

SPRINT 1

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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_COIL1 3

// 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;
    }
}

```

Circuit Diagram

