Funnel Setup Instructions

Step 1. Setting up Funnel

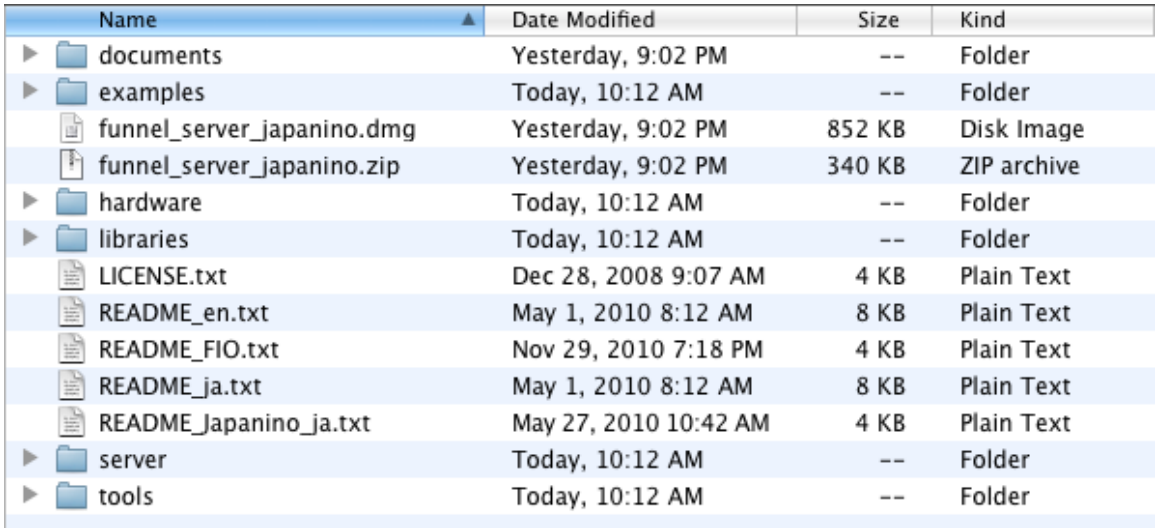
1. Download funnel: http://code.google.com/p/funnel/downloads/detail?name=funnel-1.0-r783.zip&can=2&q=

2. Unzip the archive and rename the folder from "funnel-1.0-r783" to "funnel". Renaming helps in case you download a newer version of funnel in the future, you won't have to update the location of the code library in your Flash Actionscript settings.

3. If you have previously downloaded funnel, replace your existing version with the new one. If this is your first time to download and setup funnel on your computer, then find a good place on your HD to put the funnel folder. I recommend something like Documents/Tools/funnel or Documents/Actionscript3/funnel

4. Open the funnel folder

   You should now have the following folder structure:



Name	Date Modified	Size	Kind
documents	Yesterday, 9:02 PM	--	Folder
examples	Today, 10:12 AM	--	Folder
funnel_server_japanino.dmg	Yesterday, 9:02 PM	852 KB	Disk Image
funnel_server_japanino.zip	Yesterday, 9:02 PM	340 KB	ZIP archive
hardware	Today, 10:12 AM	--	Folder
libraries	Today, 10:12 AM	--	Folder
LICENSE.txt	Dec 28, 2008 9:07 AM	4 KB	Plain Text
README_en.txt	May 1, 2010 8:12 AM	8 KB	Plain Text
README_FIO.txt	Nov 29, 2010 7:18 PM	4 KB	Plain Text
README_ja.txt	May 1, 2010 8:12 AM	8 KB	Plain Text
README_Japanino_ja.txt	May 27, 2010 10:42 AM	4 KB	Plain Text
server	Today, 10:12 AM	--	Folder
tools	Today, 10:12 AM	--	Folder

5. Open the server folder and launch the macosx.dmg file.

Name	Date Modified	Size	Kind
documents	Yesterday, 9:02 PM	--	Folder
examples	Today, 10:12 AM	--	Folder
funnel_server_japanino.dmg	Yesterday, 9:02 PM	852 KB	Disk Image
funnel_server_japanino.zip	Yesterday, 9:02 PM	340 KB	ZIP archive
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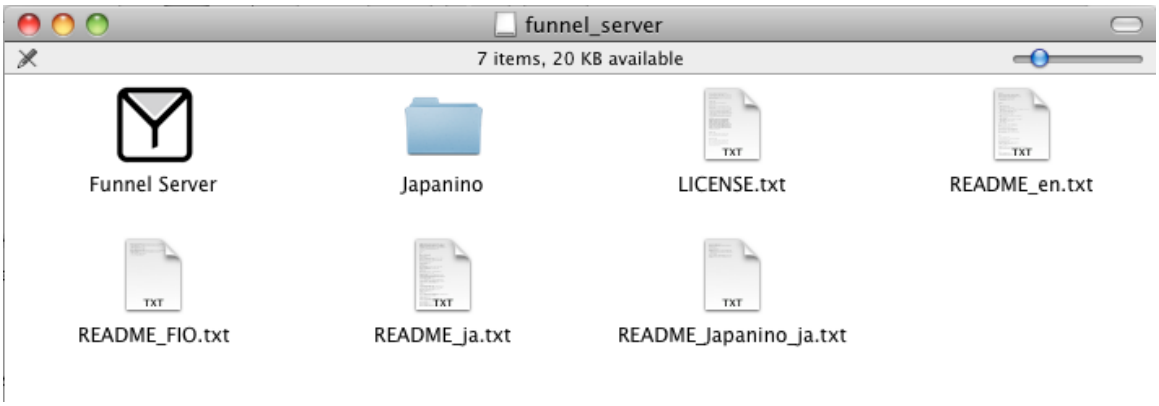
README_Japanino_ja.txt	May 27, 2010 10:42 AM	4 KB	Plain Text
server	Today, 10:12 AM	--	Folder
macosx.dmg	Yesterday, 9:02 PM	852 KB	Disk Image
src	Today, 10:12 AM	--	Folder
windows.zip	Yesterday, 9:02 PM	340 KB	ZIP archive
tools	Today, 10:12 AM	--	Folder

6. When the dmg file expands you'll see the following:



7. Drag the Funnel Server application to your Applications directory. It will be copied automatically. (*This is an update to the instructions I gave you in class. If you moved the Funnel Server application to the server folder in class that's fine, it just may be more convenient to have it in the Applications directory since it's easier to locate and you also don't have to copy all of the other files, just the Funnel Server application*).

Step 2. Uploading StandardFirmata to your Arduino

1. I recommend downloading and installing the latest version of Arduino (Arduino 0022): http://arduino.cc/en/Main/Software

2. If this is the first time you have installed any version of Arduino on your computer and you are using an Arduino board older than an Arduino UNO (UNO is the newest board

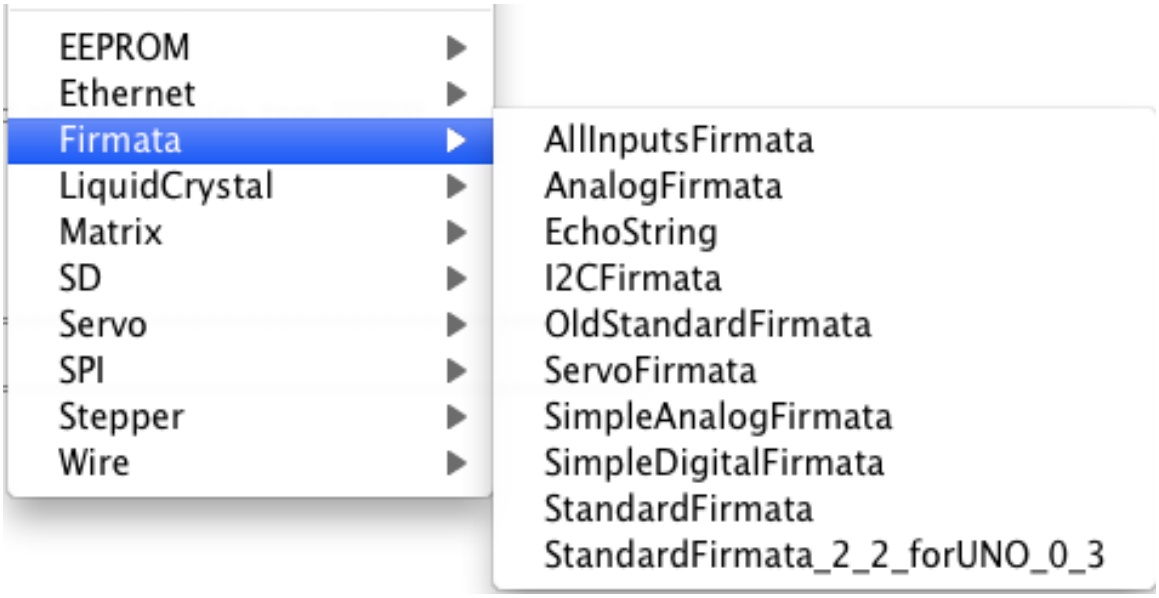
at this time so anything else is “older”), you will need to install the FTDI driver. When you expand the arduino-0022.dmg file you’ll see a package installer labeled “FTDIUSBSerialDriver_10_4_10_5_10_6”. Run the installer and follow the instructions. You’ll have to restart your computer upon completion. Once your computer restarts, expand the arduino-0022.dmg file again and copy the Arduino application to your Applications directory.

3. Connect your Arduino board to your computer

4. Launch the Arduino application.

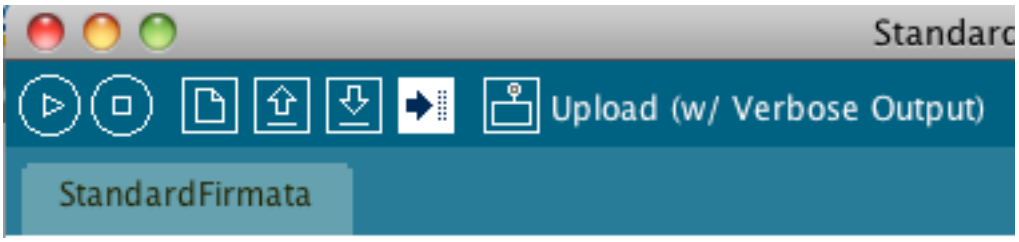
5. Under the Tools menu, select the type of Arduino board you are using from the Board menu item. Also select the serial port from the Serial Port menu item.

6. Under File, follow the menu tree to Firmata (File -> Examples -> Firmata) and select StandardFirmata (unless you are using an Arduino UNO, then select StandardFirmata_2_2_forUNO_0_3).



7. Click the “play” button (or press Command + R) to compile the sketch. If you don’t get any errors you’re ready for the next step. If you do get errors, make sure you selected the correct board and serial port from the Tools menu.

8. Upload the sketch to your board (in the image below, upload is the highlighted icon)

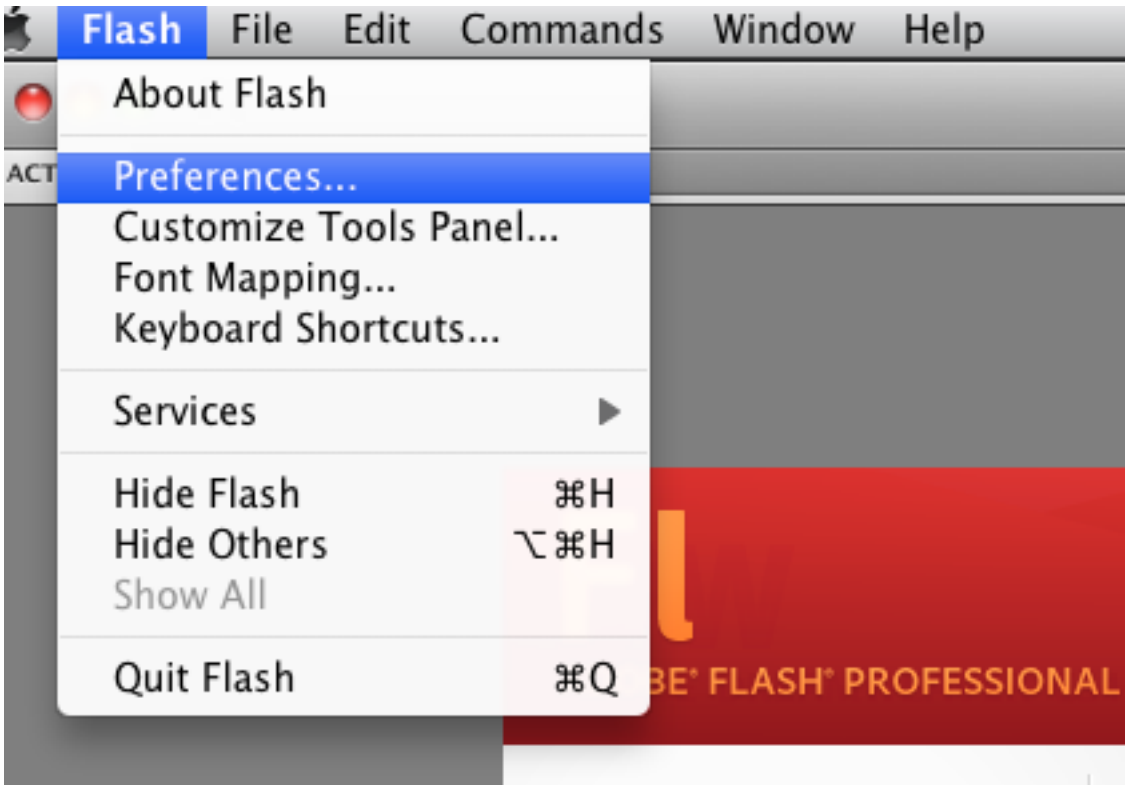


9. If you happen to get an error, make sure the correct board and serial port are selected from the tool menu. If the upload was successful, close the Arduino application.

Step 3. Setting up Flash

1. Open Flash

2. Select Flash -> Preferences

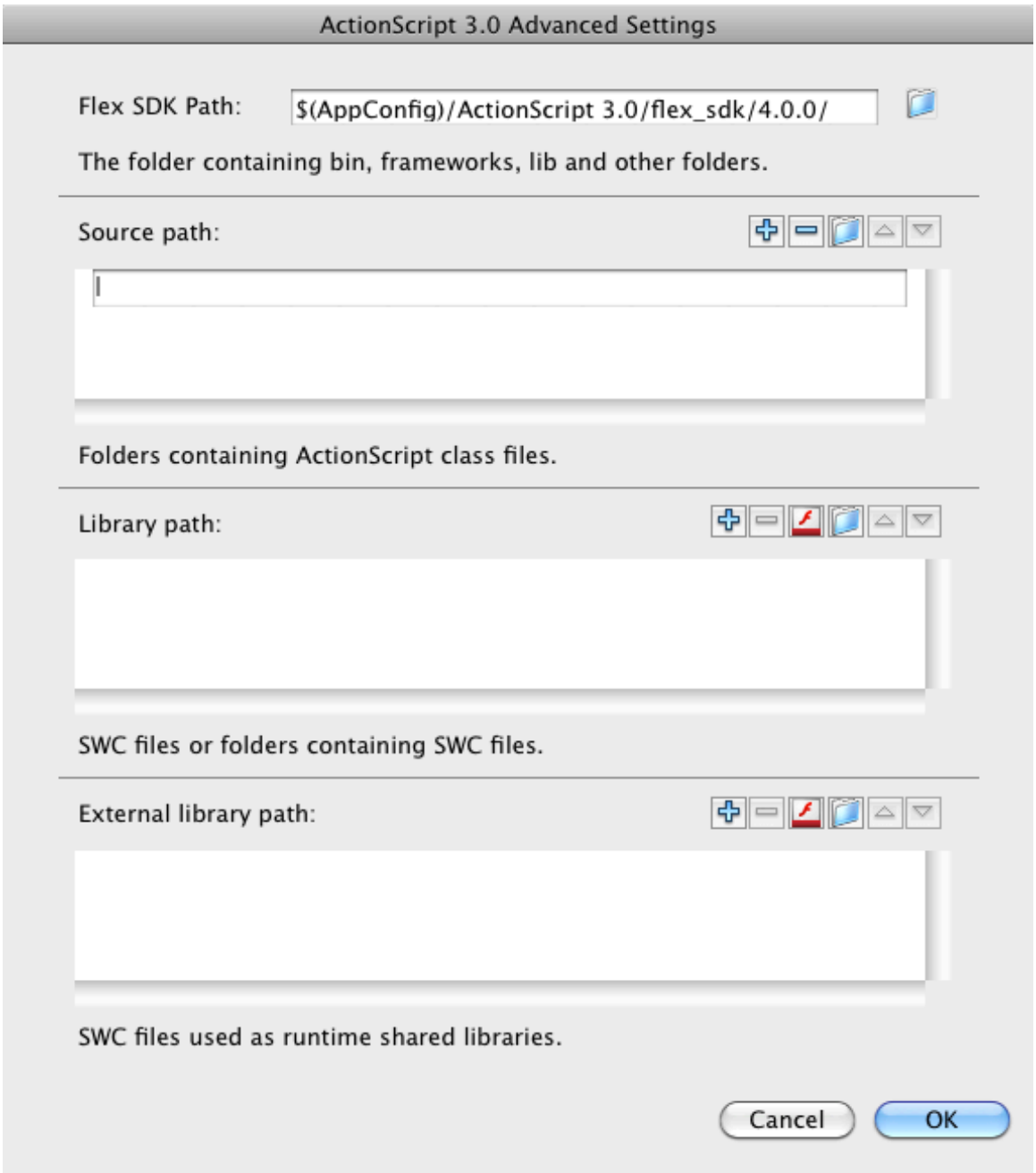


3. In the Preferences panel, select ActionScript from the Category list.

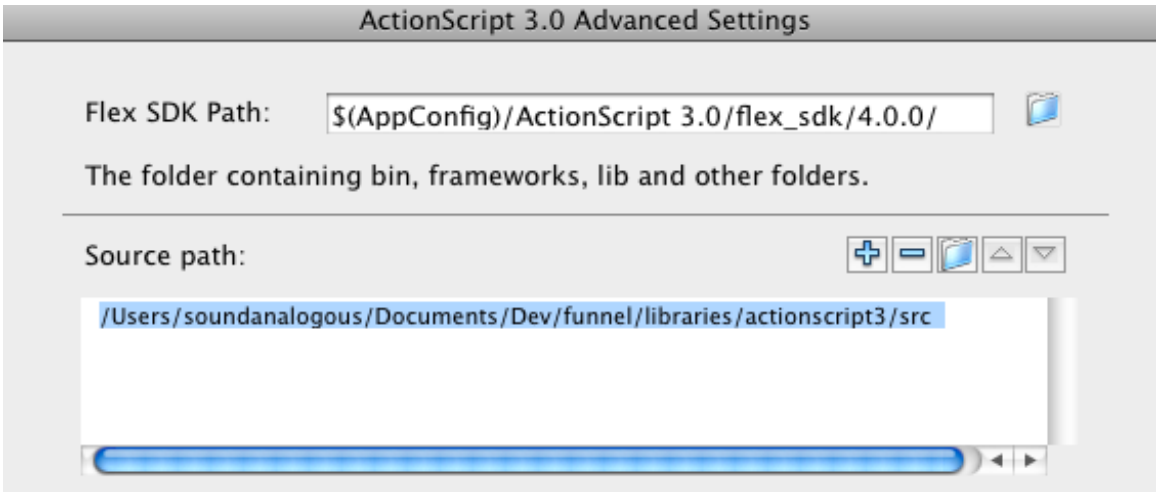
4. From the ActionScript preferences, select ActionScript 3.0 Settings…

5. At this point the options are a bit different depending on which version of Flash you are running. In CS4 and CS5 you should see the following panel: (if you are using CS3 I think

you will have a field labeled Classpath, and you can select the funnel src folder in the same was as the following instructions).



Click the + icon in the Source path area, then select the folder icon and navigate to your funnel directory and navigate to /funnel/libraries/actionscript3/src. Select the src folder and click the Choose button. You should now see the following text in your Source Path (the path leading up to /funnel/libraries… will be different depending on where you stored the funnel directory on your hard drive):

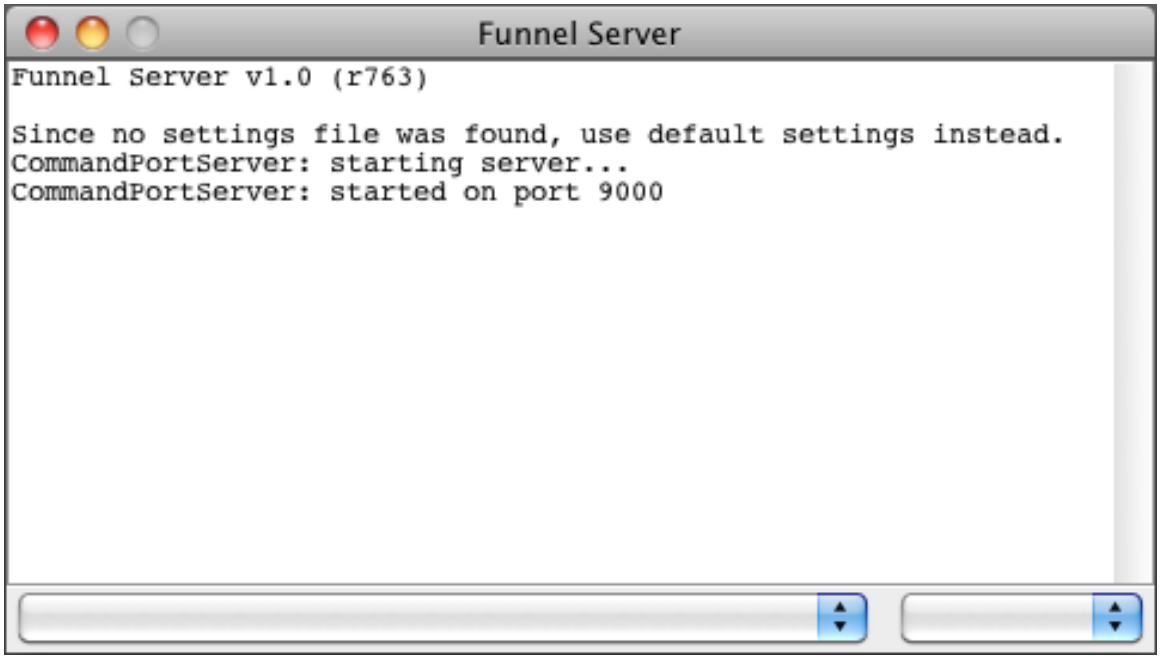


6. Click OK and you should be set.

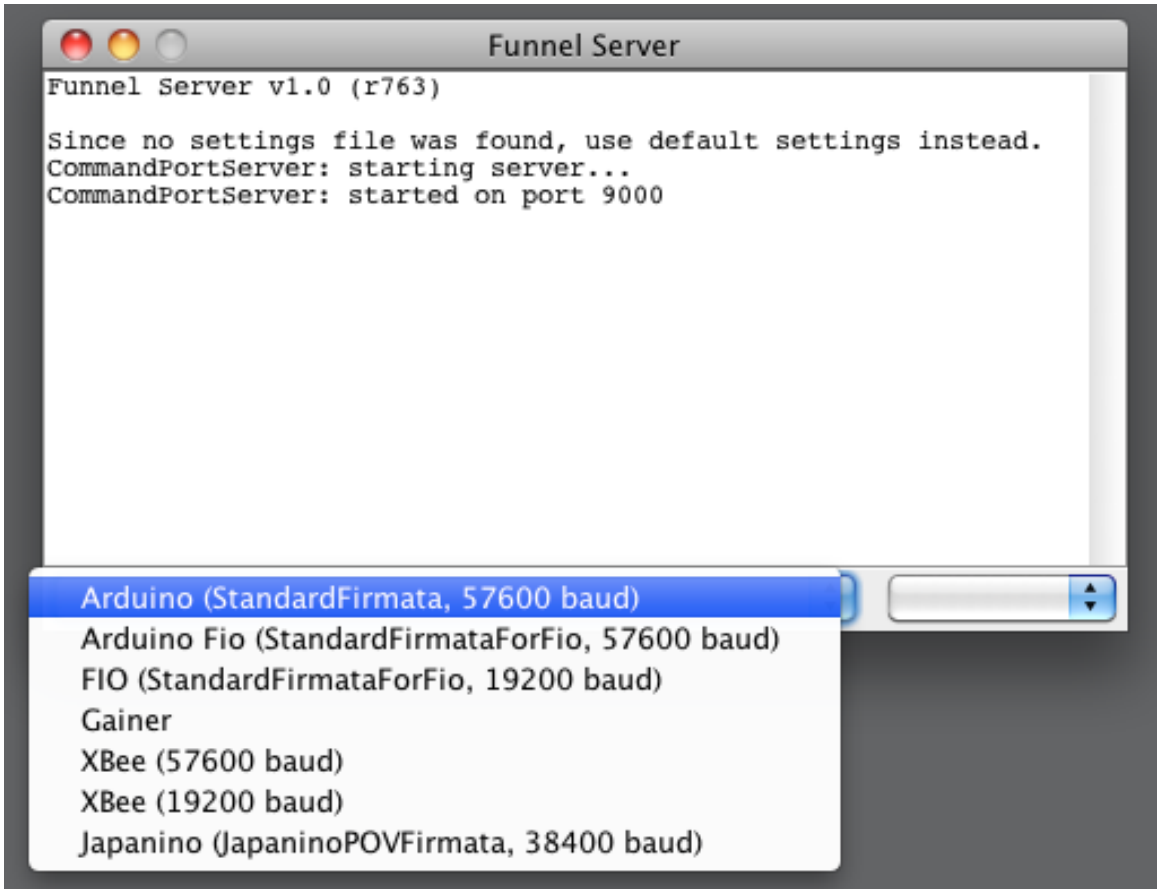
Step 4. Running Funnel Server

1. Connect your Arduino board to your computer.

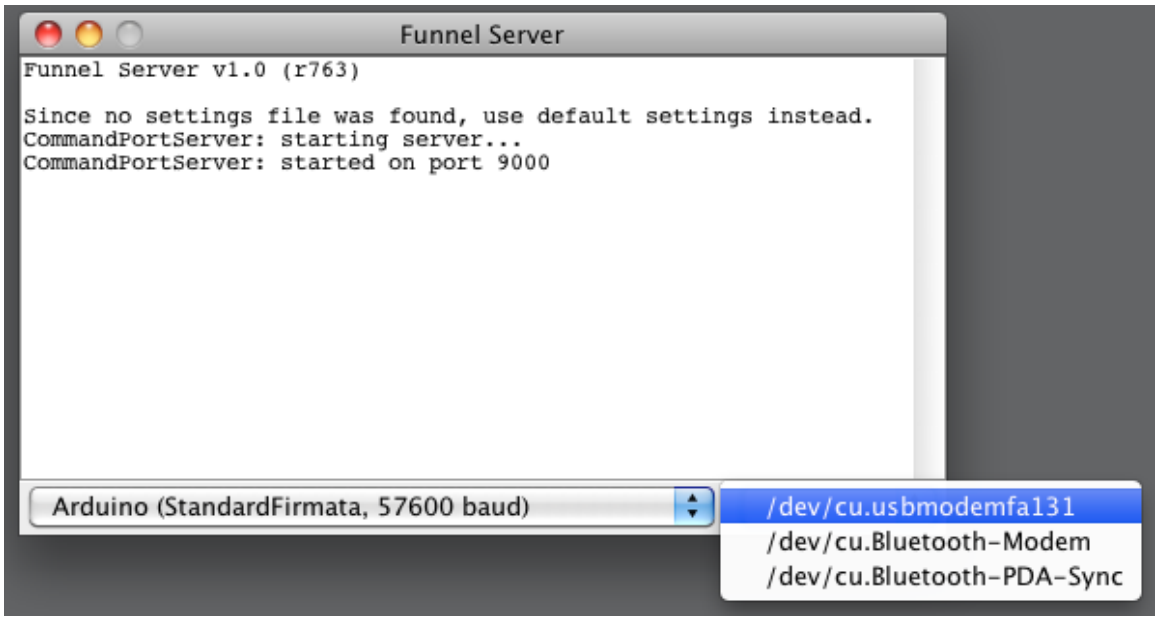
2. Launch the Funnel Server application



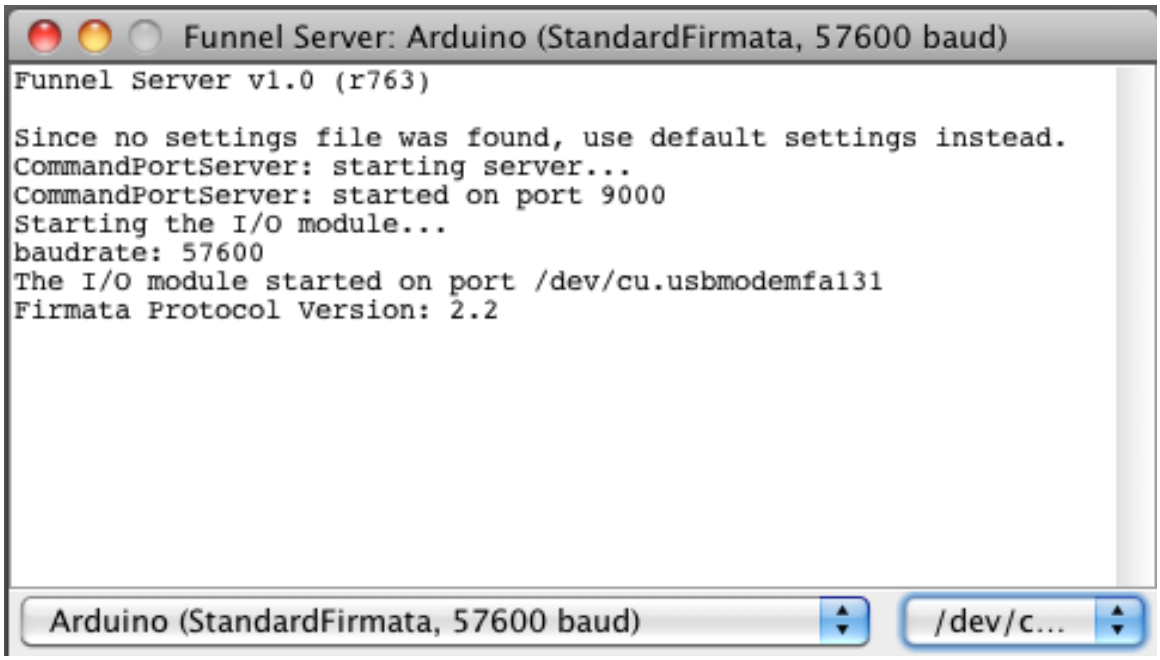
3. Select your Arduino board



4. Select the usb port



Upon selecting the usb port, there may be a couple seconds delay before you see any change in the screen. Once the connection is established, you should see similar output to this:



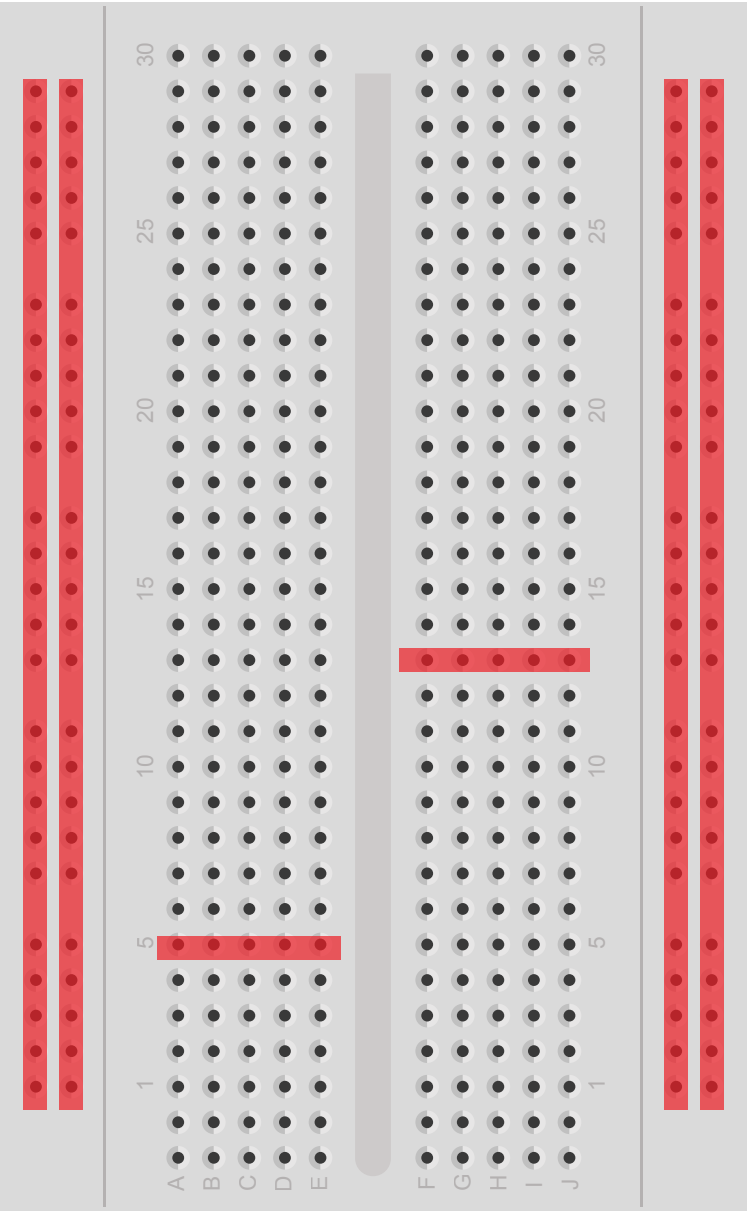
The thing you want to look for is:
"The I/O module started on port <name of usb port you selected from the dropdown> Firmata Protocol Version 2.2"
(for some of you it may say Version 2.1 if you didn't update to Arduino 0022 and upload StandardFirmata from Arduino 0022).

Step 5. Running an example file.

1. Build the Ditital I/O circuit illustrated in the sva2001_w10_exercises document (you can find this in the dropbox under 10_FunnelBasics – there is a keynote version as well as a pdf).

   Double check all of the connections is this is will likely be the source of any errors you encounter.

   One other thing to be aware of when using breadboards is the way the pin holes are connected. The following illustration shows the connections. Notice that the 5 hold wide sections are separated by the center of the board if you want to carry the signal across the center, you need to add a wire between the 2 sides.



2. Connect your Arduino board to your computer.

3. Launch Funnel Server (if you set up Funnel Server in Step 4, you should see the output described at the end of Step 4).

4. Open the Ex02_ButtonEvent.fla file. You'll find this file in the exercises folder. Be sure to get the correct version, there is a folder for cs3, cs4, and cs5 on the dropbox (10_FunnelBasics/exercises/).

5. Once the fla file is open, Run the swf: Control -> Test Movie -> Test, or use the key shortcut Command + Enter.

If there are no errors you should see a button on the screen and if you push the button on your breadboard, the virtual button on the screen should animate.

If you encounter errors saying that FunnelEvent or other Classes cannot be found, review Step 3 (Setting up Flash) to be sure the src older was selected.

If you do not get any error messages in the Flash output window but the on screen button is not animating when you press the physical button, then double check all of your connections on the breadboard. I also noticed in class that some of the buttons you were using that you purchased for Rob's pComp class were sticking so you may want to try another button if you are having issues with the circuit.

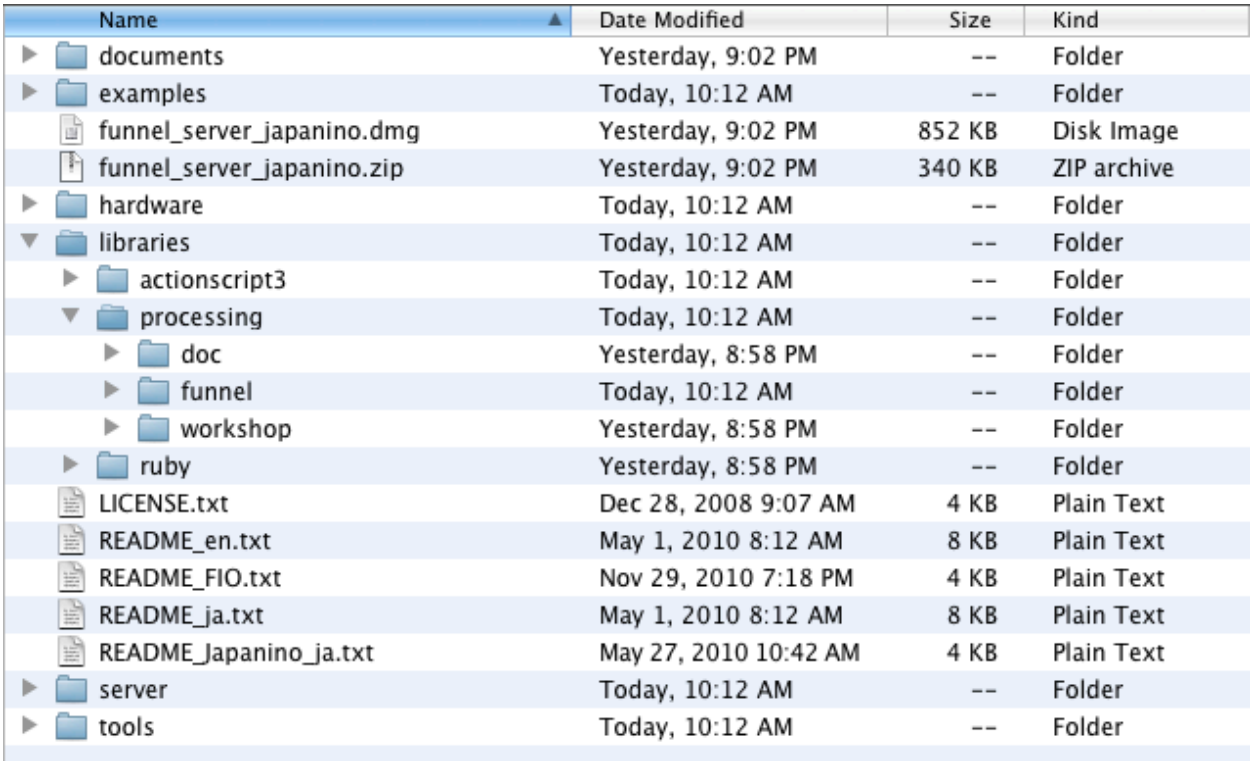
6. Read through the source code, there are comments to help you understand.

7. Save a new copy of the example and try to make something else happen on screen when the button is pressed. Try to use each of the button events (press, release, long press, sustained press).

   I'll also provide a separate document that explains each of the funnel classes in more detail.

Optional Step. Setting up Processing for funnel

1. Go to the funnel directory and expand the libraries folder and then expand the processing folder.



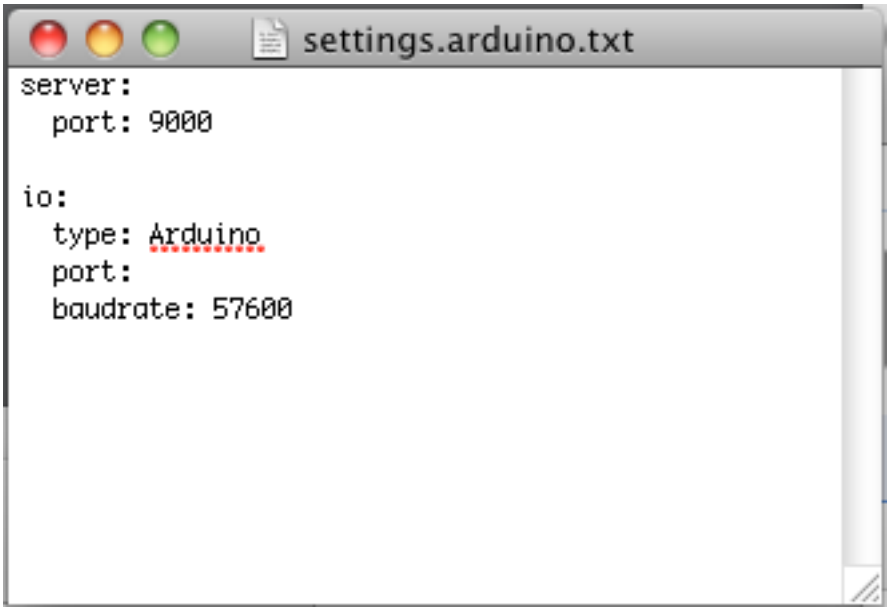
Name	Date Modified	Size	Kind
documents	Yesterday, 9:02 PM	--	Folder
examples	Today, 10:12 AM	--	Folder
funnel_server_japanino.dmg	Yesterday, 9:02 PM	852 KB	Disk Image
funnel_server_japanino.zip	Yesterday, 9:02 PM	340 KB	ZIP archive
hardware	Today, 10:12 AM	--	Folder
libraries	Today, 10:12 AM	--	Folder
actionscript3	Today, 10:12 AM	--	Folder
processing	Today, 10:12 AM	--	Folder
doc	Yesterday, 8:58 PM	--	Folder
funnel	Today, 10:12 AM	--	Folder
workshop	Yesterday, 8:58 PM	--	Folder
ruby	Yesterday, 8:58 PM	--	Folder
LICENSE.txt	Dec 28, 2008 9:07 AM	4 KB	Plain Text
README_en.txt	May 1, 2010 8:12 AM	8 KB	Plain Text
README_FIO.txt	Nov 29, 2010 7:18 PM	4 KB	Plain Text
README_ja.txt	May 1, 2010 8:12 AM	8 KB	Plain Text
README_Japanino_ja.txt	May 27, 2010 10:42 AM	4 KB	Plain Text
server	Today, 10:12 AM	--	Folder
tools	Today, 10:12 AM	--	Folder

2. Copy the funnel folder within the processing folder to /Documents/Processing/libraries/. If you do not already have a folder named "libraries" in /Documents/Processing/ you will need to create that folder. This is where you put all 3rd party processing libraries.

   Note: We will be focusing primarily on using funnel with Flash, but I'll take some time in the 3rd class to show you how it works with Processing. There are times when you would want to use Processing over Flash. For example if you want to create something with complex 3D graphics you'll get better with performance in Processing than Flash, or if want to use computer vision then Processing is the way to go. However the funnel library is not as extensive for Processing as it is for Actionscript 3.

   One of the issues with funnel in processing is that currently most of the documentation is only available in Japanese. I'll be creating a few examples with English documentation that I can distribute.

3. Funnel Server runs within Processing so you don't need to launch the Funnel Server application separately. However you do need to edit the settings.arduino.txt file located in /Documents/Processing/libraries/funnel/library/. Open the file, it should look like this:



4. You need to supply the usb address for the port: field in the io section. You can get this in 2 ways. The easiest way is to connect your Arduino board and open the Arduino application. Once Arduino opens, select the Tools menu, then Serial Ports. Write down the name of the serial port at the top of the list (it should not say anything about Bluetooth, if it does make sure your Arduino is connected and that you had previously installed the correct drivers). Enter the serial port information into the port: field (the one between type: Arduino and baudrate: 57600) of the settings.arduino.txt file and save the file.

   The other way to get the port info is to open your Terminal applications (you'll find this in Applications/Utilities (you can also search for it in Spotlight).

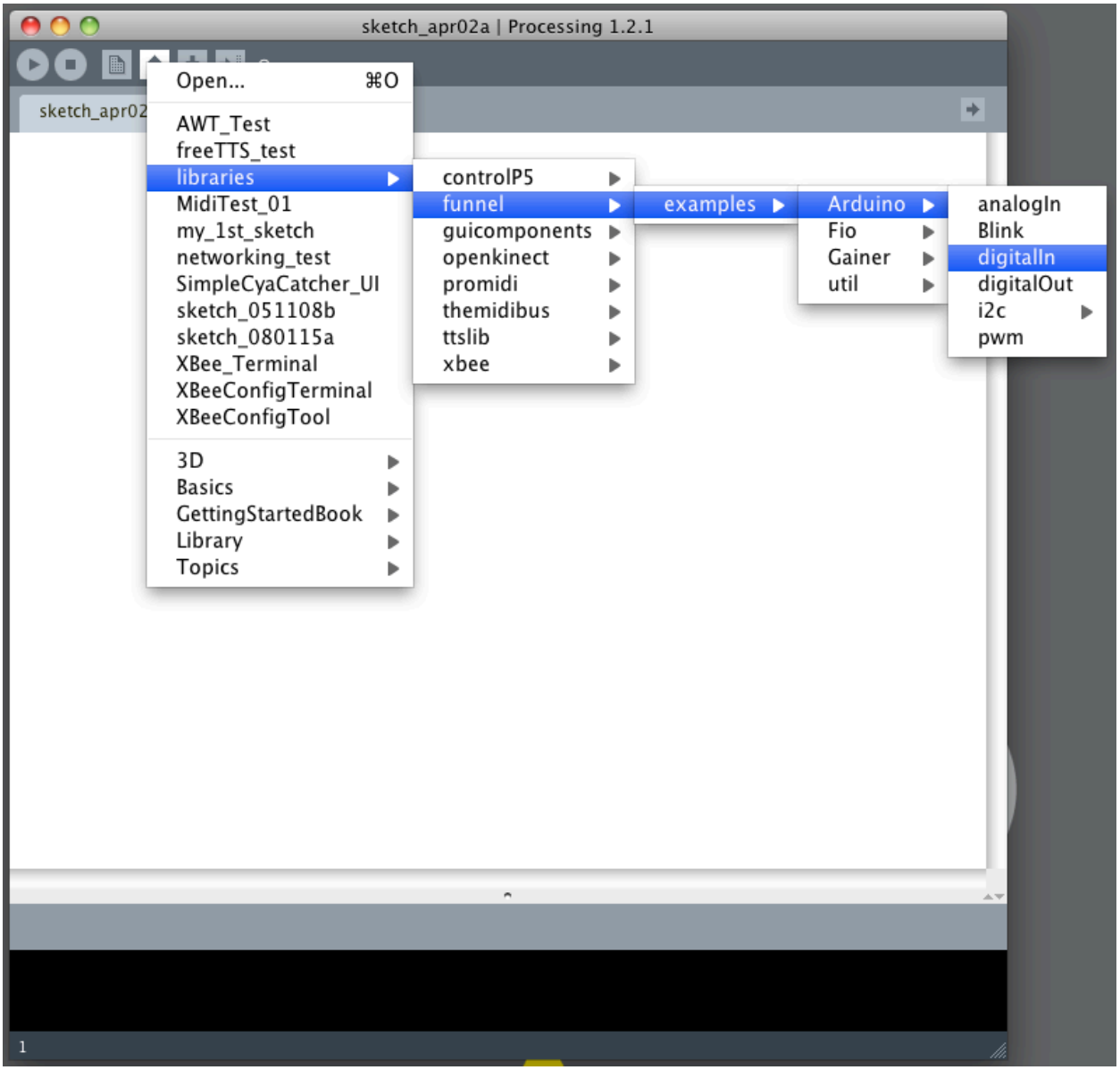
   When the Terminal app is open type the following: ls /dev/tty.*
   Then hit Enter.

   This will return a list, copy the one that corresponds to your Arduino (the one that does not include Bluetooth) and then paste it into the settings.arduino.txt file.

   As long as you always use the same Arduino board with Processing you should not have to edit the settings.arduino.txt file once you have the port field set. However if you use a different arduino board, you will have to update the txt file with the port infor corresponding to the new Arduino board.

5. Launch Processing

6. Open the example in libraries -> funnel -> examples -> Arduino -> digitalIn



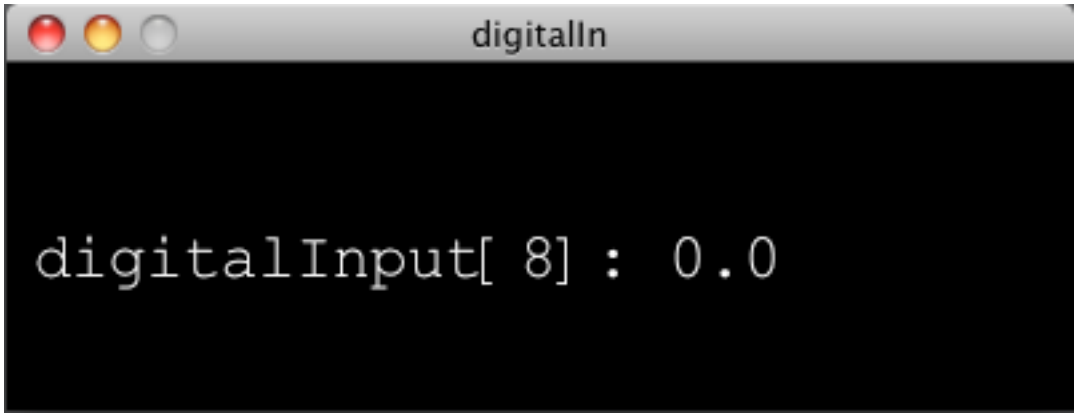
7. Attach a button to digital pin 8 on your Arduino board. You can use the Digital I/O illustration from the week 10 examples as a reference. You only need to connect the button however, not the LED and connect the button to pin 8 rather than pin 2.

8. Connect the Arduino board to your computer.

9. Press the 'play' button in Processing to run the sketch

   If you get a NullPointerException make sure you entered the correct port information in the settings.arduino.txt file.

   If the sketch runs successfully you'll see the following output. Pressing the button will change the value from 0.0 to 1.0.



10. Look over the code. You should be able to see similarities between the Processing code and the Actionscript code. The processing funnel library however does not have the convenient UI classes that are found in the Actionscript library.