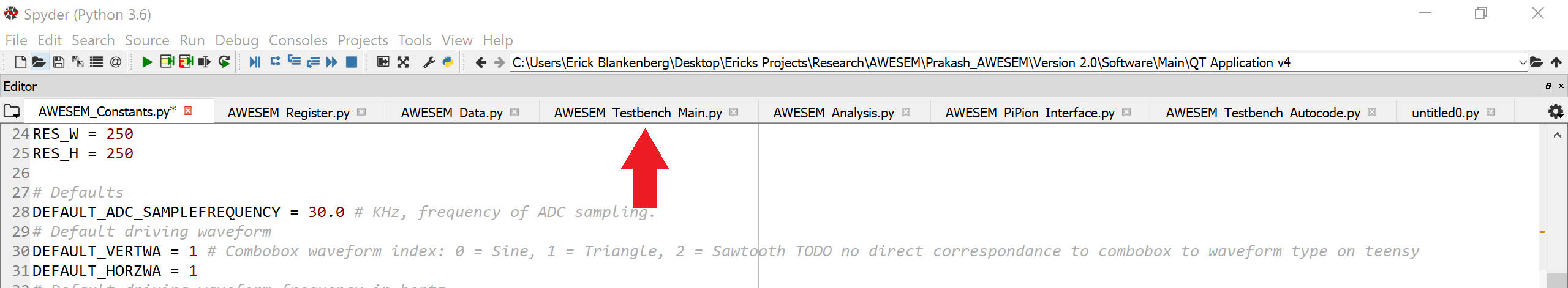
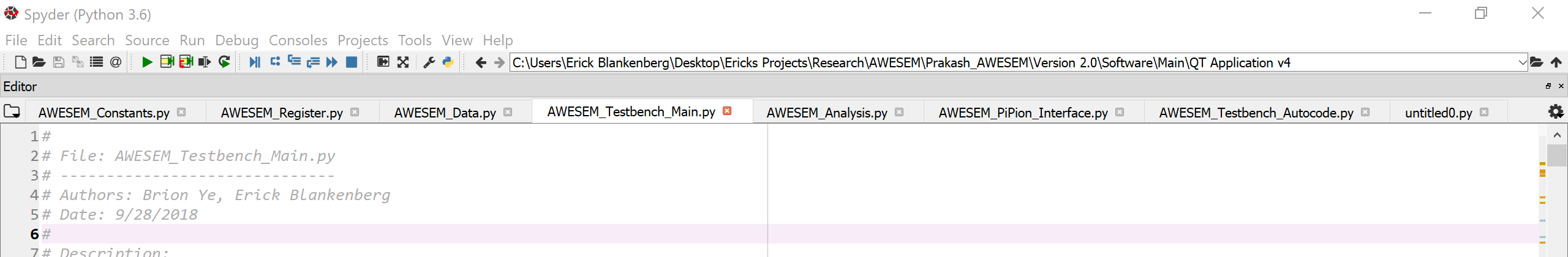
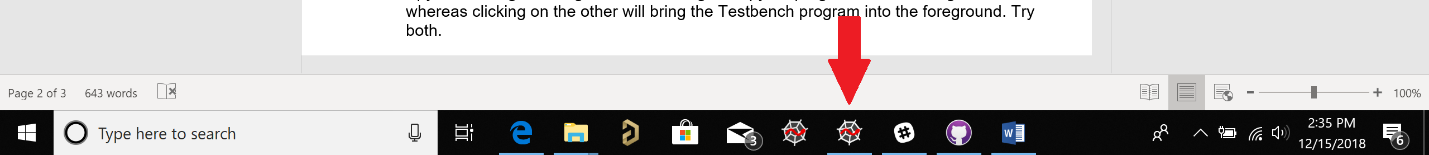
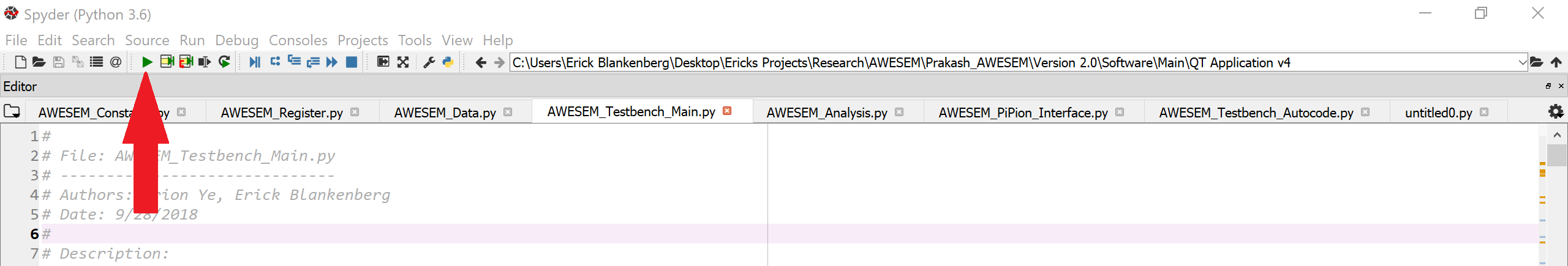
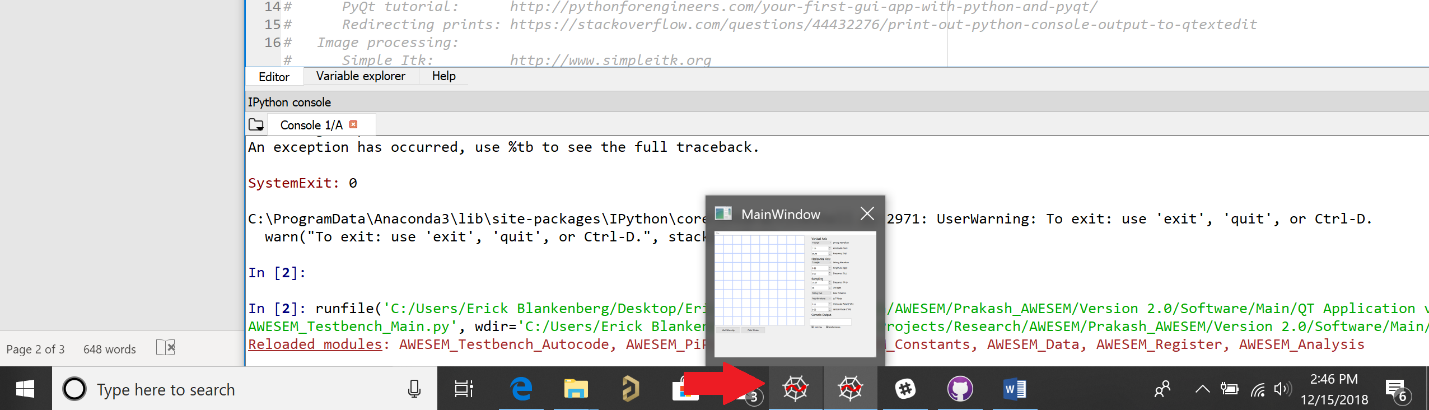
AWESEM Acquisition Testbench

# Setup

1. Instructions assume computer is initially turned off and that all electrical connections with the micro-controller are disconnected.
2. Setting up the computer:
   1. Open the laptop (Gigabyte Aero 14) and press the circular power button above the keyboard. While the computer is booting up the power button should glow white.
   2. On the windows 10 welcome screen, press enter to switch to the user login page
   3. The username and password are as follows:
      1. Username: “Erick Blankenberg”
      2. Password: “Pi31415926”
   4. Once the desktop loads, near the center of the desktop there is an application called “Spyder”. This is the development environment I have been using. Once you open the program it should load all of the files from the last session.
   5. Along the top of the program, there are several tabs, one for each file (ex. AWSEM\_Data.py). Click on the tab labelled “AWSEM\_Testbench\_Main.py”. 
   6. You should see that the code available in the editor has changed. We now need to set up the MCU.
3. Setting up the MCU:
   1. Find a micro USB cable that you know works with other devices and connect the Teensy 3.6 micro-controller to the computer on any USB port.
   2. Set up but do not connect any external support hardware, primarily the driving amplifiers and signal amplifier. Make sure that these will not deliver a potential of greater than 3.3v to any pins of the micro-controller at any time. The output DAC’s of the micro-controller used for driving the stage range from 0v to 3.3v with a neutral value of 1.65v. Please see he “Pinout” section for pin assignment.
   3. Use a multimeter to check that the output of both DACs of the micro controller are steady at 1.65 volts when first connected to the computer. If this is not the case you should first disconnect and reconnect the MCU from the computer. If this does not work, see the troubleshooting entry titled “Uploading MCU Firmware”
   4. Once you have verified that the external analog hardware is safe and that the micro-controller is in the expected initial state as above, connect the external analog signal input to the signal amplifier and the DAC outputs to the external driver amplifiers. Make sure that all grounds are common. Please see the “Pinout” section for details. We should now be able to run the program.
4. Running the program:
   1. Spyder should still be running from before on our desktop. If this is not the case either open the program from the desktop or find it running in the taskbar at the bottom of the screen. If you had to restart Spyder open the tab titled “AWESEM\_Testbench\_Main.py”. 
   2. Along the top of the Spyder IDE there are a few colored icons, click the green arrow icon to run the Testbench program. 
   3. The terminal along the bottom half of the screen should have a message “runfile(…..)”.
      1. If you receive any error messages, especially
   4. The program is now running but may be hidden behind Spyder.
      1. If Spyder does not occupy half of the screen already, click anywhere along the top half of the Spyder program and drag your cursor to one side of the screen. Once your cursor hits the far edge you will see that a small shockwave animation occurs at the cursor and that a glassy rectangular outline occupies half of the desktop. Release the mouse. This should resize Spyder so that it occupies half of the monitor.
   5. If you cannot see the AWESEM Testbench program window, look at the taskbar at the bottom of the desktop. There appear to be two separate instances of Spyder running. Clicking on one will bring the Spyder program into the foreground whereas clicking on the other will bring the Testbench program into the foreground. Try both. You can hover your mouse over the icon in the taskbar to bring up a preview. 
5. Program Manual

# Pinout

# Troubleshooting

1. Uploading MCU Firmware