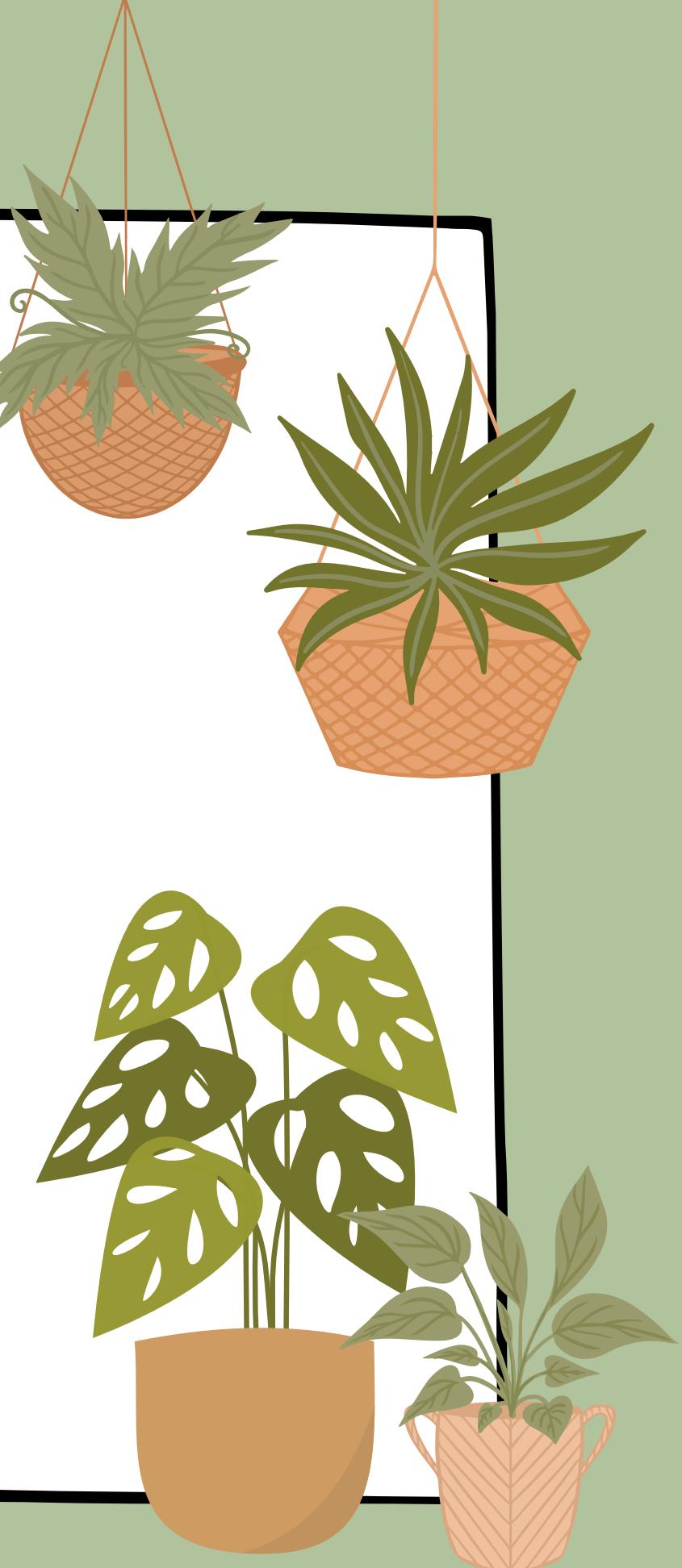


SMART HORTICARE SYSTEM FOR CHILI PLANT

Anecito, Flores, Francisco, Ong



PROJECT DESCRIPTION



The Smart Horticulture System aims to automate urban household gardening by creating a device that regulates the vitality of household farm plants. In this project, a chili plant was used for this study. The optimal temperature, humidity, and soil moisture reading of the chili plant was implemented in this device which allows the plant owner to monitor and maintain its health. Powered by Arduino Uno and sensors, the device allows novice plant owners to get started with urban gardening.

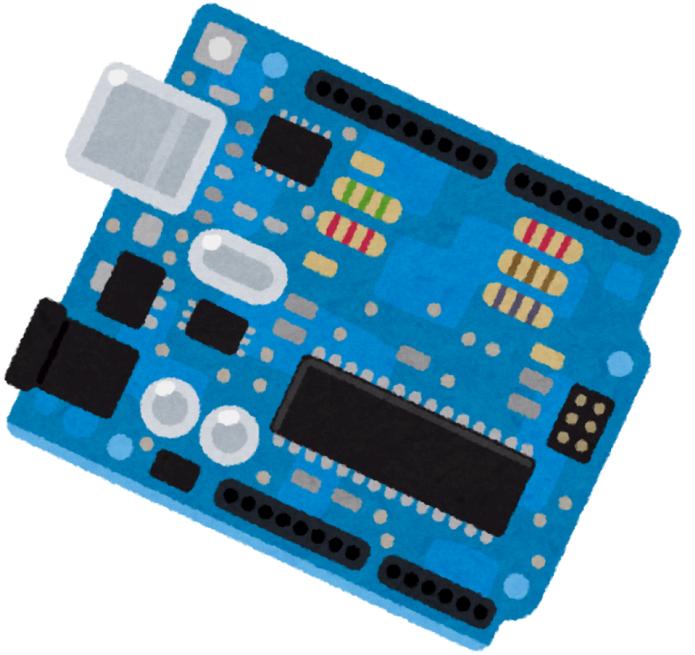
OBJECTIVES



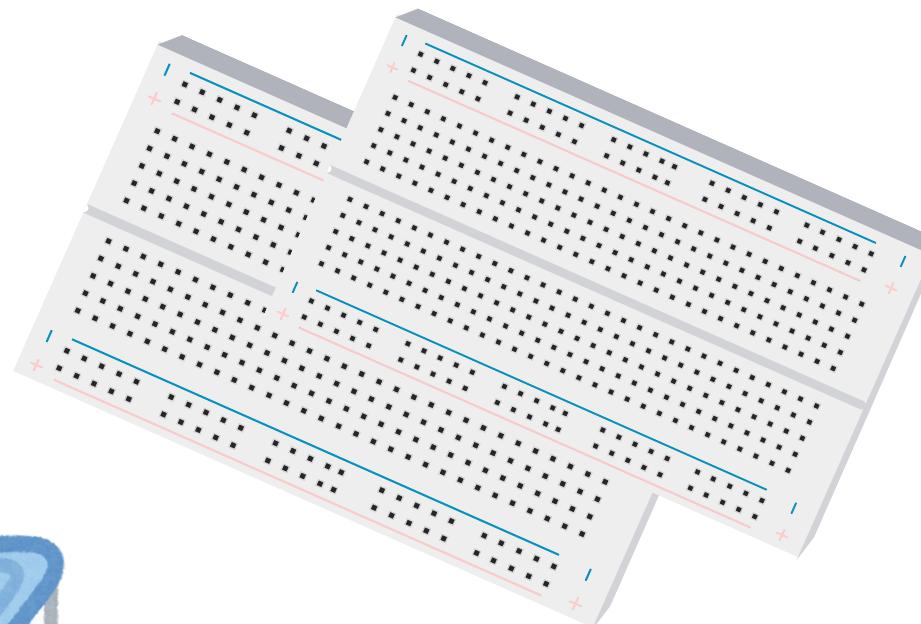
To automate urban household gardening by regulating the vitality of household farm plants, specifically, chili plants.

- To regulate and maintain optimal temperature (18°C to 35°C) by providing an automatic sunlight shade
- To regulate and maintain optimal relative humidity (55% to 60%) by providing an automatic ventilation
- To regulate and maintain optimal soil moisture (at most 530 out of 1023) by providing an automatic water irrigation system
- To regulate water management and prevention of water spillage by providing an alarm system

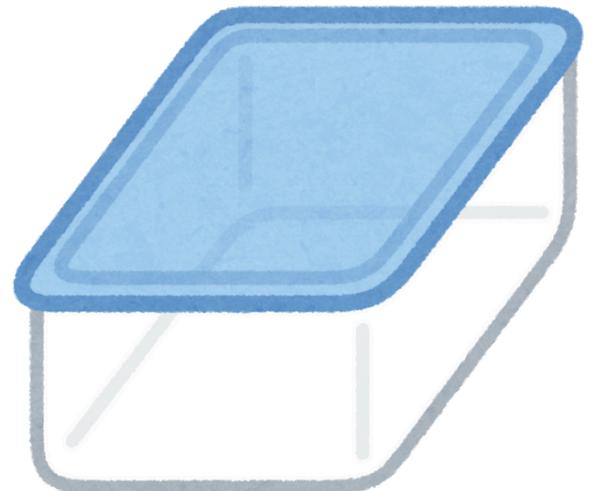
MAIN MATERIALS



Arduino UNO



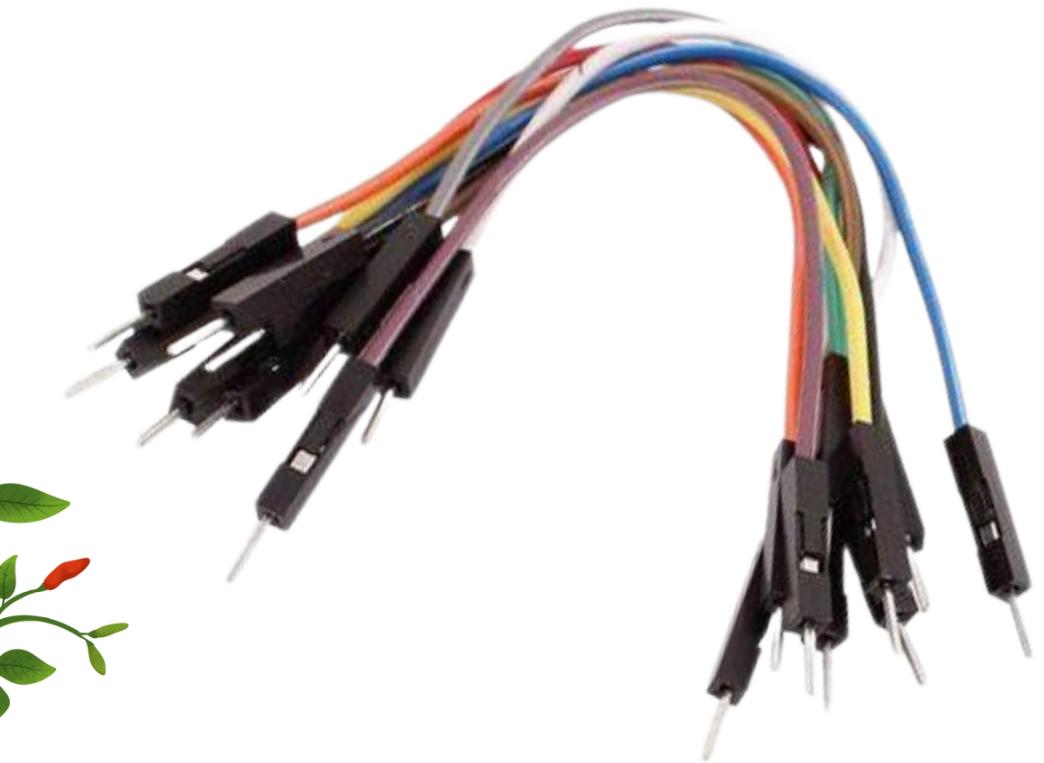
Breadboards



Old Plastic Container

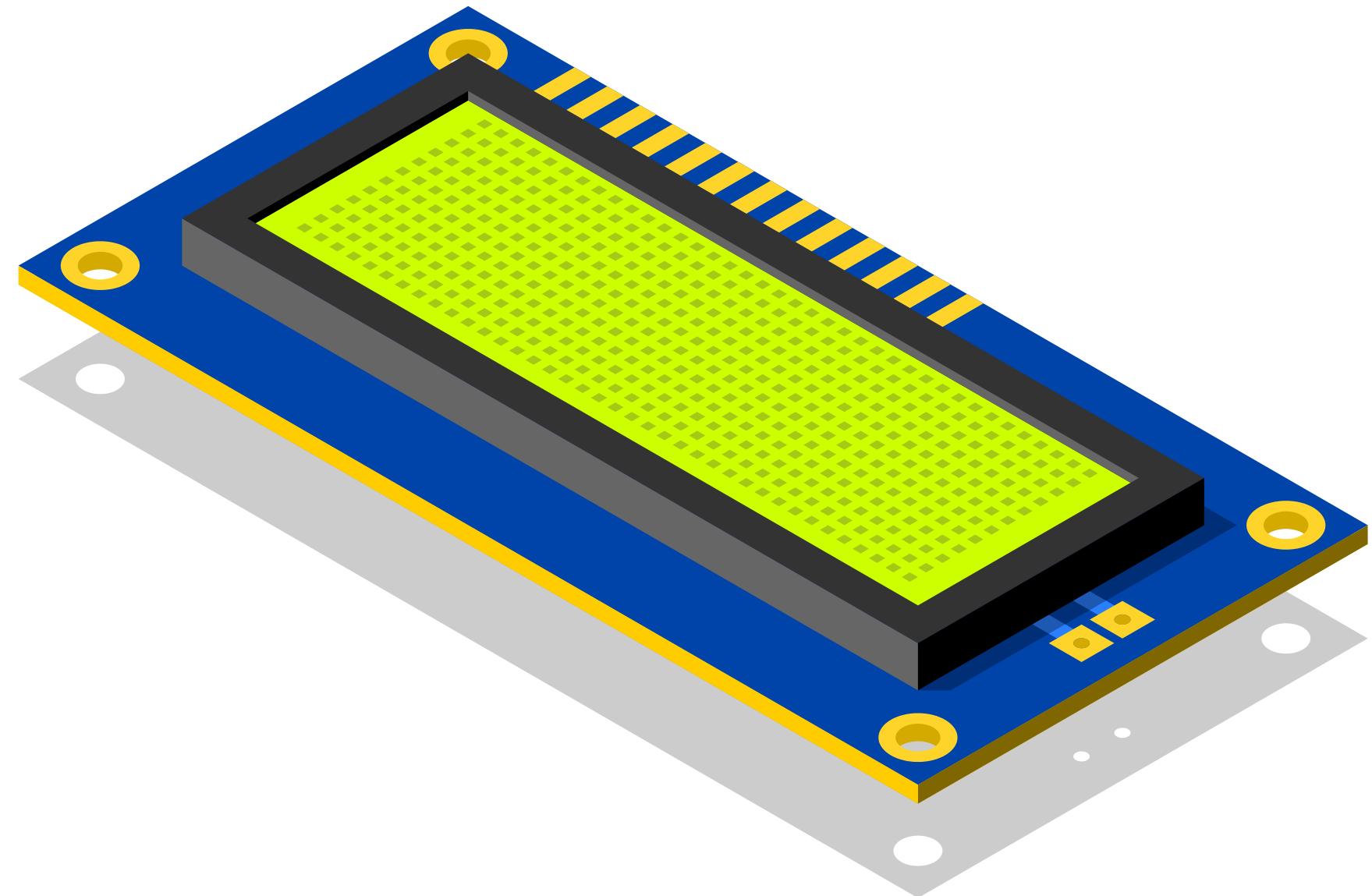


Chili Plant with Pot



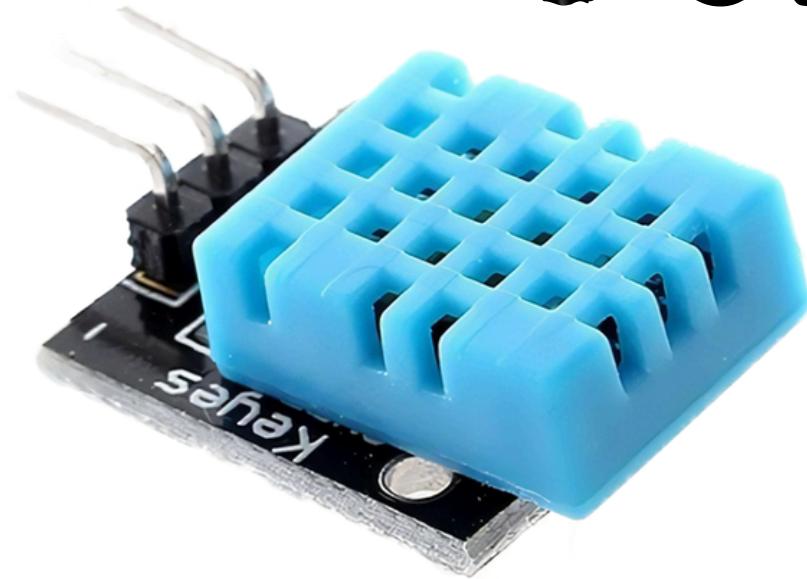
Jumper Wires

FOR USER INTERFACE



LCD I2C

FOR DEPLOYING SHADE



DHT11



Standard Servo Motor



Cloth



Electrical and Foam Tape

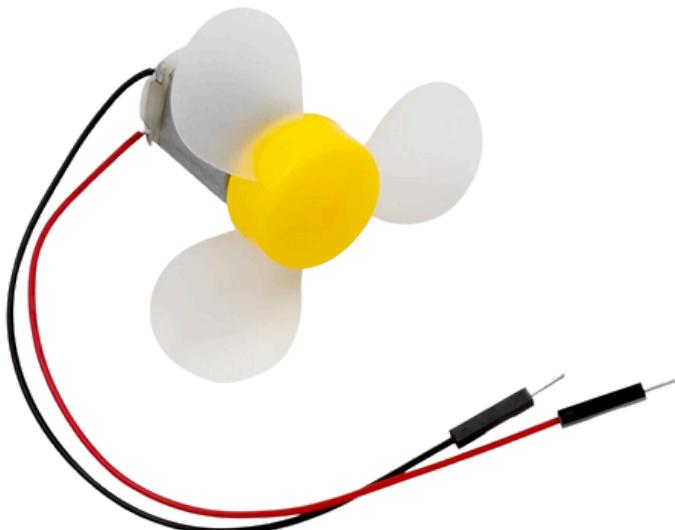


Yarn / Thread

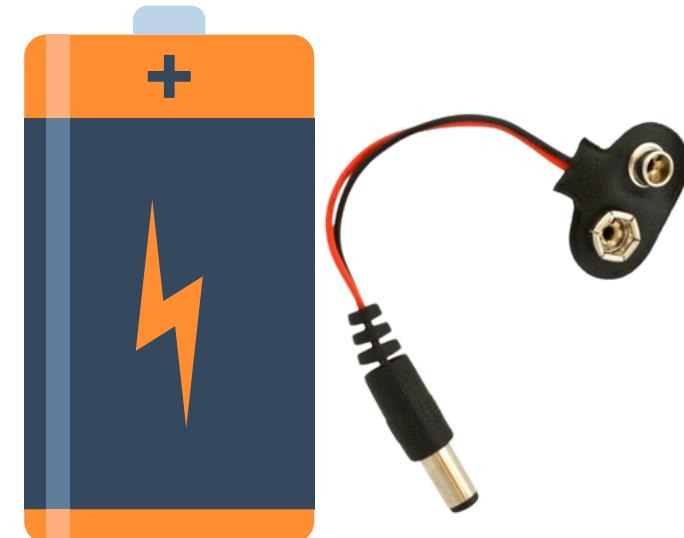


Thin / Popsicle Sticks

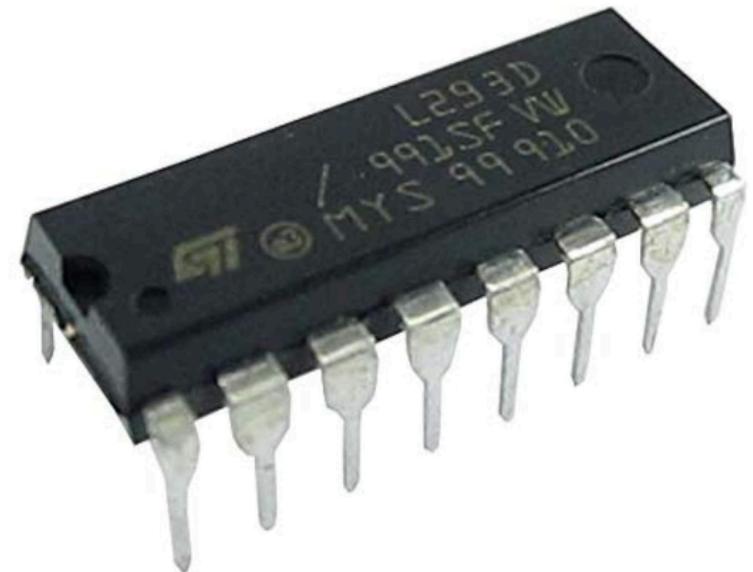
FOR VENTILATION



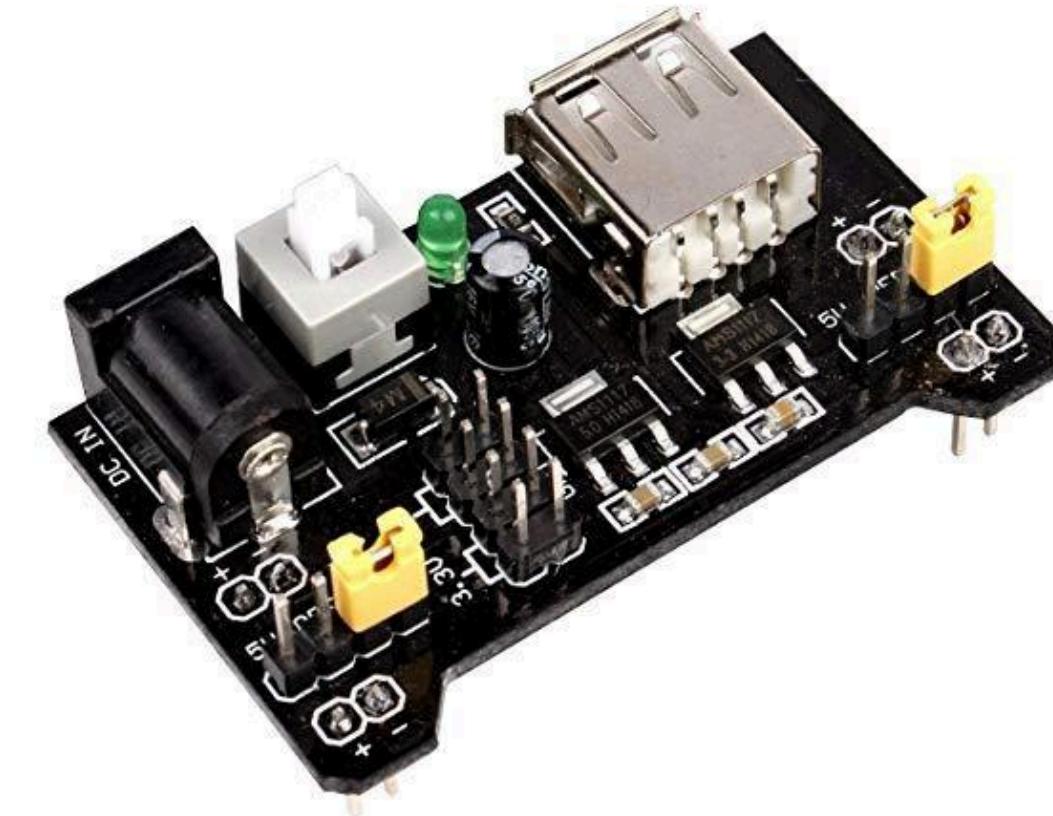
Mini Fan



9V Battery with connector

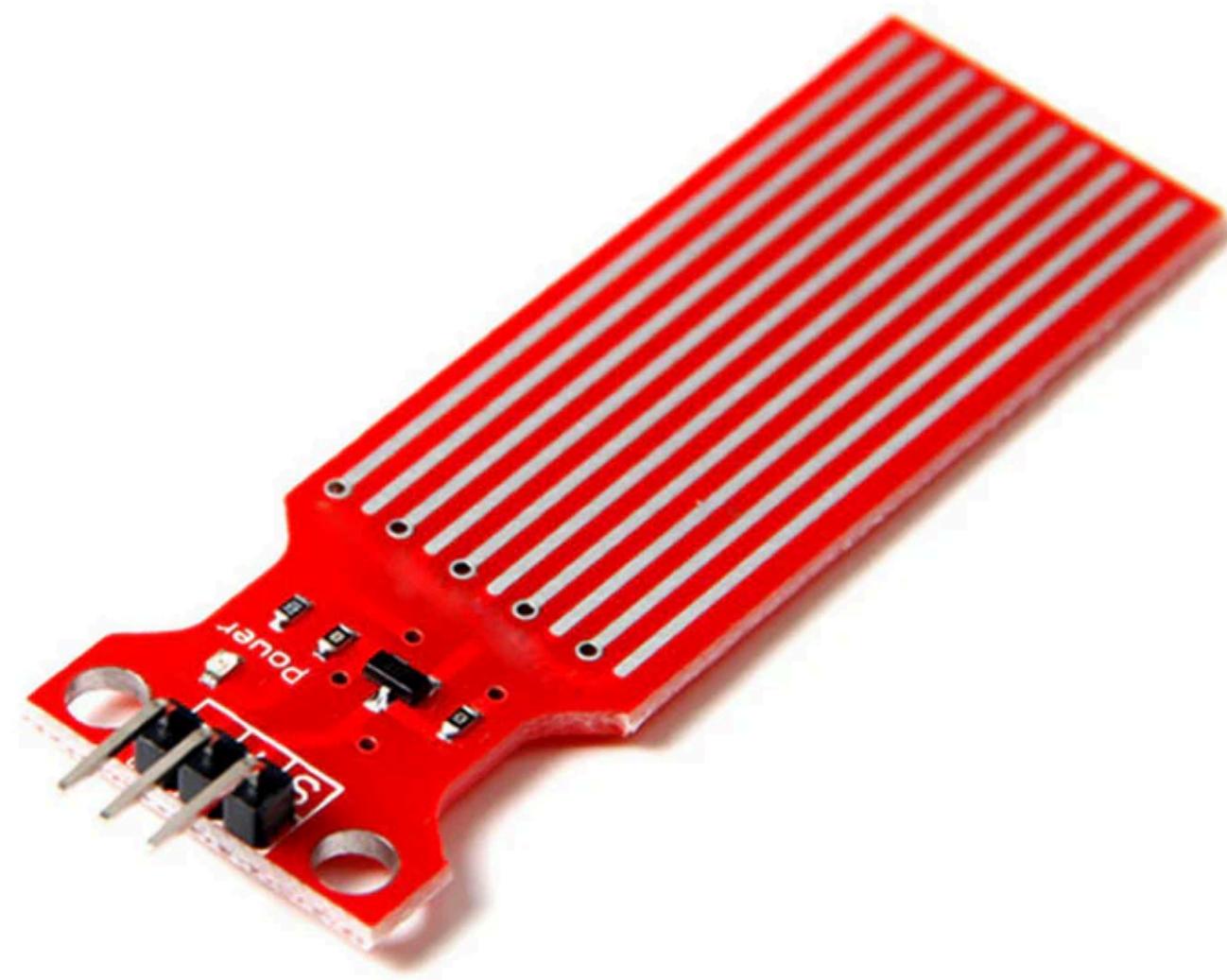


L293D



Power Supply Module

FOR WATER SPILLAGE DETECTION



Water Level Sensor



Active Buzzer

FOR WATER IRRIGATION SYSTEM



5V Relay with Board



Hose Tube



Submersible Water Pump



Soil Moisture Sensor



Water Bottle with Water

CODE STRUCTURE

```
void loop()
{
    lcd.clear();

    displayTemperatureAndHumidity();

    activateWaterPump();

    deploySunlightShade();

    activateFan();

    alertHighWaterLevel();
}
```

Implemented mostly while-loop conditions instead of if-conditions to ensure continuous operation until the system reaches the optimal condition set for plant health. Prioritized the jobs to ensure that critical functions are executed first.



RECOMMENDATIONS

- Create a greenhouse for the plant
- Solder electrical connections
- Proper installation of sensors
- Use of higher power supply materials for long-term use

