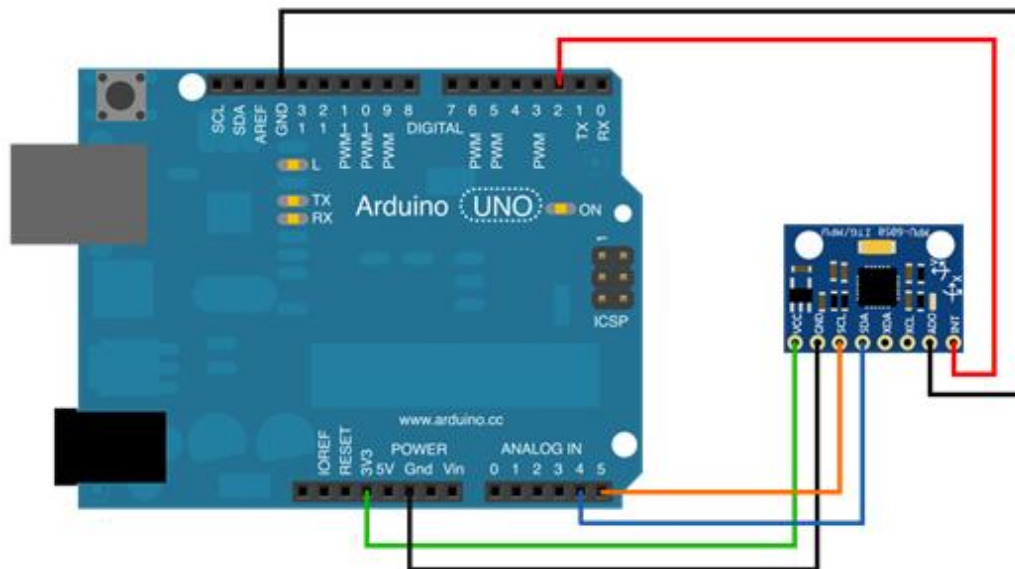


MPU6050: Application

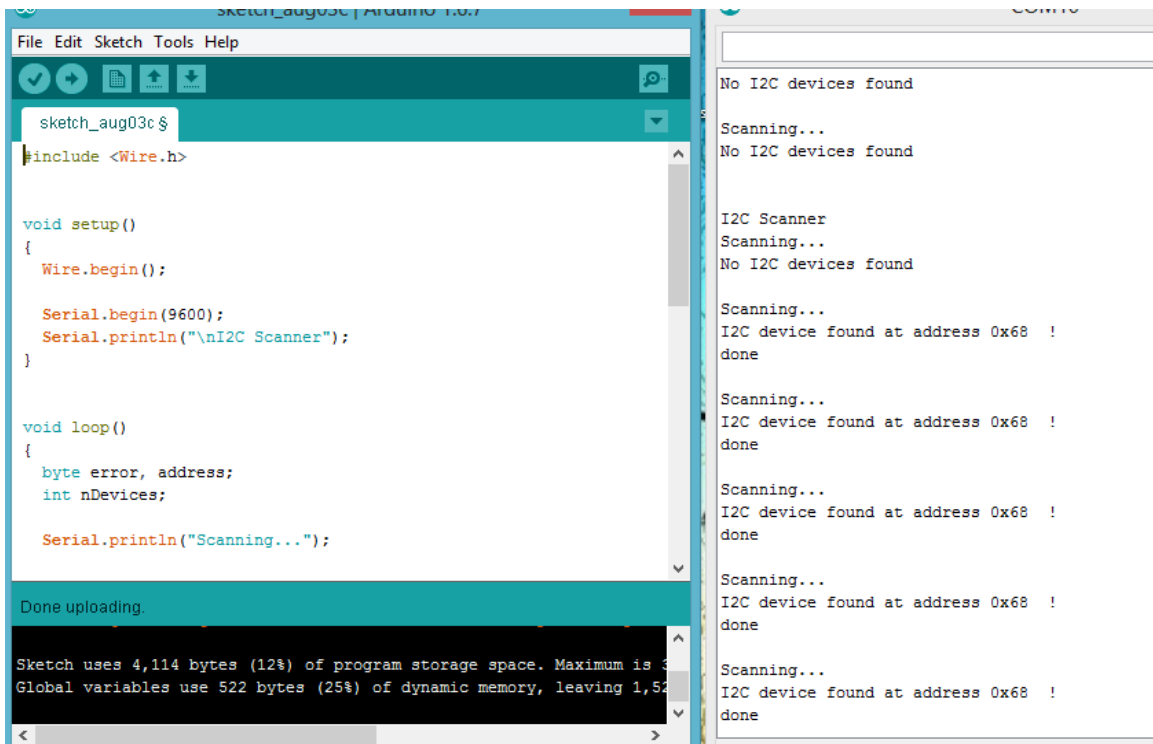
The MPU-6050 sensor contains an accelerometer and a gyro in a single chip. It is very accurate, as it contains 16-bits analog to digital conversion hardware for each channel. Therefore it captures the x, y, and z channel at the same time.

First let's try to find whether our device is connected with the Arduino. Connect the circuit as shown below.

Arduino Uno	MPU 6050
3.3V	VCC
GND	GND
Analog pin 4	SDA
Analog pin 5	SCL
Digital pin 2	INT
GND	ADO



Then upload the code into arduino.ide. It will find your MPU 6050 GY-521 at the address 0x68 or 0x69. If it doesn't find the IMU at that location, there might be an issue with your wiring. Please check the connection and running the code again.



```

File Edit Sketch Tools Help
sketch_aug03c $
#include <Wire.h>

void setup()
{
  Wire.begin();

  Serial.begin(9600);
  Serial.println("\nI2C Scanner");
}

void loop()
{
  byte error, address;
  int nDevices;

  Serial.println("Scanning...");

  Done uploading.

Sketch uses 4,114 bytes (12%) of program storage space. Maximum is 32,768 bytes.
Global variables use 522 bytes (25%) of dynamic memory, leaving 1,522 bytes free.

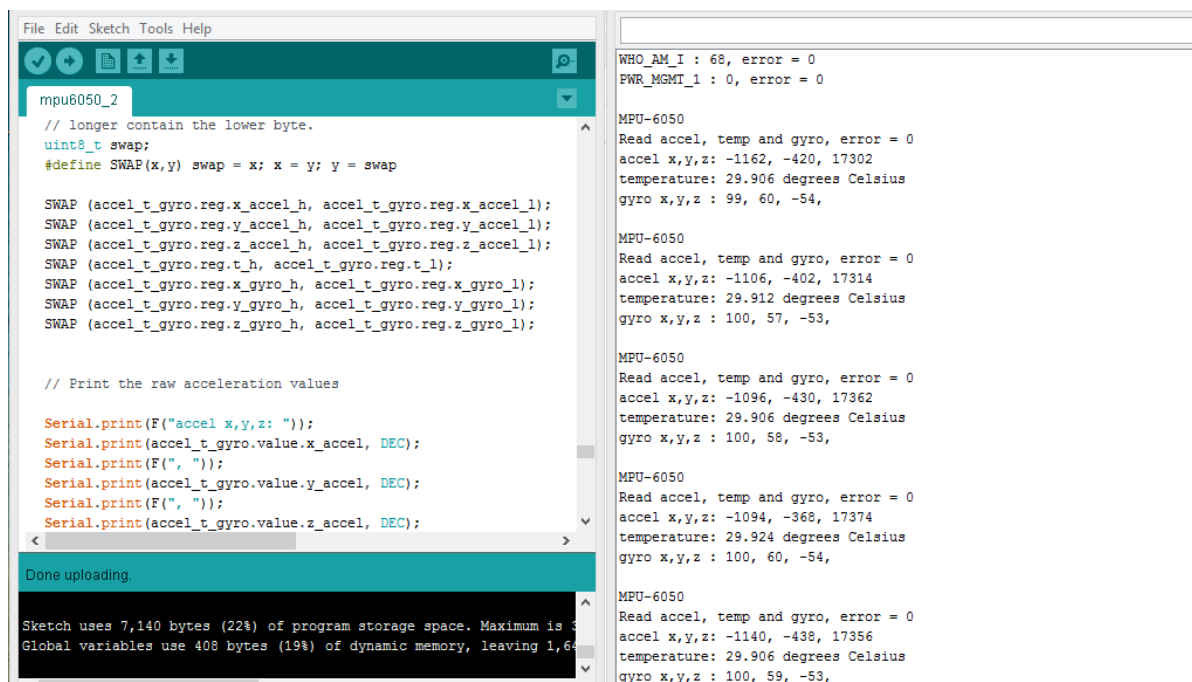
```

```

No I2C devices found
Scanning...
No I2C devices found
I2C Scanner
Scanning...
No I2C devices found
Scanning...
I2C device found at address 0x68 !
done
Scanning...
I2C device found at address 0x68 !
done
Scanning...
I2C device found at address 0x68 !
done
Scanning...
I2C device found at address 0x68 !
done
Scanning...
I2C device found at address 0x68 !
done

```

Next code is to get the raw outputs from the sensor. The connection of circuit is same as before. Then we can upload the next code into arduino.ide. The output will display acceleration, temperature and gyro.



```

File Edit Sketch Tools Help
mpu6050_2
// longer contain the lower byte.
uint8_t swap;
#define SWAP(x,y) swap = x; x = y; y = swap

SWAP (accel_t_gyro.reg.x_accel_h, accel_t_gyro.reg.x_accel_l);
SWAP (accel_t_gyro.reg.y_accel_h, accel_t_gyro.reg.y_accel_l);
SWAP (accel_t_gyro.reg.z_accel_h, accel_t_gyro.reg.z_accel_l);
SWAP (accel_t_gyro.reg.t_h, accel_t_gyro.reg.t_l);
SWAP (accel_t_gyro.reg.x_gyro_h, accel_t_gyro.reg.x_gyro_l);
SWAP (accel_t_gyro.reg.y_gyro_h, accel_t_gyro.reg.y_gyro_l);
SWAP (accel_t_gyro.reg.z_gyro_h, accel_t_gyro.reg.z_gyro_l);

// Print the raw acceleration values
Serial.print(F("accel x,y,z: "));
Serial.print(accel_t_gyro.value.x_accel, DEC);
Serial.print(F(", "));
Serial.print(accel_t_gyro.value.y_accel, DEC);
Serial.print(F(", "));
Serial.print(accel_t_gyro.value.z_accel, DEC);

Done uploading.

Sketch uses 7,140 bytes (22%) of program storage space. Maximum is 32,768 bytes.
Global variables use 408 bytes (19%) of dynamic memory, leaving 1,600 bytes free.

```

```

WHO_AM_I : 68, error = 0
PWR_MGMT_1 : 0, error = 0

MPU-6050
Read accel, temp and gyro, error = 0
accel x,y,z: -1162, -420, 17302
temperature: 29.906 degrees Celsius
gyro x,y,z : 99, 60, -54,

MPU-6050
Read accel, temp and gyro, error = 0
accel x,y,z: -1106, -402, 17314
temperature: 29.912 degrees Celsius
gyro x,y,z : 100, 57, -53,

MPU-6050
Read accel, temp and gyro, error = 0
accel x,y,z: -1096, -430, 17362
temperature: 29.906 degrees Celsius
gyro x,y,z : 100, 58, -53,

MPU-6050
Read accel, temp and gyro, error = 0
accel x,y,z: -1094, -368, 17374
temperature: 29.924 degrees Celsius
gyro x,y,z : 100, 60, -54,

MPU-6050
Read accel, temp and gyro, error = 0
accel x,y,z: -1140, -438, 17356
temperature: 29.906 degrees Celsius
gyro x,y,z : 100, 59, -53,

```