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#include <Wire.h>
#include <LiquidCrystal_I2C.h>
#include <Servo.h>

// Define pin numbers
const int rainSensorPin = A0; // Rain sensor analog input pin
const int servoPin = 9; // Servo motor control pin
const int pHSensorPin = A1; // pH sensor analog input pin

Servo servo; // Create servo object
LiquidCrystal_I2C lcd(0x27, 16, 2); // Initialize the LCD object
with the I2C address and dimensions

void setup() {
  Serial.begin(9600);
  servo.attach(servoPin); // Attach servo to the specified pin
  lcd.begin(16, 2); // Initialize the LCD
  lcd.backlight(); // Turn on the LCD backlight
}

void loop() {
  int rainSensorValue = analogRead(rainSensorPin); // Read rain
sensor value
  delay(100); // Delay for stability

  // Check rain sensor value
  if (rainSensorValue < 500) {
    Serial.println("Rain detected.");
    lcd.clear();
    lcd.print("Rain detected.");

    openContainer(); // Open the container using servo motor

    delay(2000); // Delay to allow water to fill the container

    float pHValue = measurepH(); // Measure pH value
```

```
lcd.clear();
lcd.print("pH: ");
lcd.print(pHValue);

if (pHValue < 7) {
  Serial.println("Acidic rain detected.");
  lcd.setCursor(0, 1);
  lcd.print("Acidic rain");
} else {
  Serial.println("Healthy rain detected.");
  lcd.setCursor(0, 1);
  lcd.print("Healthy rain");
}

closeContainer(); // Close the container using servo motor
} else {
  lcd.clear();
  lcd.print("No rain");
}

delay(5000); // Delay between rain detection cycles
}

void openContainer() {
  servo.write(180); // Open the container by rotating the servo to
180 degrees
  delay(2000); // Delay to allow the container to fully open
}

void closeContainer() {
  servo.write(0); // Close the container by rotating the servo to
0 degrees
  delay(2000); // Delay to allow the container to fully close
}

float measurepH() {
  int pHSensorValue = analogRead(pHSensorPin); // Read pH sensor
```

value

```
// Convert the sensor value to pH level  
float pHLevel = map(pHSensorValue, 0, 1023, 0, 14); // Assuming  
pH range from 0 to 14
```

```
return pHLevel;
```

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}
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