Introduction

SMART PLANT WATERING SYSTEM

Traditional plant care methods waste-water and require constant attention. This project presents a Smart Plant Watering System that automates irrigation using rainwater and controls fertilizer delivery. Powered by IoT and mobile app integration, it ensures efficient, scheduled watering and nutrient management, promoting healthy plant growth with minimal manual effort.

GROUP NO: WD.01.128

Our Vision

The aim of our project is to create a smart system that helps water plants and add fertilizer automatically.

1 CHECK WATER LEVELS

We use IoT (Internet of Things) technology to check water levels and rainfall.

2 WATER MANAGEMENT

The system decides whether to use rainwater or main water to water the plants.

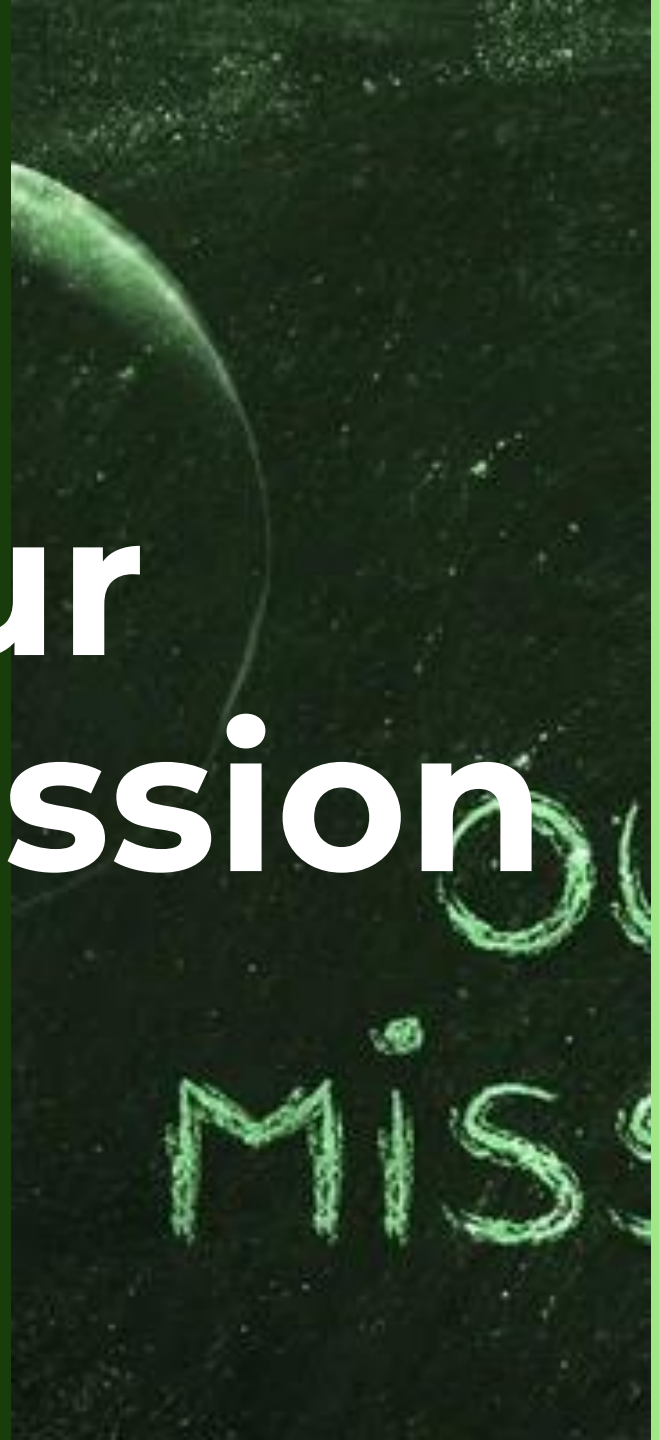
3 AUTOMATIC FERTILIZATION

The System also adds fertilizer to the plants on a set schedule and We use the Blynk app to control and monitor everything from a phone.

4 REDUCE MANUAL WORK

This project helps save water, take care of plants better, and reduce manual work.

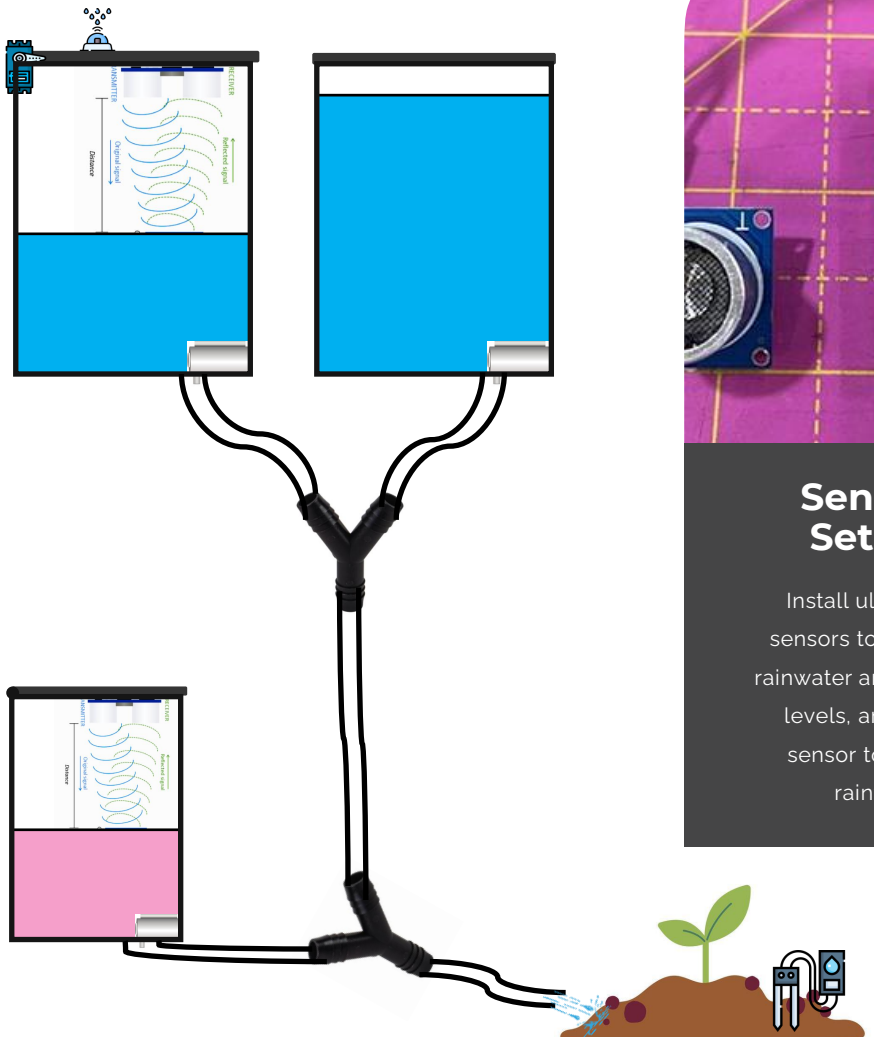
Our Mission

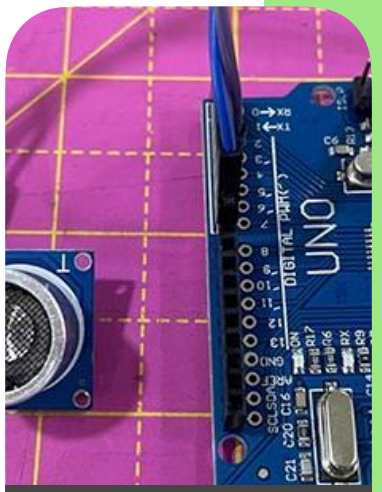


Our mission is to create an automated, eco-friendly watering system using sensors, pumps, and app control.

1. TO CHECK WATER LEVELS IN THE RAINWATER TANK AND FERTILIZER TANK USING SENSORS.
2. TO SENSE RAIN AND AUTOMATICALLY OPEN OR CLOSE THE TANK LID WITH A MOTOR.
3. TO USE THREE WATER PUMPS:
   - One for rainwater,
   - One for main water when rainwater is not enough,
   - One for adding fertilizer.
4. TO BUILD A MOBILE APP THAT SHOWS REAL-TIME WATER AND FERTILIZER LEVELS AND LETS USERS CONTROL THE PUMPS AND SET FERTILIZER TIMES.
5. TO MAKE SURE THE SYSTEM WORKS WELL BY TESTING IT AND USING COMPONENTS SAFELY.
6. TO MEASURE HOW ACCURATE, RELIABLE, AND ECO-FRIENDLY THE SYSTEM IS

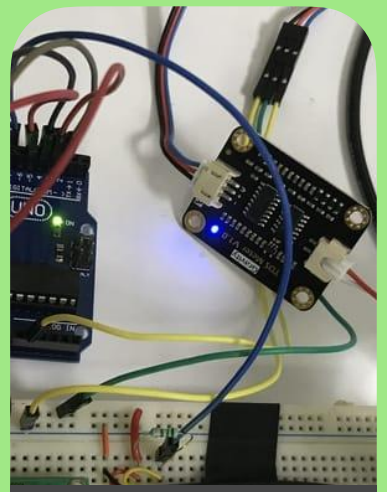
Methodology & Components





Sensor Setup

Install ultrasonic sensors to measure rainwater and fertilizer levels, and a rain sensor to detect rainfall.

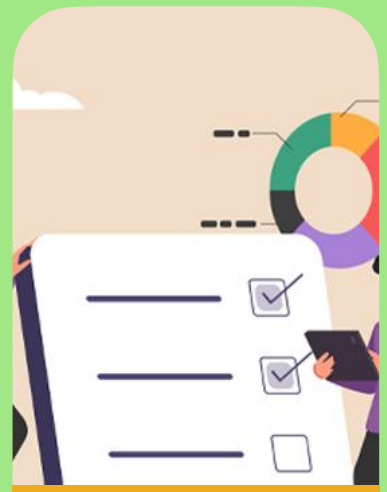


Control System Integration

Use ESP32 to connect and control pumps, relays, and a servo motor for the tank lid..

Mobile App Configuration

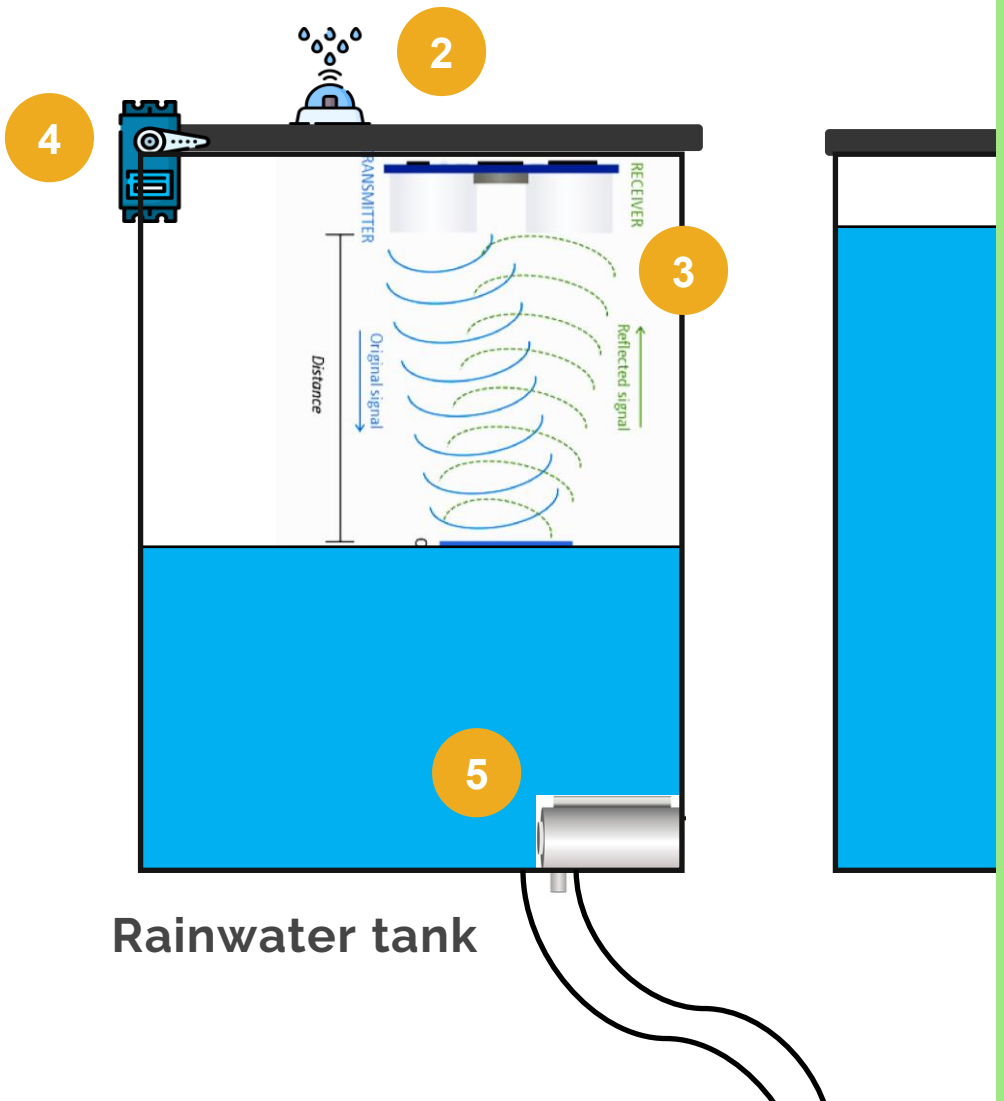
Create a Blynk-based mobile app to display tank levels and allow the user to schedule fertilizer timings..

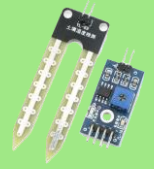


Testing and Evaluation

Test the system for accuracy, reliability, and efficiency, ensuring safe operation of all components..

Methodology & Components





1. Soil Moisture Sensor
Detects moisture level in soil to decide when plants need watering, ensuring efficient and automated irrigation control.

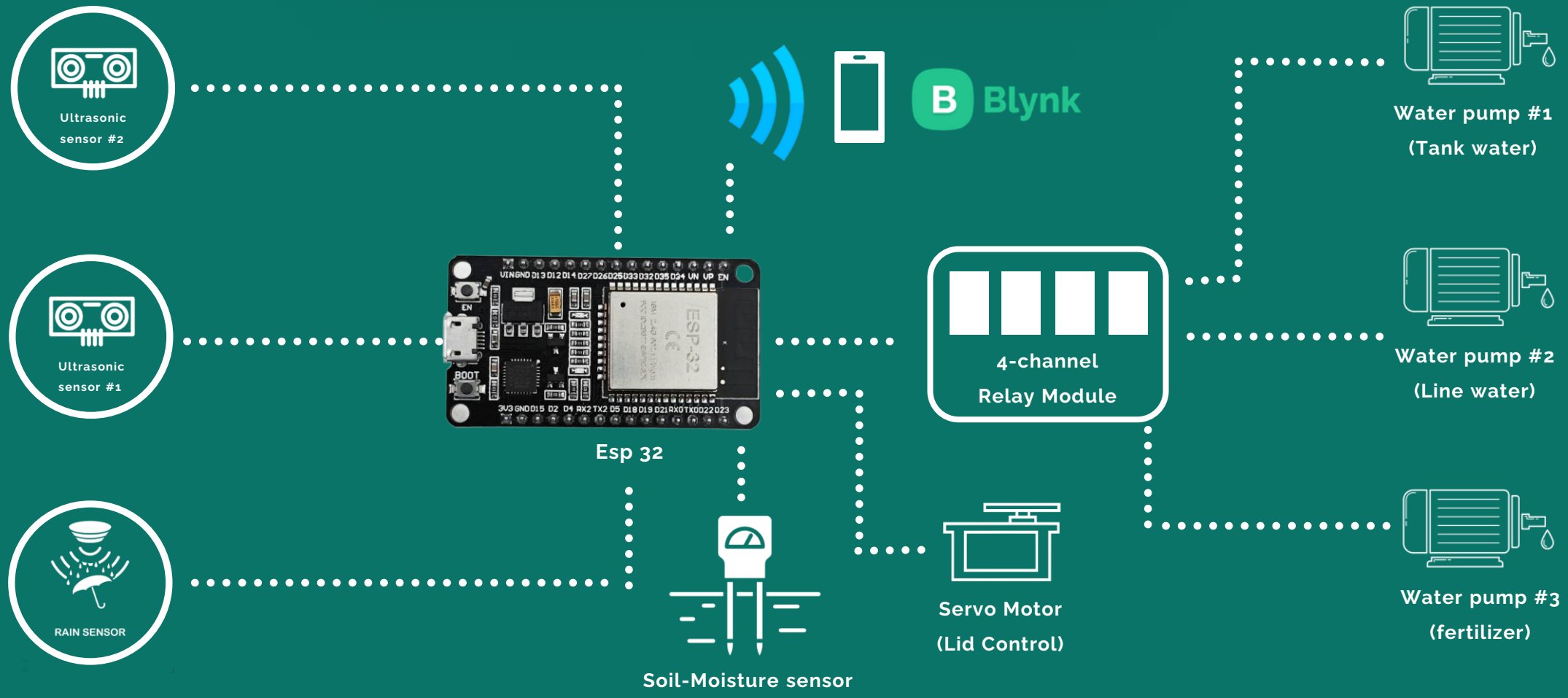
2. Rain Sensor
Detects rainfall on the surface and sends a signal to automate the lid operation and water source decision.

3. Ultrasonic Sensor (HC-SR04)
Measures water or fertilizer levels by calculating the distance between the sensor and liquid surface using sound waves.

4. Servo Motor (SG90)
Automatically opens or closes the tank lid when rain is detected, controlled by signals from the Arduino.

5. Water Pump
Transfers water from rainwater or main water source to plants based on availability and system conditions

SYSTEM DIAGRAM



Conclusion

Our Smart Water Tank and Greenhouse Automation System offers an efficient, eco-friendly solution for modern gardening. By automating irrigation and fertilization using IoT, it reduces manual effort, saves water, and enhances plant care. This project highlights how technology can simplify daily tasks and support sustainable living.