

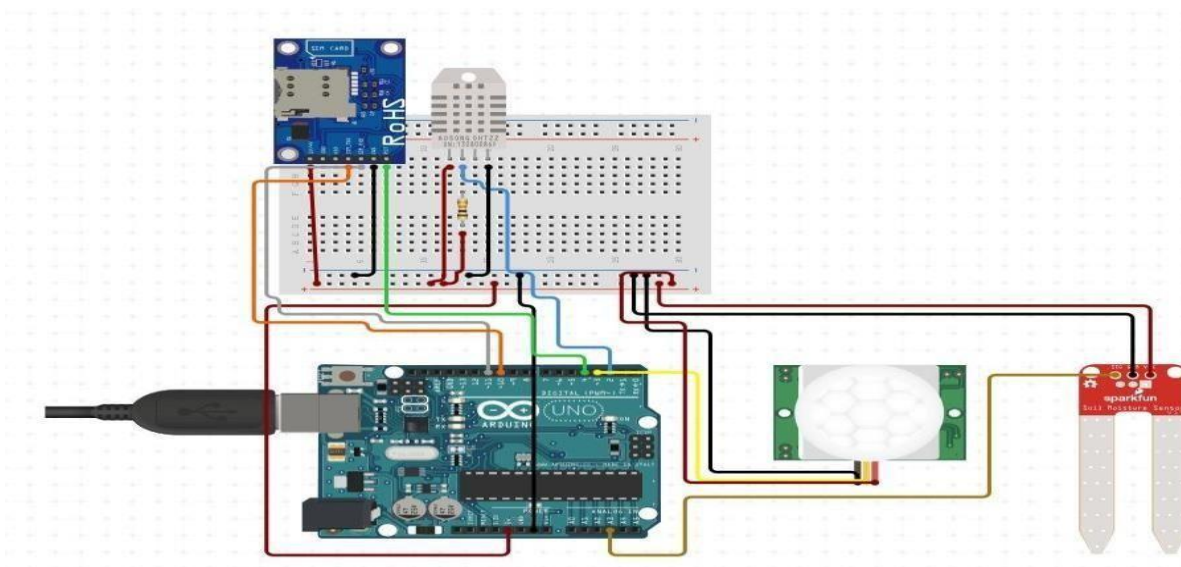
Sprint-1

IoT Devices

Date	28 October 2022
Team ID	PNT2022TMID19113
Project Name	SmartFarmer - IoT Enabled Smart Farming Application

Connectivity and functionality setup of sensors and Wi-fi module

- **Circuit connection:**



- **Coding:**

```
//include libraries
#include <dht.h>
#include <SoftwareSerial.h>
//define pins
#define dht_apin A0 // Analog Pin sensor is connected
SoftwareSerial mySerial(7,8);//serial port of gsm
const int sensor_pin = A1; // Soil moisture sensor O/P pin
int pin_out = 9;
//allocate variables
dht DHT;
int c=0;

void setup()
{
```

```

pinMode(2, INPUT); //Pin 2 as INPUT
pinMode(3, OUTPUT); //PIN 3 as
OUTPUTpinMode(9, OUTPUT); //output
for pump
}
void loop()
{
  if (digitalRead(2) == HIGH)
  {
    digitalWrite(3, HIGH); // turn the LED/Buzz ON
    delay(10000); // wait for 100 msecond
    digitalWrite(3, LOW); // turn the LED/Buzz OFF
    delay(100);
  }
  Serial.begin(9600);
  delay(1000);
  DHT.read11(dht_apin); //temprature
  float h=DHT.humidity;
  float t=DHT.temperature;
  delay(5000);
  Serial.begin(9600);
  float moisture_percentage;//moistureint
  sensor_analog;
  sensor_analog = analogRead(sensor_pin);
  moisture_percentage = ( 100 - ( (sensor_analog/1023.00) * 100 ) );
  float m=moisture_percentage;delay(1000);
  if(m<40)//pump
  {
    while(m<40)
    {
      digitalWrite(pin_out,HIGH); //open pump
      sensor_analog = analogRead(sensor_pin);
      moisture_percentage = ( 100 - ( (sensor_analog/1023.00) * 100 ) );
      m=moisture_percentage;
      delay(1000);
    }
  }
}

```

```

digitalWrite(pin_out,LOW);//closepump
}
if(c>=0)
{
mySerial.begin(9600);
delay(15000);
Serial.begin(9600);
delay(1000); Serial.print("\r");
delay(1000);
Serial.print("AT+CMGF=1\r");
delay(1000);
Serial.print("AT+CMGS=\"+XXXXXXXXXX\r"); //replace X with 10 digit
mobile number
delay(1000);
Serial.print((String)"update-
>"+(String)"Temprature="+t+(String)"Humidity="+h+(String)"Moisture="+m);
delay(1000);
Serial.write(0x1A);
delay(1000);
mySerial.println("AT+CMGF=1");//Sets the GSM Module in Text
Modedelay(1000);
mySerial.println("AT+CMGS=\"+XXXXXXXXXX\r"); //replace X with 10
digitmobile number
delay(1000);
mySerial.println((String)"update-
>"+(String)"Temprature="+t+(String)"Humidity="+h+(String)"Moisture="+m);//
message format
mySerial.println();
delay(100);
Serial.write(0x1A);
delay(1000);
c++;

}

}

```

Explanation:

IoT Simulator

- In our project in the place of sensors we are going to use IoT sensor simulator which give random readings to the connected cloud.
- We need to give the credentials of the created device in IBM Watson IoT Platform to connect cloud to simulator.

OpenWeather API

- OpenWeatherMap is an online service that provides weather data. It provides current weather data, forecasts and historical data to more than 2 million customer.
- **Steps to configure:**
- Create account in OpenWeather
- Find the name of your city by searching
- Create API key to your account
- Replace “city name” and “your api key” with your city and API key in below red text
- `api.openweathermap.org/data/2.5/weather?q={city name}&appid={your api key}`