

# Smart Plant Monitoring System

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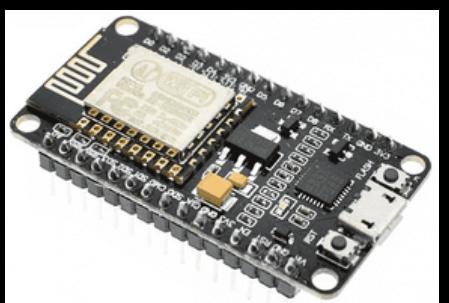
Integrating IoT with Blynk Application

# INTRODUCTION

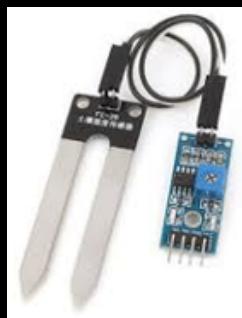
A Smart Plant Monitoring System is an innovative solution that leverages automation and Internet of Things (IoT) technology to ensure precision plant care. It integrates sensors, real-time monitoring, and automated controls to manage vital plant parameters such as soil moisture, temperature, humidity, and light intensity.



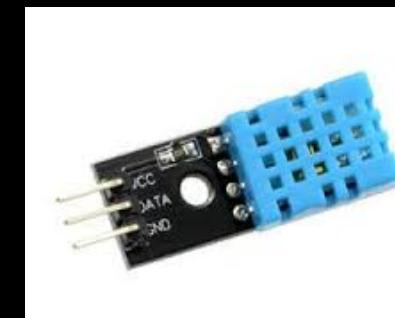
# COMPONENTS USED



ESP8266  
Microcontroller



FC-28 Soil Moisture  
Sensor



DHT11 Humidity  
Sensor



PIR Motion  
Sensor



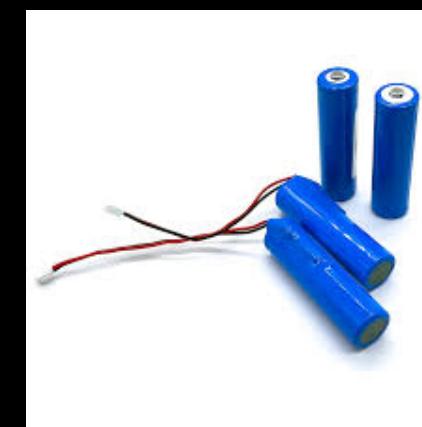
16x2 I2C LCD  
Display



DC Water Pump



Relay Switch (5V)



5-7V Battery Supply

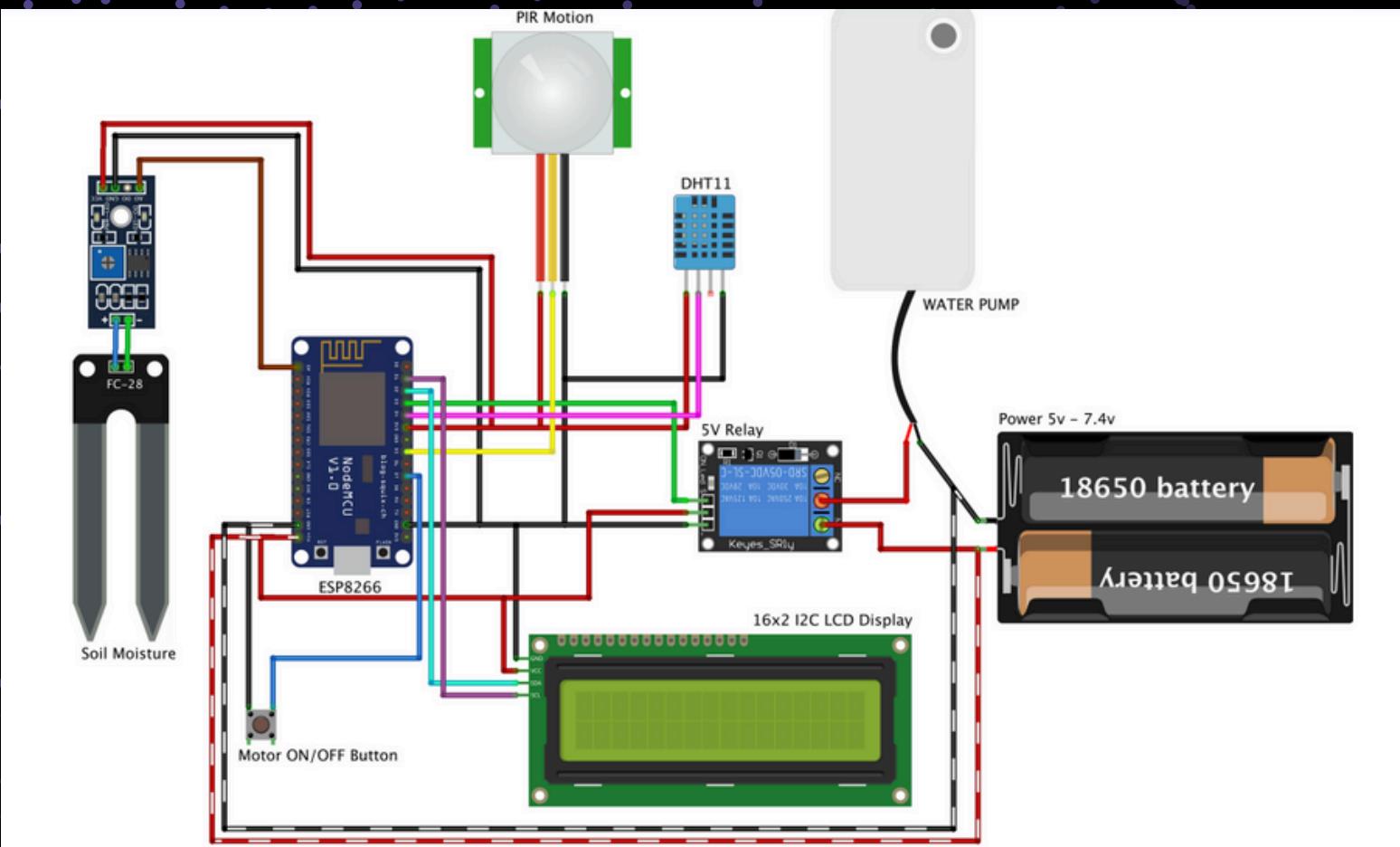
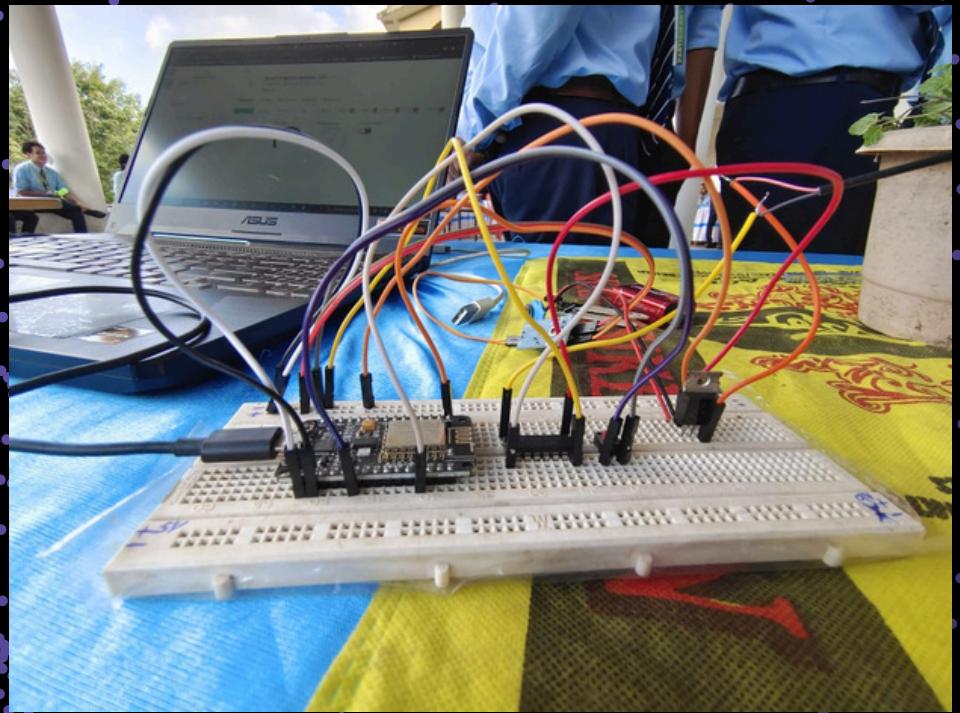


Push Button



Blynk IoT Application

# Circuit Diagram & Pictures



# Working Principle

- Sensors collect real-time data: soil moisture, temperature, and humidity.
- PIR detects movement.
- The water pump activates through the relay switch based on soil moisture data.
- Manual on/off button allows user control.
- Data is transmitted to the Blynk app for monitoring.

# Blynk IoT Integration

- Use of Blynk IoT app for real-time data visualization.
- Display features:
- Soil moisture level
- Temperature and humidity
- Motion detection status
- Water pump activation status

# Features and Benefits

- Automated plant watering based on moisture levels.
- Water flows in pulses, to avoid any over flow of water or damage to the plant.
- Real-time monitoring through Blynk App.
- Manual on/off control for water pump.
- Energy-efficient with a low-voltage battery supply.
- Motion detection for security purposes.

# Results and Observations

- Successful water pump activation at low soil moisture.
- Real-time data visualization on Blynk dashboard.
- Sensor accuracy is 90% and response time is very fast.

# Conclusion

The Smart Plant Monitoring System efficiently combines IoT technology and automation to monitor essential parameters like soil moisture, temperature, and humidity while automating irrigation. It ensures optimal plant care through real-time monitoring using the Blynk app, reducing manual effort and saving resources. Future enhancements, such as integrating solar power, advanced sensors, and AI-based automation, can further improve the system's efficiency and sustainability. This solution is highly practical for small-scale agriculture, home gardening, and greenhouse management, providing a reliable and cost-effective approach to precision plant care.

# THANK YOU!

Do you have  
any questions?

Send it to us! We hope you learned something new.  
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