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SOIL MOISTURE SYSTEM UISNG GSM

About The Project:

The project "Arduino Uno as Soil Moisture Sensor" is an electronics project that involves using an Arduino Uno microcontroller board to measure the moisture content of soil. The project is ideal for gardeners, farmers, and anyone interested in monitoring the moisture levels of their plants and soil.

To create the project, you will need an Arduino Uno board, a soil moisture sensor, and some basic electronic components such as jumper wires and a breadboard. The soil moisture sensor works by measuring the electrical conductivity of the soil, which changes depending on the moisture content.

The Arduino Uno board will be used to read the sensor values and display them on an LCD screen or transmit them wirelessly to a computer or mobile device. The project can also be expanded to include automatic watering systems or notifications when the moisture levels fall below a certain threshold.

To create the project, you will need to connect the soil moisture sensor to the Arduino Uno board and write a program to read the

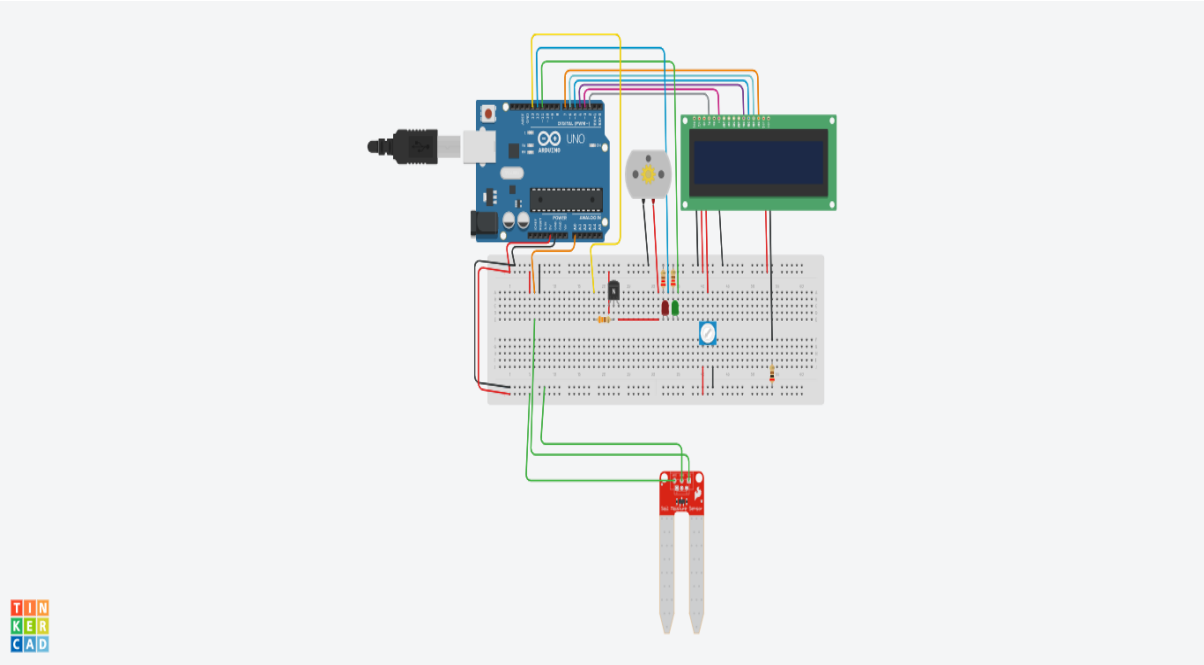
sensor values. The program will then need to be uploaded to the board using the Arduino IDE software.

Overall, the "Arduino Uno as Soil Moisture Sensor" project is a fun and practical project that allows you to monitor the health of your plants and ensure they are getting the right amount of water.

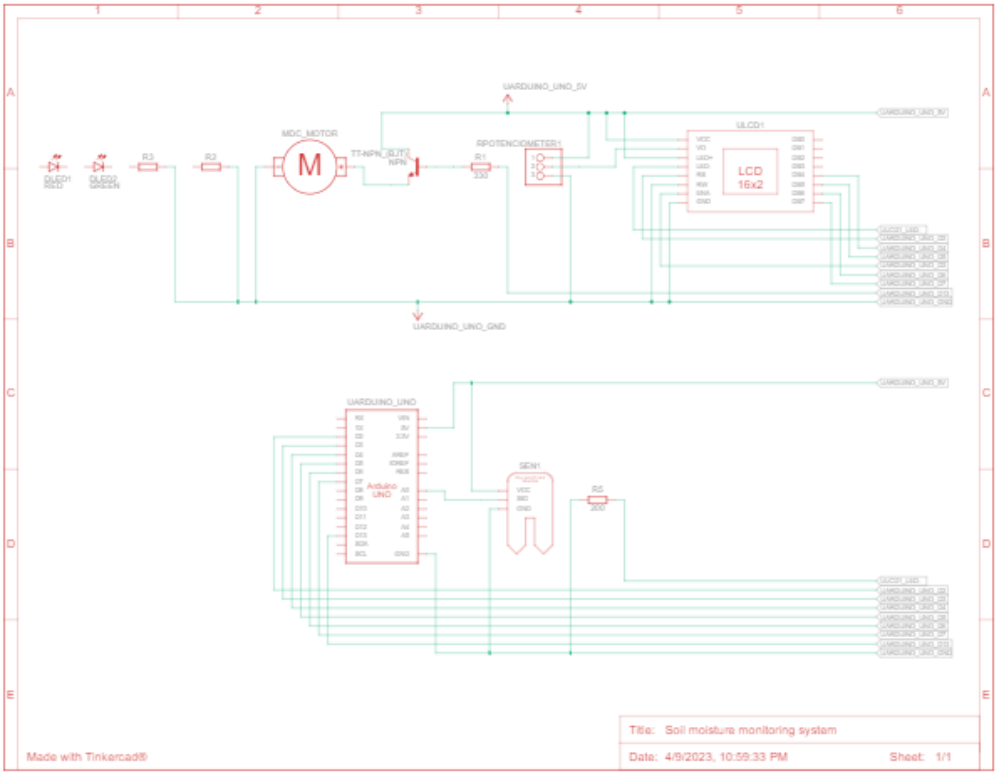
Apparatus required:

Name	Quantity	Component
UArduino Uno	1	Arduino Uno R3
MDC motor	1	DC Motor
TT-NPN (BJT)	1	NPN Transistor (BJT)
R2 R3	2	Resistor 220 ohm
DLED2	1	LED Green
ULCD1	1	LCD 16 x 2
RPotenciometer1	1	Potentiometer 10k
DLED1	1	LED Red
R1	1	330 Ω Resistor
R5	1	200 Ω Resistor
SEN1	1	Soil Moisture Sensor

Tinkercad circuit:



Circuit diagram:



Code:

#include <LiquidCrystal.h>

```
const int LM35 = A0;
const int motor = 13;
const int LedRed = 12;
const int LedGreen = 11;
int percentValue = 0;

LiquidCrystal lcd(2, 3, 4, 5, 6, 7);

void setup() {
  Serial.begin(9600);
  lcd.begin(16, 2);
  lcd.print("Automated Crop");
  lcd.setCursor(0,1);
  lcd.print("Watering System!");
  pinMode(motor, OUTPUT);
  pinMode(LedRed, OUTPUT);
  pinMode(LedGreen, OUTPUT);
  delay(2000);
  lcd.clear();
  lcd.print("SoilM = ");
  lcd.setCursor(0,1);
  lcd.print("WaterPump= ");
}

void loop() {
```

```
  int value = analogRead(LM35);
  float Moisture = value * 500.0 / 1023.0;
  lcd.setCursor(6,0);
  lcd.print(Moisture);
  lcd.setCursor(11,1);


  if (Moisture < 310){
    digitalWrite(motor, HIGH);
    digitalWrite(LedRed, HIGH);
    digitalWrite(LedGreen, LOW);
    lcd.print("ON ");
  }
  else {
    digitalWrite(motor, LOW);
    digitalWrite(LedRed, LOW);
    digitalWrite(LedGreen, HIGH);
    lcd.print("OFF");
  }

Serial.print ("Moisture");
  Serial.println (Moisture);
}
```

Procedure:

1. Connect soil moisture sensor to the Arduino board using jumper wires.
2. Connect transistor, potentiometer, LED, resistor in bread board and connect battery to the circuit.
3. Then connect DC motor and LCD display to show the output.
4. Connect all the components to appropriate pins and grounds.