Project 22:

Smart Farming Using IoT

Introduction

This is smart farming using IoT in this project we will use the server to store the sensor data this is similar to our recent smart agriculture using IoT project. but in this project, we are going to use more than 6 sensors.

although, this will be going to be very tough Cause we are going to use 7 sensors with the esp8266. there is 1 analog pin in the nodemcu but we will use many. this is very not easy but we have done it and going to share all the details and information with you guys.

This is the advanced idea for iot farming. this could be used in agriculture as well. all the data is available on the server so you can monitor it from anywhere.

COMPONENTS: -

1. Multiplexer
2. Soil moisture
3. Wemos

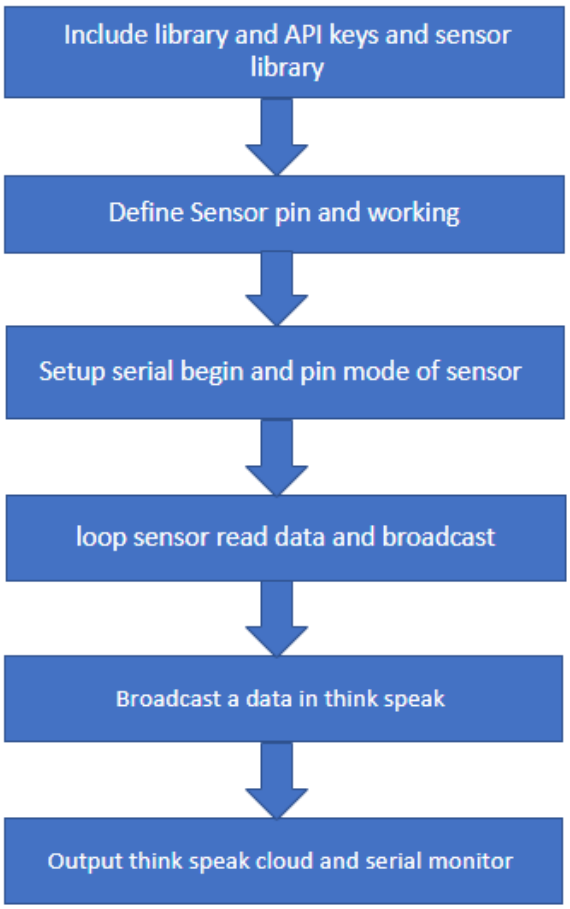
APPLICATION: -

IoT in agriculture uses robots, drones, remote sensors and computer imaging combined with continuously progressing machine learning and analytical tools for monitoring crops, surveying and mapping the fields and provide data to farmers for rational farm management plans to save both time and money.

OBJECTIVES: -

IoT smart farming solutions is a system that is built for monitoring the crop field with the help of sensors (light, humidity, temperature, soil moisture, crop health, etc.) and automating the irrigation system. The farmers can monitor the field conditions from anywhere.

FLOW CHART: -



PROGRAMMING: -

```
#include <ESP8266WiFi.h>
 #include <ESP8266HTTPClient.h>
 #include <Adafruit_ADS1015.h>
 WiFiClient client;
 String thingSpeakAddress= "http://api.thingspeak.com/update?";
 String writeAPIKey;
 String tsfield1Name;
 String request_string;
 HTTPClient http;
  Adafruit_ADS1115 ads;
 void setup()
 {
  Serial.begin(115200);
  delay(3000);
  WiFi.disconnect();
  Serial.println("START");
  WiFi.begin("DESKTOP","asdfghjkl");   // Wifi ("ID","Password")
  while ((!(WiFi.status() == WL_CONNECTED))){
```

```
 delay(300);
 Serial.println("...");
 }
 Serial.println("I AM CONNECTED");
  Serial.println("Hello!");
 Serial.println("Getting single-ended readings from AIN0..3");
 Serial.println("ADC Range: +/- 6.144V (1 bit = 3mV/ADS1015,
0.1875mV/ADS1115)");
 ads.begin();
}
void loop()
{
 int16_t adc0, adc1, adc2, adc3;
 Serial.println(" ");
  adc0 = ads.readADC_SingleEnded(0);
  adc0 = adc0 / 25;
  adc1 = ads.readADC_SingleEnded(1);
  adc1 = adc1 / 25;
  adc2 = ads.readADC_SingleEnded(2);
```

```
  adc2 = adc2 / 25;

  adc3 = ads.readADC_SingleEnded(3);

  adc3 = adc3 / 25;

  Serial.print("SOIL MOISTURE in persent 1% : ");
Serial.println(adc0);

  Serial.print("SOIL MOISTURE in persent 2% : ");
Serial.println(adc1);

  Serial.print("SOIL MOISTURE in persent 3% : ");
Serial.println(adc2);

  Serial.print("SOIL MOISTURE in persent 4% : ");
Serial.println(adc3);

  Serial.println(" ");

  if (client.connect("api.thingspeak.com",80))

  {

   request_string = thingSpeakAddress;

   request_string += "key=";

   request_string += "2YGO2FHN3XI3GFE7";

   request_string += "&";

   request_string += "field1";

   request_string += "=";
```

```
  request_string += adc0;
  http.begin(request_string);
  http.GET();
  http.end();
 }
delay(10);
 if (client.connect("api.thingspeak.com",80))
 {
  request_string = thingSpeakAddress;
  request_string += "key=";
  request_string += "2YGO2FHN3XI3GFE7";
  request_string += "&";
  request_string += "field2";
  request_string += "=";
  request_string += adc1;
  http.begin(request_string);
  http.GET();
  http.end();
```

```
  }
delay(10);
 if (client.connect("api.thingspeak.com",80))
  {
   request_string = thingSpeakAddress;
   request_string += "key=";
   request_string += "2YGO2FHN3XI3GFE7";
   request_string += "&";
   request_string += "field3";
   request_string += "=";
   request_string += adc2;
   http.begin(request_string);
   http.GET();
   http.end();
  }
delay(10);
 if (client.connect("api.thingspeak.com",80))
  {
```

```
  request_string = thingSpeakAddress;
  request_string += "key=";
  request_string += "2YGO2FHN3XI3GFE7";
  request_string += "&";
  request_string += "field4";
  request_string += "=";
  request_string += adc3;
  http.begin(request_string);
  http.GET();
  http.end();
 }
delay(10);
}
```

HARDWARE CONNECTION: -

1. Connect sensor pin A0 to multiplexer pin A0 to wemos pin scl
2. Connect sensor pin A0 to multiplexer A1 to wemos SDA
3. Connect sensor pin A0 to A2

CIRCUIT DIAGRAM: -