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Problem Statement

Rinki has a plant in her pot. That plant requires constant moisture level every time else in dry soil condition it may die soon. Rinki cannot be with the plant and care it every moment.

Build a device that nurtures the plant with the above condition

- Measure the moisture level of the soil every moment.
- Turn on the pump to supply water to the plant whenever moisture is low.
- Motor should Turn off whenever moisture of soil gets normal.
- Moisture level should be displayed.

Components required

- Arduino
- Moisture sensor
- Relay switch
- LCD + I2C Module
- Motor
- Motor Power supply

Algorithm

System that reads and displays moisture level and motor status
And controls as follows:

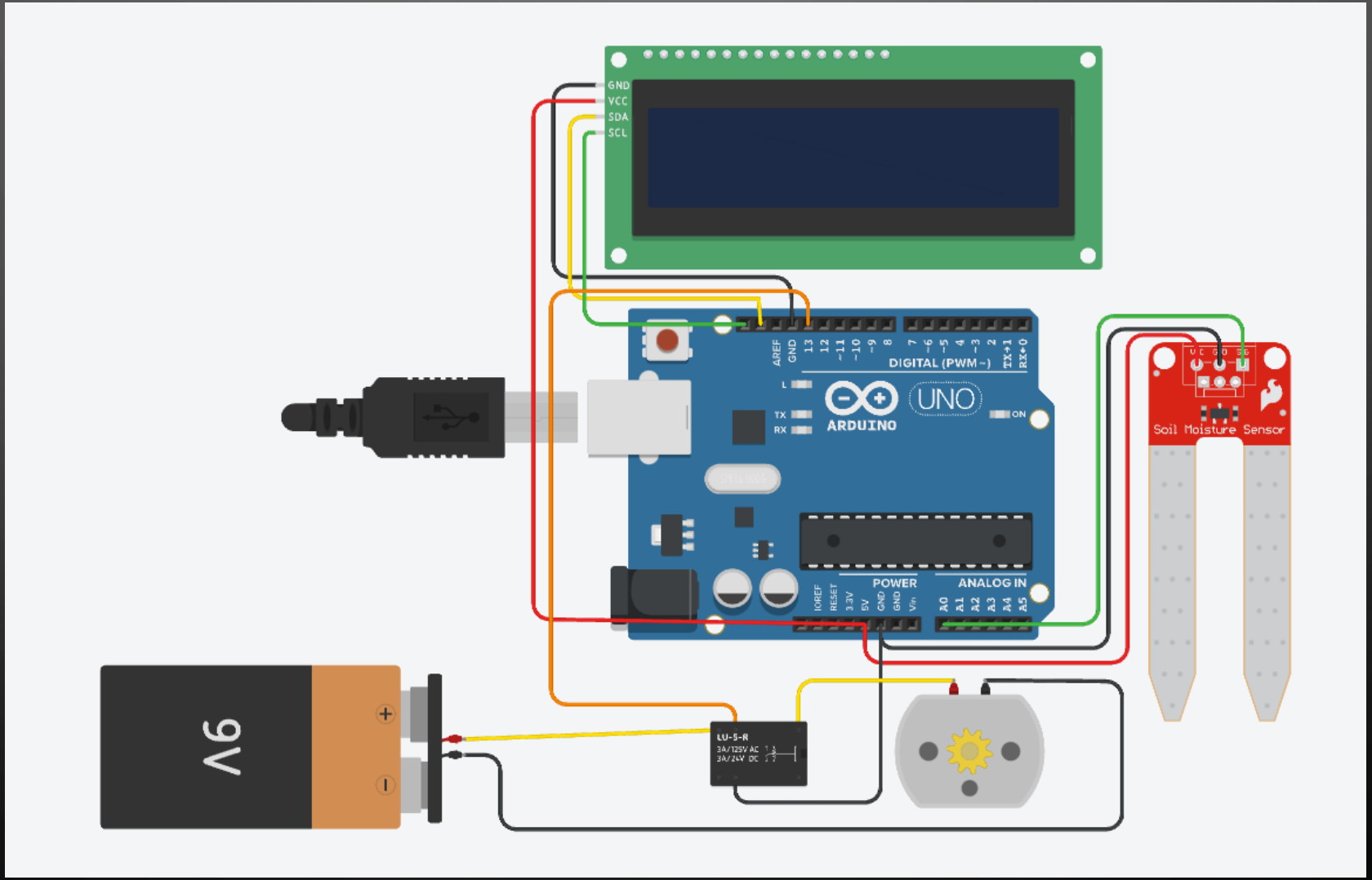
Case1: Low Moisture

- Motor should turn ON
- Display MOTOR ON

Case2: High Moisture

- Motor should turn OFF
- Display MOTOR OFF

Circuit Diagram



Circuit Diagram

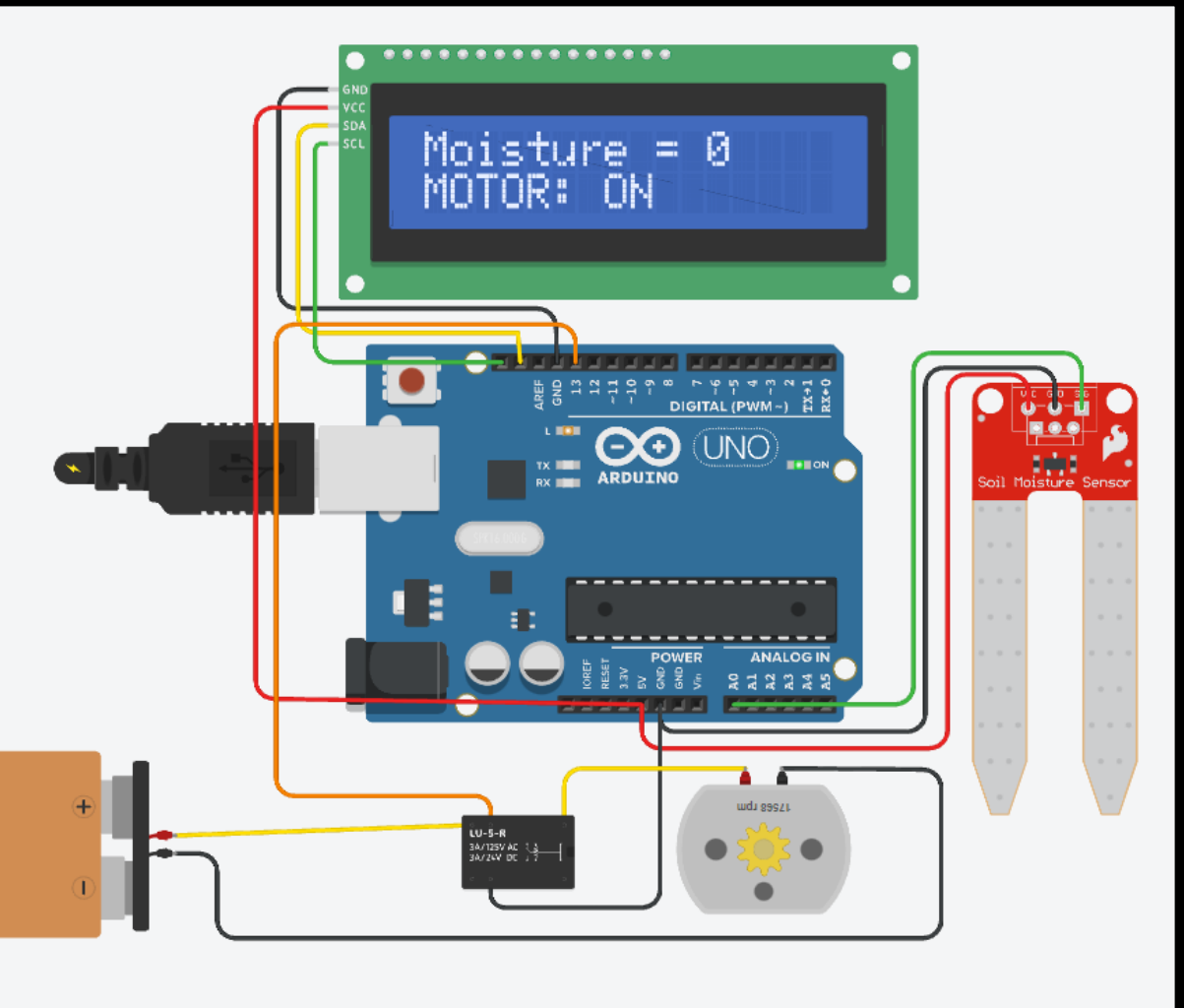
- Connect Power supply and I2C Pins to Arduino and **I2C LCD**.
- Connect Power supply and Analog Pin to Arduino and **Moisture sensor.**
- Connect a relay to Arduino and ground.
- Connect a 9V battery and a pump circuit via **Relay Common** pin and **Normally Open** pin.

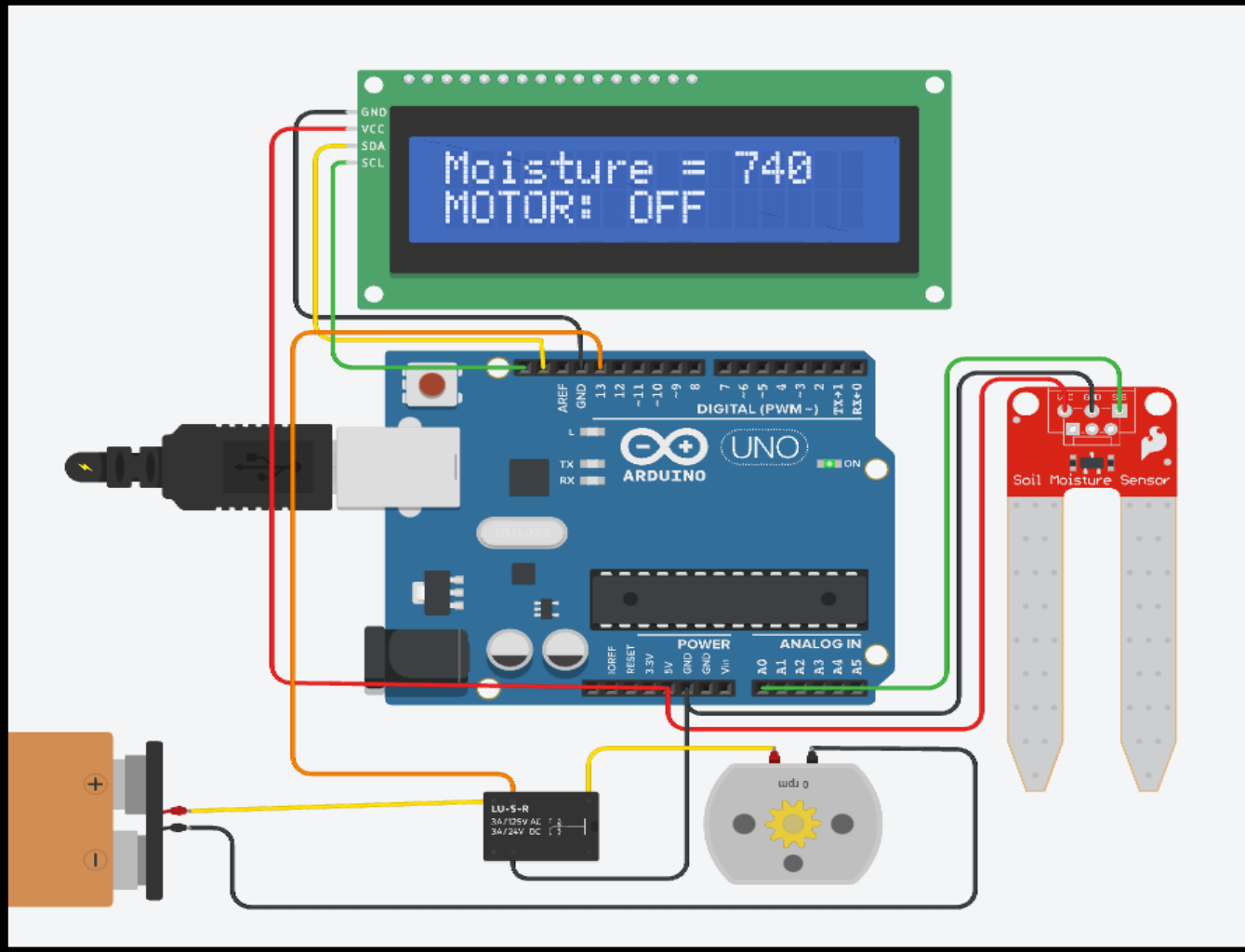
Program

```
// C++ code
#include <Adafruit_LiquidCrystal.h>

Adafruit_LiquidCrystal lcd_1(0);

void setup()
{
  lcd_1.begin(16, 2);//Begin
  Serial.begin(9600);
  pinMode(13,OUTPUT);

}
```

```
void loop(){
  lcd_1.clear();
  int moist = analogRead(A0); // read the sensor
  lcd_1.setCursor(0,0);
  lcd_1.print("Moisture = "+String(moist));
  Serial.println("Moist = "+String(moist));
  lcd_1.setCursor(0,1);

  if(moist <= 500){
    Serial.println("Motor ON");
    lcd_1.print("MOTOR: ON");
    digitalWrite(13,HIGH);
  }
  else{
    Serial.println("Motor OFF");
    lcd_1.print("MOTOR: OFF");
      digitalWrite(13,LOW);
  }
  delay(500);
}
```

Output


GND
VCC
SDA
SCL
Moisture = 0
MOTOR: ON
DIGITAL (PWM~)
ARDUINO
UNO
POWER
ANALOG IN
Soil Moisture Sensor
LU-5-R
17568 rpm


GND
VCC
SDA
SCL
Moisture = 740
MOTOR: OFF
DIGITAL (PWM~)
ARDUINO
UNO
POWER
ANALOG IN
Soil Moisture Sensor
LU-5-R
0 rpm