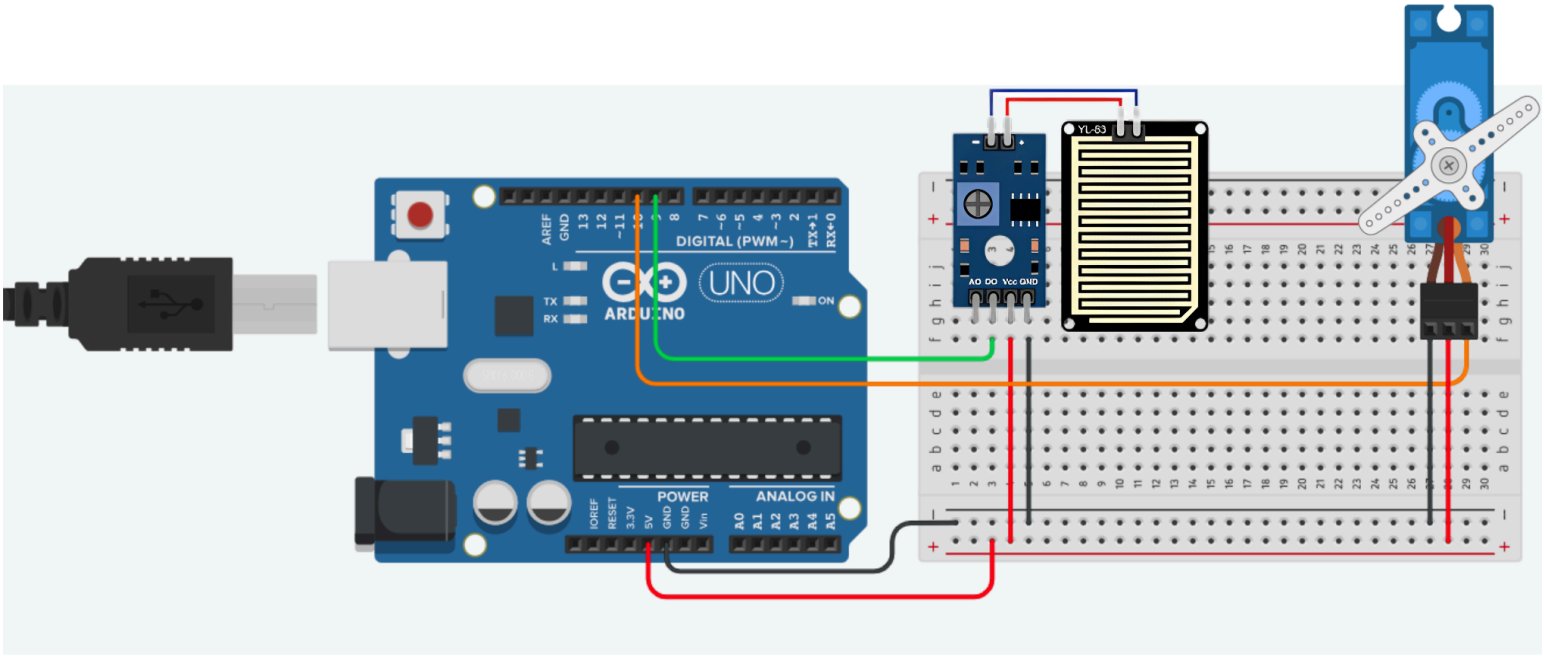

🌧️ Rain Water Detection System with Servo Motor

1. Title

Automatic Rain Detection and Servo Control System Using Arduino UNO

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2. Objective

To design and implement a system that detects rainwater using a rain sensor and automatically moves a servo motor when rain is detected.

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3. Introduction

Rain detection systems are widely used in smart agriculture, automatic window systems, and weather monitoring stations. This project uses an **Arduino UNO** microcontroller to detect rain and control a servo motor automatically.

When rainwater touches the sensor, the system detects it and rotates the servo motor to a predefined angle. When the surface becomes dry, the servo returns to its original position.

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4. Components Required

- Arduino UNO
- Rain Water Sensor Module
- Servo Motor (SG90 or similar)
- Jumper Wires
- Breadboard
- 5V Power Supply

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5. Working Principle

The rain sensor consists of a sensing plate with conductive tracks.

- When dry → High resistance → No current flow
- When wet → Water connects tracks → Resistance decreases

The sensor sends a digital signal to Arduino:

- HIGH → Rain detected
- LOW → No rain

The Arduino then sends a control signal to the servo motor to rotate accordingly.

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6. Circuit Connections

Rain Sensor → Arduino

- VCC → 5V
- GND → GND
- DO → Digital Pin 2

Servo Motor → Arduino

- Red → 5V
- Brown/Black → GND
- Orange → Digital Pin 9

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7. Program Code

```
#include <Servo.h>

Servo myServo;

int rainPin = 2;
int servoPin = 9;

void setup() {
 pinMode(rainPin, INPUT);
 myServo.attach(servoPin);
 myServo.write(0);
 Serial.begin(9600);
}

void loop() {
 int rainState = digitalRead(rainPin);

 if (rainState == HIGH) {
   myServo.write(90);
 } else {
   myServo.write(0);
 }

 delay(500);
}
```

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8. Applications

- Automatic window closing system
- Smart irrigation system
- Automatic cloth drying cover
- Weather monitoring station

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9. Advantages

- Low cost
- Easy to implement
- Automatic operation
- Energy efficient

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10. Conclusion

The Rain Water Detection System with Servo Motor successfully detects rainfall and automatically controls mechanical movement using Arduino. This project demonstrates the practical use of sensors and actuators in automation systems.