SPRINT 2

Date	05 Nov 2022
Team ID	PNT2022TMID26330
Project Name	Smart Farmer – IoT Enabled Farming Application
Maximum Marks	8 Marks

The purpose of smart farmer project is to help farmers in the irrigation process. The system provides various parameters like temperature, humidity etc. to monitor the condition of the fields and to protect the crops. Based on the temperature, soil moisture, water level of the field etc., and system will take necessary action and the entire operation can be controlled by the IoT application.

Sensor Interfacing:

Program:

```
#include <Wire.h>
#include <Servo.h>
#include <Adafruit_LiquidCrystal.h>
Servo s; int e = 4; int t = 5; int r =
12; int g = 11; int b = 10; int sec =
0; int Sensor = 0; int data = 0; int
motorPin = 9;
Adafruit_LiquidCrystal lcd(0);

void setup()
{
   Wire.begin();
   pinMode(A0,INPUT);          //Temperature Sensor
pinMode(A1,INPUT);  //Soil Moisture Sensor     pinMode(t,OUTPUT);
//Ultra sonic Trigger      pinMode(e,INPUT);     //Ultra sonic Echo
pinMode(b,OUTPUT);            //GREEN light for LED
pinMode(g,OUTPUT);            //BLUE light for LED
pinMode(r,OUTPUT); //RED light for LED     pinMode(motorPin,
OUTPUT); //DC motor
   s.attach(3);               // Servo Motor
```

```
   lcd.begin(16, 2);                          //LCD 16x2 Display
lcd.setBacklight(0);     Serial.begin(9600);
}

float readDistanceCM(){
digitalWrite(t, LOW);
delayMicroseconds(2);
digitalWrite(t, HIGH);
delayMicroseconds(10);
digitalWrite(t, LOW);     int
duration = pulseIn(e, HIGH);
return duration * 0.034 / 2;
}

void loop(){
//Soil Moisture:
   Sensor = analogRead(A1);         //Reads data from Soil Moisture sensor     data =
map(Sensor,0, 1023, 0, 100);            //Low analog value indicates HIGH moisture level
and High analog value indicates LOW moisture level     //data =
map(analogValue,fromLOW,fromHIGH,toLOW,toHIGH)
   Serial.print("Soil Moisture value:");
   Serial.println(data);
   //'data = 0' indicates wet and 'data = 100' indicates dry

   //Temperature:
   double a = analogRead (A0);         //Reads data from Temperature sensor
   double t = (((a/1024)*5)-0.5)*100;
   Serial.print("Temperature value:");
   Serial.println(t);

   //Ultrasonic sensor:
   float distance = readDistanceCM();
Serial.print("Measured distance: ");
   Serial.println(readDistanceCM());
```

```
        //LCD Display:
lcd.setBackLight(1);    lcd.clear();

   //Conditions:    if (t>40 & t<50){
digitalWrite(b,0);        digitalWrite(g,1);
digitalWrite(r,0);        s.write(90);
digitalWrite(motorPin, HIGH);
Serial.println("Water Partially Flows");
   }

   else if (t>50){        digitalWrite(b,1);
digitalWrite(g,1);        digitalWrite(r,0);
s.write(180);
digitalWrite(motorPin, HIGH);
Serial.println("Water Fully Flows");
   }

   else if (t>30 & data<30){
digitalWrite(b,1);        digitalWrite(g,1);
digitalWrite(r,0);            s.write(90);
digitalWrite(motorPin, HIGH);
Serial.println("Water Partially Flows");
   }

   else if (data<50){        digitalWrite(b,0);
digitalWrite(g,0);        digitalWrite(r,1);
s.write(90);        digitalWrite(motorPin,
HIGH);        Serial.println("Water Partially
Flows");
   }

   else if (distance < 10){
digitalWrite(b, 0);        digitalWrite(g, 0);
```

```
digitalWrite(r, 1);          s.write(0);
digitalWrite(motorPin, LOW);
Serial.println("Water Does Not Flow");
lcd.clear();                 lcd.println("Drain the
water");
   }

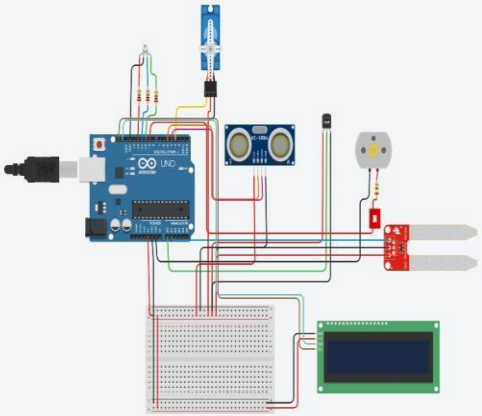
   else{         digitalWrite(b,1);
digitalWrite(g,0);         digitalWrite(r,0);
s.write(0);         digitalWrite(motorPin,
LOW);         Serial.println("Water Does Not
Flow");     }                lcd.setCursor(0,0);
lcd.print("Temp:");
   lcd.println(t);
          lcd.println("degree");
lcd.setCursor(0,1);      lcd.print("Soil
Moisture:");     lcd.println(data);
          lcd.println("%");
   Serial.println("--------------------------------------------------");
delay(1000);
}
```

TinketCad Circuit:

Smart farmer PNT2022TMID12911

All changes saved

Code | Start Simulation | Send To



Text | 1 (Arduino Uno R3)

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```

Serial Monitor