Accelerometer

Introduction

This class uses the I2C interface to connect to a MCU-6050 sensor in order to read tilt data. The class reads the data in a constant loop starting from the point the class is initialised. The class contains three publically accessible methods for the X, Y and Z axis. These all return values between -1 and 1.

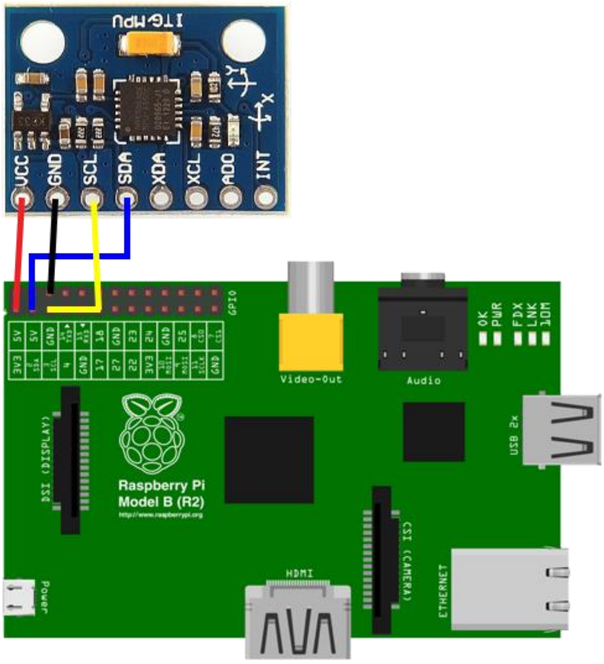
To determine which axis is which, take a look at the arrows on the sensor itself.

If you require help with setting up I2C communication, please view our I2C tutorial.

Assembly

Parts:

- MCU-6050 Sensor (or equivalent)
- Jumper Cables
- Raspberry Pi
- Solder (Optional)



Build Instructions:

1. Power Off Pi completely.
2. Attach either crocodile clips to the first 4 connections on the chip. Alternatively solder these 4 connections.
3. Attach VCC (on sensor) to the 3v3 pin.
4. GND to ground on the Pi.
5. Attach SCL to SCL on the Pi (3rd pin down on the left).
6. Attach SDA to SDA on the Pi (2nd pin down on the left).

Exercises

You should also have a class called **AccelerometerExercises**, this contains blank or simple methods for you to complete by doing the exercises below:

Exercise 1: In the method prettyPrint(), output a nicely printed version of the X, Y and Z values on a single line. You may also have to round each value to an appropriate significant figure.

Exercise 2: In the method isUpsideDown(), return true when the sensor is upside down. Hint: Use your prettyPrint() method to determine which axis you will have to monitor.

Exercise 3: Attach a Speaker and attempt to get the method to play a sound when the speaker is upside down.

Notes

- Remember, Pi4J using something called WiringPi to manage GPIO pins. This means that the pin numbers do not actually correlate with what is written on the board. Use this website to convert: http://pi4j.com/pins/model-b-plus.html

- Don’t be put off if you are having trouble understanding the source of the Accelerometer class. This contains a lot of accessing values from registers and converting them into readable form.