

## Develop a code to publish in IBM IoT Platform

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Project Name	Project – Smart Farmer-IoT Enabled smart Farming Application

### Connecting Sensors with Arduino using C++ code

// Include Libraries

#include "Arduino.h"

#include "DHT.h"

#include "SoilMoisture.h"

#include "SolenoidValve.h"

// Pin Definitions

#define DHT\_PIN\_DATA 2

#define SOILMOISTURE\_5V\_PIN\_SIG A3

#define SOLENOIDVALVE\_PIN\_COIL13

// Global variables and defines

// object initialization

DHT dht(DHT\_PIN\_DATA);

SoilMoisture soilMoisture\_5v(SOILMOISTURE\_5V\_PIN\_SIG);

SolenoidValve solenoidValve(SOLENOIDVALVE\_PIN\_COIL1);

// define vars for testing menu

const int timeout = 10000; //define timeout of 10 sec

char menuOption = 0;

long time0;

// Setup the essentials for your circuit to work. It runs first every time

your circuit is powered with electricity.

```
void setup()
{
  // Setup Serial which is useful for debugging
  // Use the Serial Monitor to view printed messages
  Serial.begin(9600);
  while (!Serial) ; // wait for serial port to connect. Needed for native
  USB
  Serial.println("start");

  dht.begin();
  menuOption = menu();
}
```

// Main logic of your circuit. It defines the interaction between the components you selected. After setup, it runs over and over again, in an eternal loop.

```
void loop()
{

  if(menuOption == '1') {
    // DHT22/11 Humidity and Temperature Sensor - Test Code
    // Reading humidity in %
    float dhtHumidity = dht.readHumidity();
    // Read temperature in Celsius, for Fahrenheit use .readTempF()
    float dhtTempC = dht.readTempC();
    Serial.print(F("Humidity: ")); Serial.print(dhtHumidity);
    Serial.print(F(" [%]\n"));
    Serial.print(F("Temp: ")); Serial.print(dhtTempC); Serial.println(F("[C]"));

  }
```

```

else if(menuOption == '2') {
// Soil Moisture Sensor - Test Code
int soilMoisture_5vVal = soilMoisture_5v.read();
Serial.print(F("Val: ")); Serial.println(soilMoisture_5vVal);

}
else if(menuOption == '3') {
// 12V Solenoid Valve - 3/4" - Test Code
// The solenoid valve will turn on and off for 500ms (0.5 sec)
solenoidValve.on(); // 1. turns on
delay(500); // 2. waits 500 milliseconds (0.5 sec). Change the
value in the brackets (500) for a longer or shorter delay in milliseconds.
solenoidValve.off();// 3. turns off
delay(500); // 4. waits 500 milliseconds (0.5 sec). Change the
value in the brackets (500) for a longer or shorter delay in milliseconds.

}

if (millis() - time0 > timeout)
{
    menuOption = menu();
}

}

// Menu function for selecting the components to be tested
// Follow serial monitor for instructions
char menu()
{

    Serial.println(F("\nWhich component would you like to test?"));
    Serial.println(F("(1) DHT22/11 Humidity and Temperature Sensor"));

```

```

Serial.println(F("(2) Soil Moisture Sensor"));
Serial.println(F("(3) 12V Solenoid Valve - 3/4\""));
Serial.println(F("(menu) send anything else or press on board reset
button\n"));
while (!Serial.available());

// Read data from serial monitor if received
while (Serial.available())
{
    char c = Serial.read();
    if (isAlphaNumeric(c))
    {
        if(c == '1')
            Serial.println(F("Now Testing DHT22/11 Humidity and
Temperature Sensor"));
        else if(c == '2')
            Serial.println(F("Now Testing Soil Moisture Sensor"));
        else if(c == '3')
            Serial.println(F("Now Testing 12V Solenoid Valve -
3/4\""));
        else
        {
            Serial.println(F("illegal input!"));
            return 0;
        }
        time0 = millis();
        return c;
    }
}
}

```