**SPRINT 2**

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| 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:**

