

brandeismakerlab

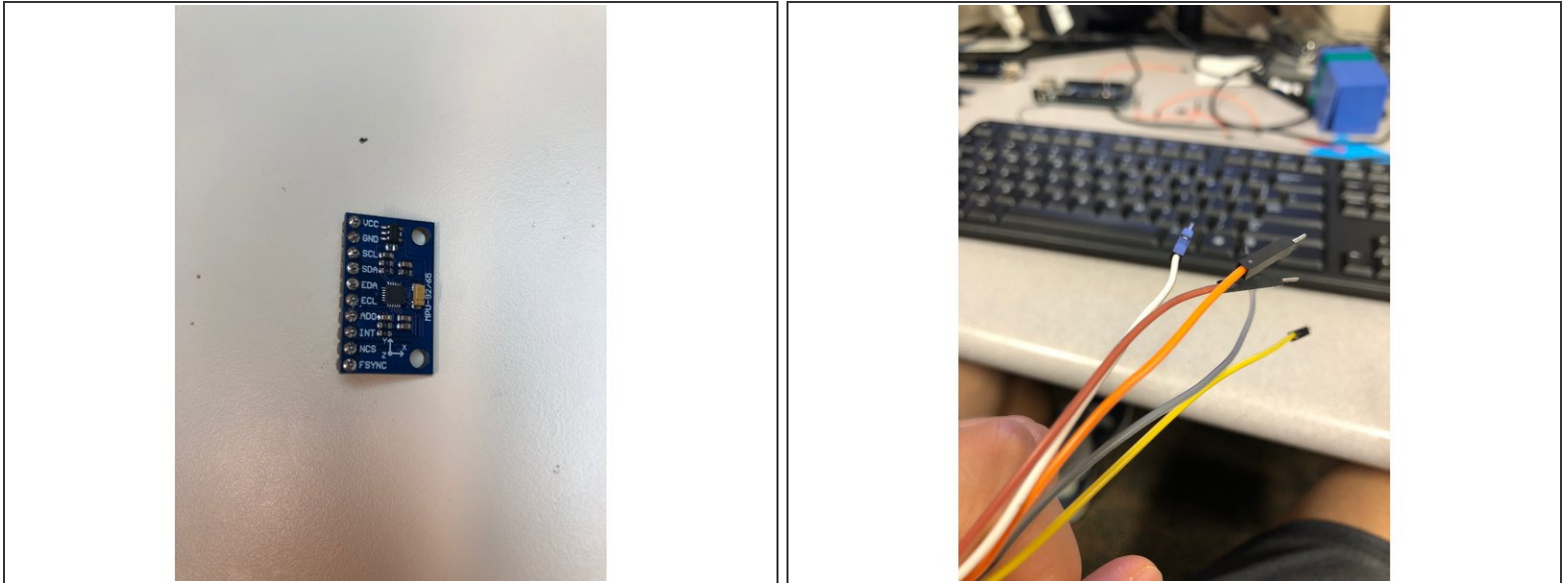
# Veni Vidi Vici with the Accelerometer/Gyroscope/Thermometer

This wise and extensive guide will aid you in the use of a super-Arduino-sensor that outputs acceleration and position in the x,y,z/ and temperature in C.

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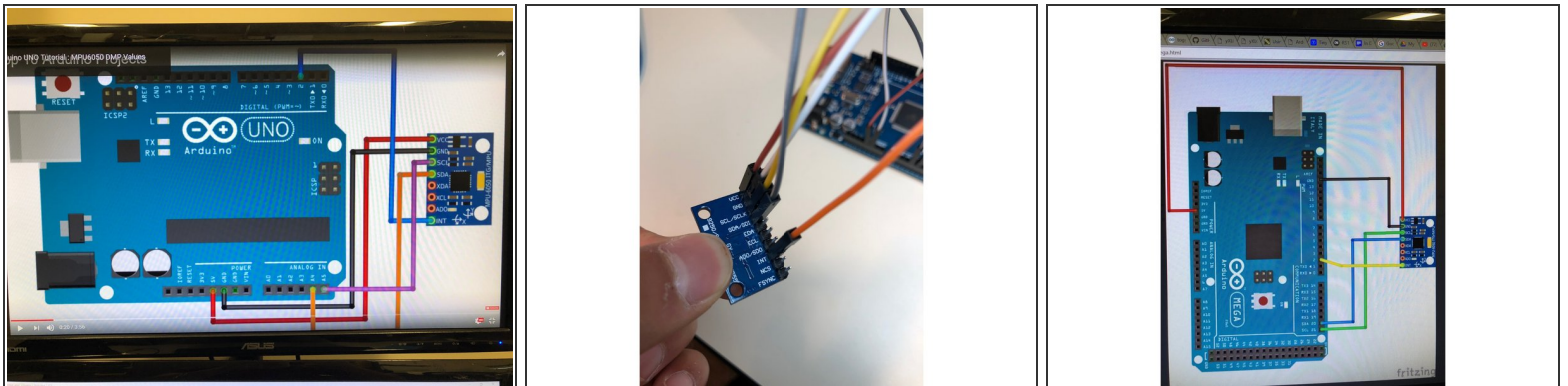


## Step 1 — Veni



- Acquire the needed Arduino ,MPU6050 (or a variation of this model), and prepare yourself for an adrenaline-fueled coding experience. You will also need 5 male to female jumper wires, a usb to Arduino cord, and an Arduino Uno or Mega.

## Step 2 — Vidi (Part 1)



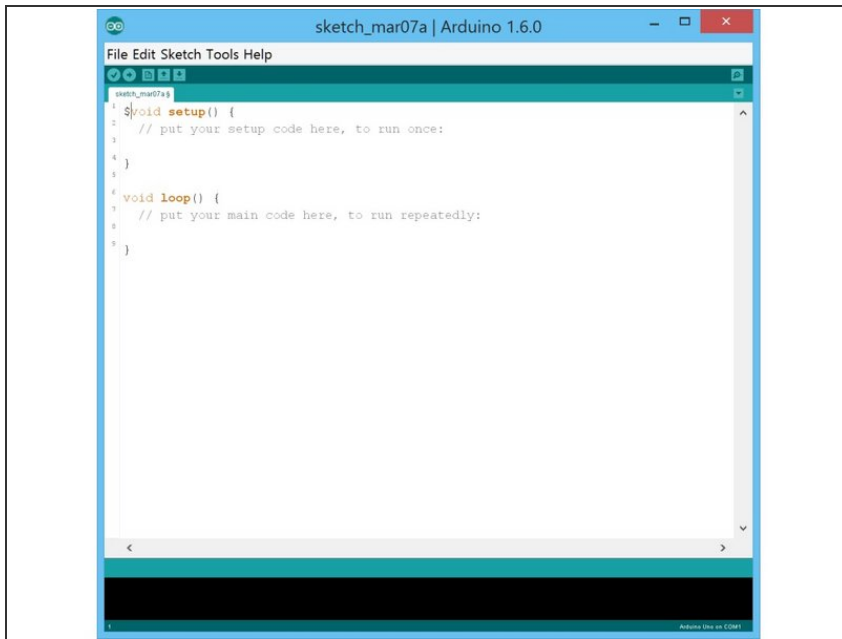
- Wire the super Arduino (MPU6050) to your Mega or Uno using the 5 jumper wires.
- If you're using a mega the wiring is slightly different.
- Both Arduino wiring formats are shown in the pictures.

## Step 3 — Vidi (Part 2)

```
SOFTWARE PRODUCTS EDU RESOURCES COMMUNITY HELP
1 // MPU-6050 Short Example Sketch
2 // By Arduino User JohnChi
3 // August 17, 2014
4 // Public Domain
5 #include <Wire.h>
6 const int MPU_addr=0x68; // I2C address of the MPU-6050
7 int16_t AcX,AcY,AcZ,Tmp,GyX,GyY,GyZ;
8 void setup(){
9   Wire.begin();
10  Wire.beginTransmission(MPU_addr);
11  Wire.write(0x6B); // PWR_MGMT_1 register
12  Wire.write(0); // set to zero (wakes up the MPU-6050)
13  Wire.endTransmission(true);
14  Serial.begin(9600);
15 }
16 void loop(){
17   Wire.beginTransmission(MPU_addr);
18   Wire.write(0x3B); // starting with register 0x3B (ACCEL_XOUT_H)
19   Wire.endTransmission(false);
20   Wire.requestFrom(MPU_addr,14,true); // request a total of 14 registers
21   AcX=Wire.read()<<8|Wire.read(); // 0x3B (ACCEL_XOUT_H) & 0x3C (ACCEL_XOUT_L)
22   AcY=Wire.read()<<8|Wire.read(); // 0x3D (ACCEL_YOUT_H) & 0x3E (ACCEL_YOUT_L)
23   AcZ=Wire.read()<<8|Wire.read(); // 0x3F (ACCEL_ZOUT_H) & 0x40 (ACCEL_ZOUT_L)
24   Tmp=Wire.read()<<8|Wire.read(); // 0x41 (TEMP_OUT_H) & 0x42 (TEMP_OUT_L)
25   GyX=Wire.read()<<8|Wire.read(); // 0x43 (GYRO_XOUT_H) & 0x44 (GYRO_XOUT_L)
26   GyY=Wire.read()<<8|Wire.read(); // 0x45 (GYRO_YOUT_H) & 0x46 (GYRO_YOUT_L)
27   GyZ=Wire.read()<<8|Wire.read(); // 0x47 (GYRO_ZOUT_H) & 0x48 (GYRO_ZOUT_L)
28   Serial.print("AcX = "); Serial.print(AcX);
29   Serial.print(" | AcY = "); Serial.print(AcY);
30   Serial.print(" | AcZ = "); Serial.print(AcZ);
31   Serial.print(" | Tmp = "); Serial.print(Tmp/340.00+36.53); //equation for temperature in
    degrees C from datasheet
32 }
```

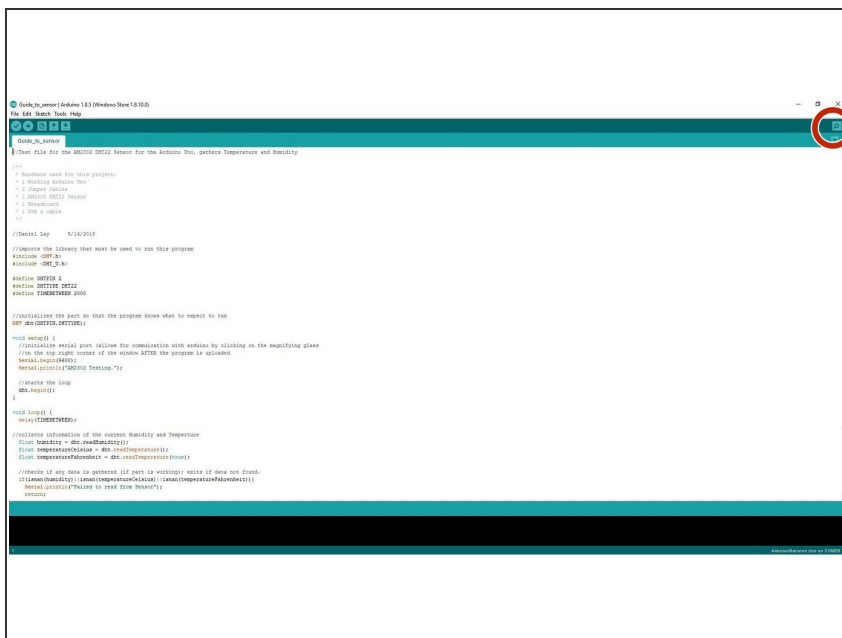
- Click this link and look at the sample code:  
<https://playground.arduino.cc/Main/MPU-6...>
- The code before the "void setup" establishes a connection between the Arduino and Mega , which allows for the values outputted by the Arduino to be received.
- The code within the setup begins the transmission of information from the Arduino to the Mega. Wire. is used to "talk" to the Arduino.
- The "void loop" segment of code is a continuous cycle that has the Arduino read the 7 values it is meant to and then spits out those numbers to the Serial Monitor. Serial.print("blah blah blah") just prints whatever is in quotations.

## Step 4 — Vidi (Part 3)



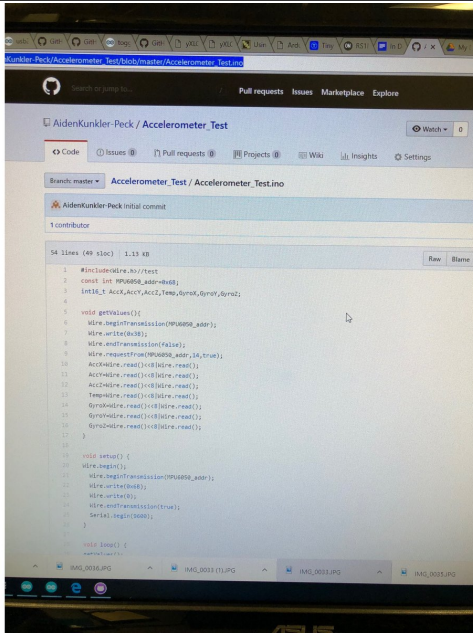
- Now it's your turn to try some coding!
- Follow this link to download Arduino if it is not already on your computer: <https://www.arduino.cc/en/Main/Software>
- Once downloaded, open the application and continue to the next step.

## Step 5 — Vidi (Part 4)



- Click the serial monitor button to view the data.

## Step 6 — VICI!!



- Get some of the source code from the previous link and get started with testing out the part.
- Here is a link to some working code for the Arduino:  
<https://github.com/AidenKunkler-Peck/Acc...>
- Congrats! You just coded an Arduino!