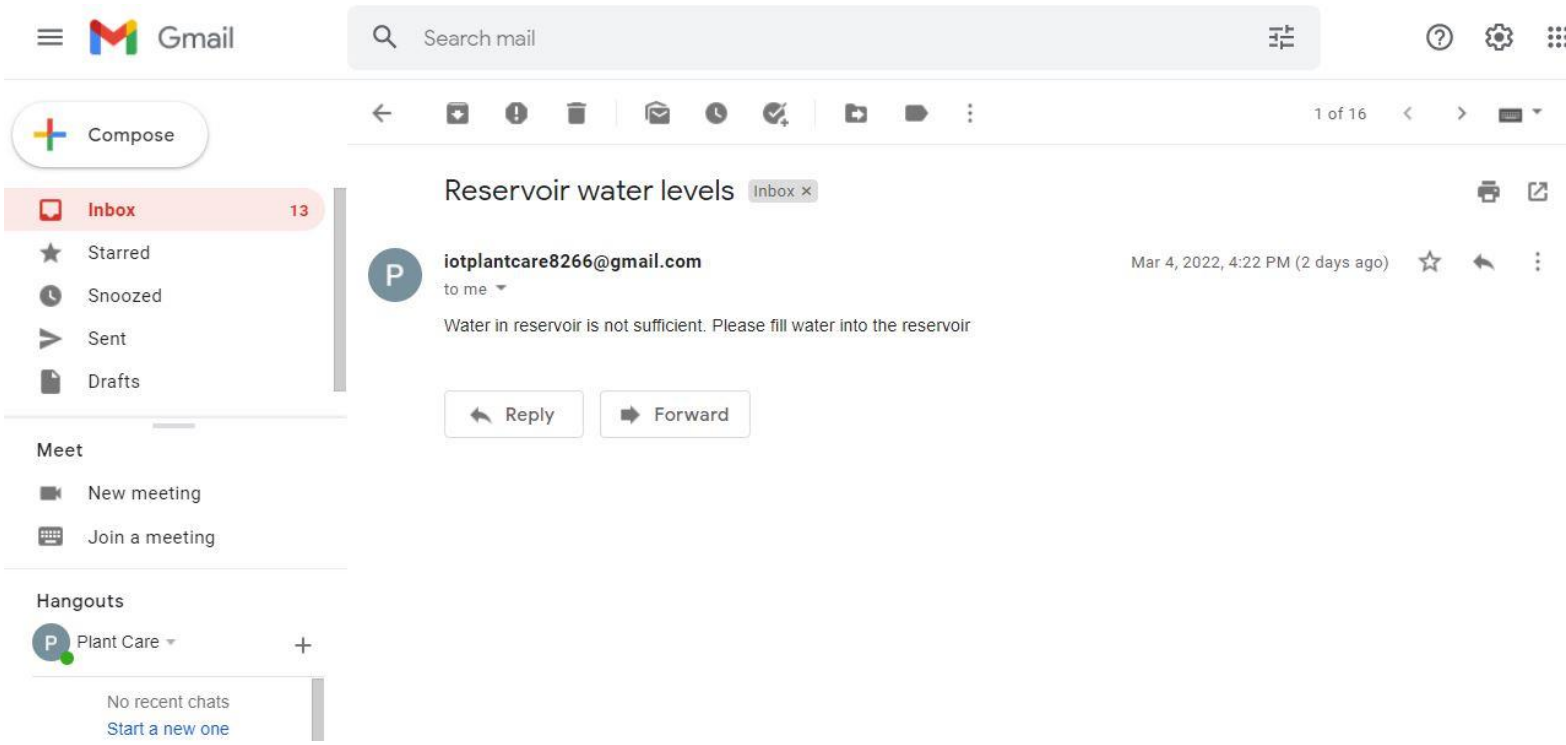
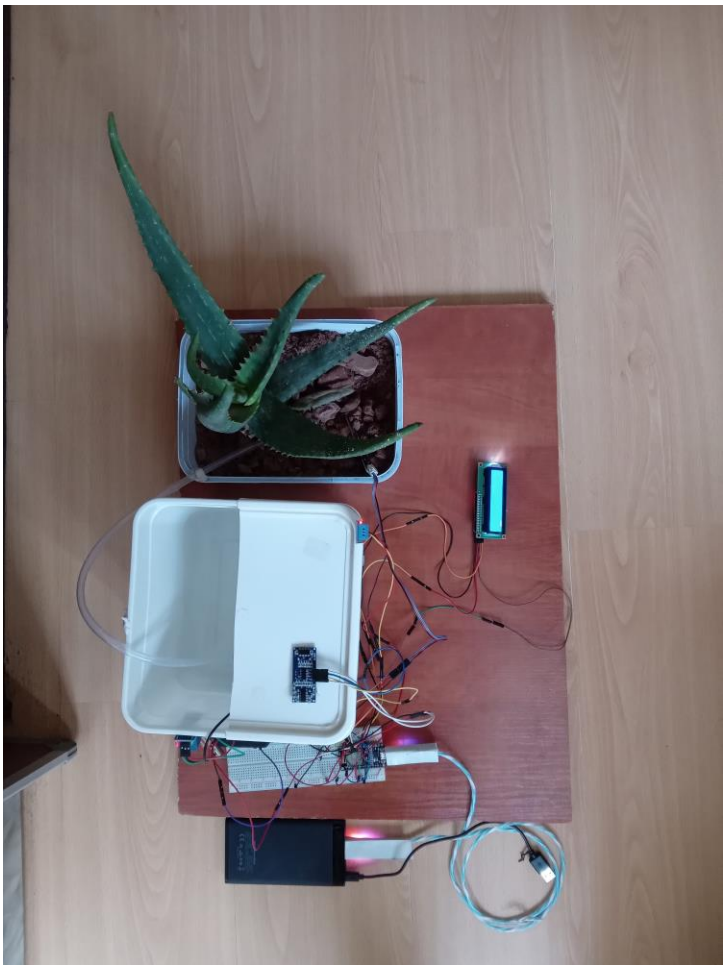
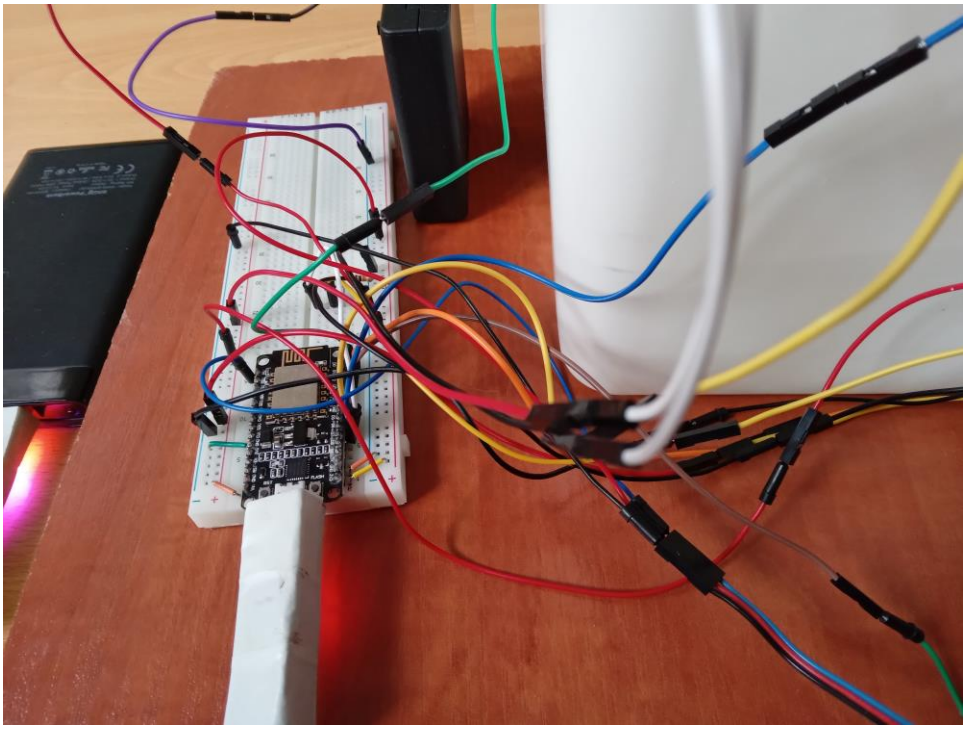


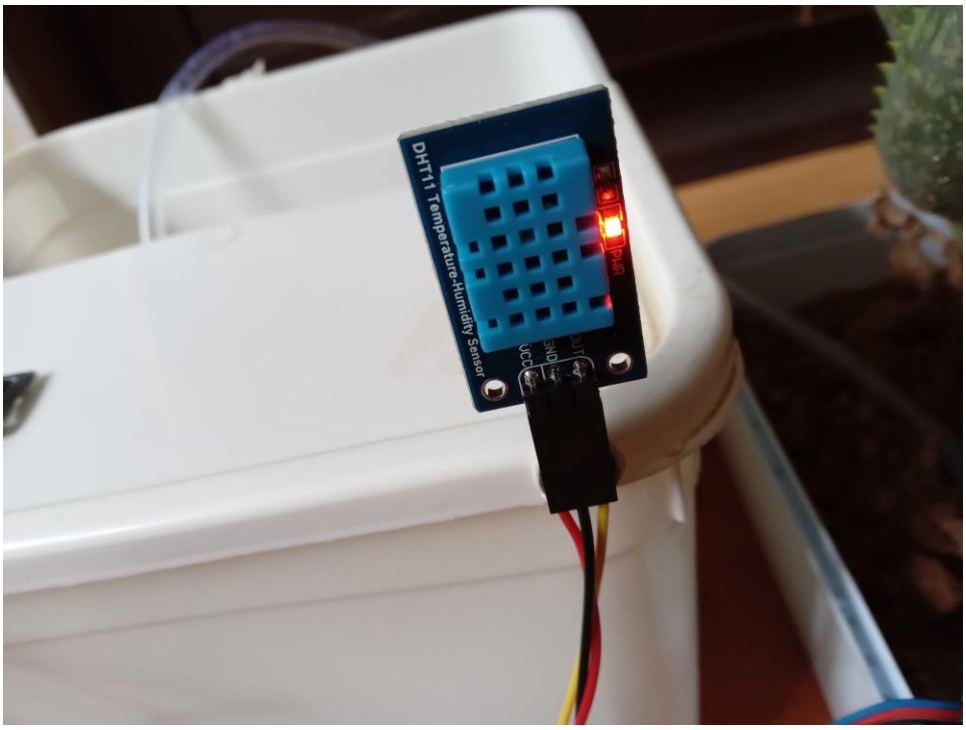
Image of the email sent to the user by the microcontroller

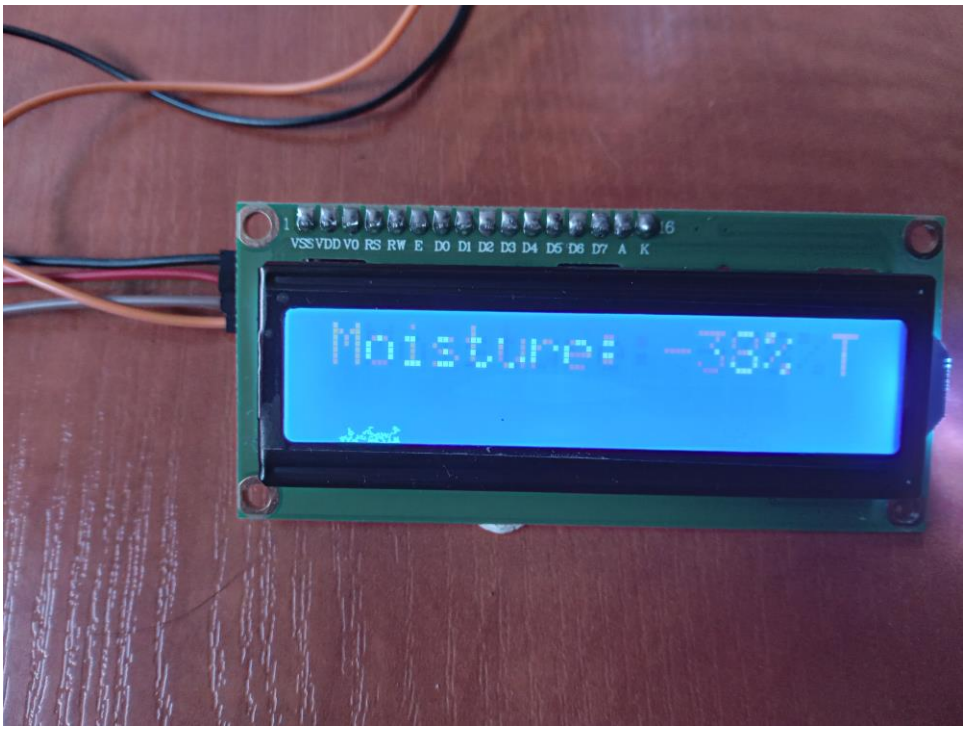


Images of Physical System Set Up

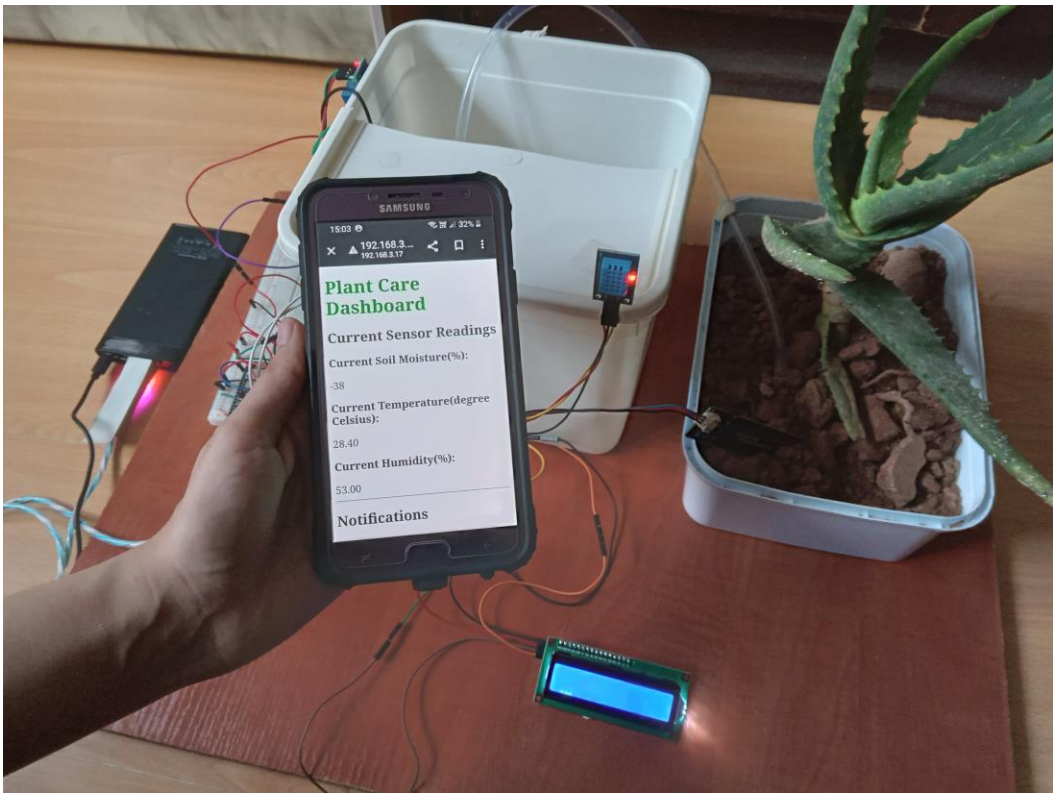





DHT11 Temperature-Humidity Sensor
PWR
GND
VCC


VSS VDD VO RS RW E D0 D1 D2 D3 D4 D5 D6 D7 A K
Moisture: -38% T


Capacitive Soil
Moisture Sensor V1.0


SAMSUNG
15:03
192.168.3....
192.168.3.17
Plant Care Dashboard
Current Sensor Readings
Current Soil Moisture(%):
-38
Current Temperature(degree Celsius):
28.40
Current Humidity(%):
53.00
Notifications