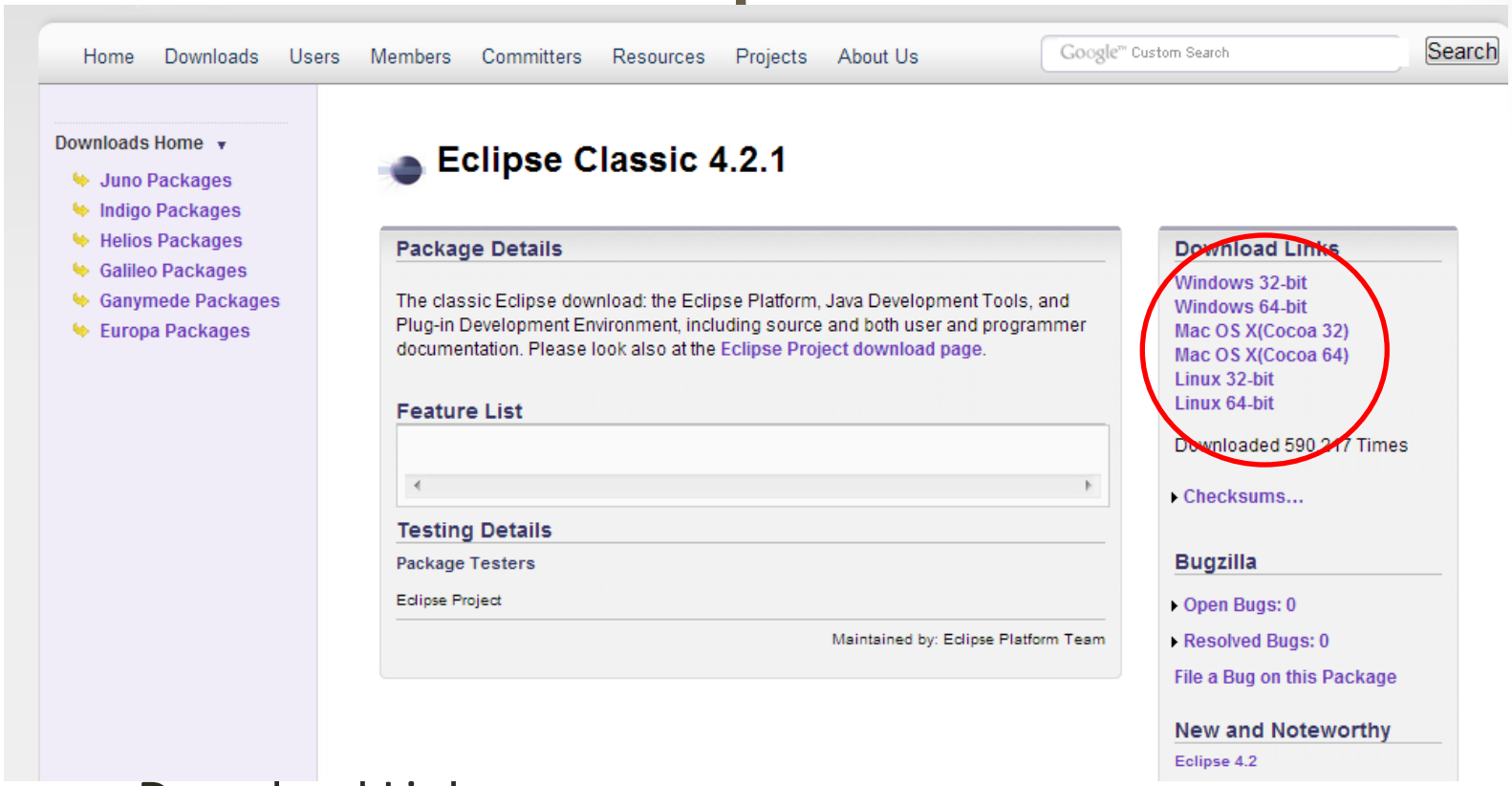
ASME Design Team

Getting Started

For Questions, email Greg at gihanson@wisc.edu

Download Eclipse



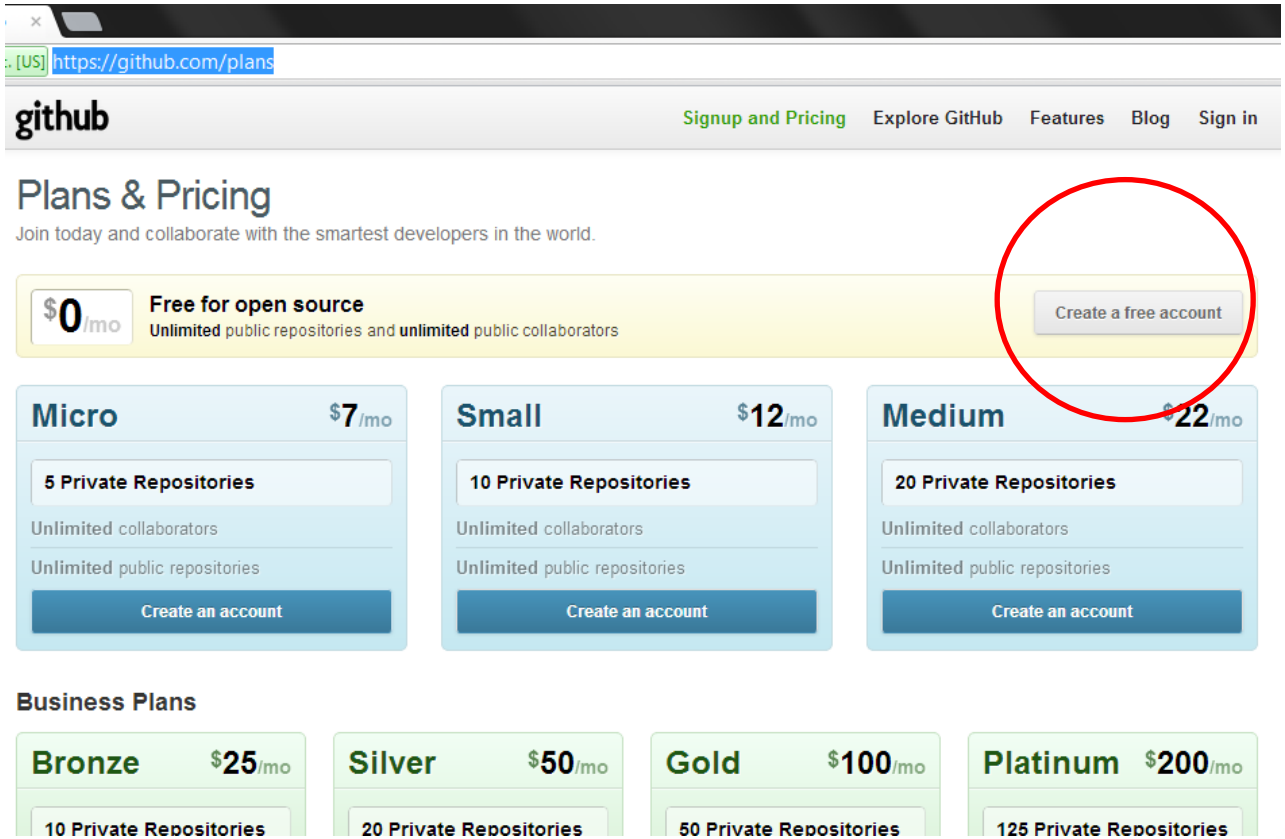
- Download Link: http://www.eclipse.org/downloads/packages/eclipse-classic-421/junosr1
- Click the download link that applies to your operating system

Git and GitHub

- Git is a revision control tool for code. https://github.com/ is a free site where your code is actually hosted.
- The general idea is that you can *pull* a copy of the code from github make changes, and then *push* those changes back to github.
- When you push a change a new revision is created. When you pull you get the latest revision, but at any point you can also access a specific revision – meaning it is very hard to lose code
- The following slides will help you set up Git

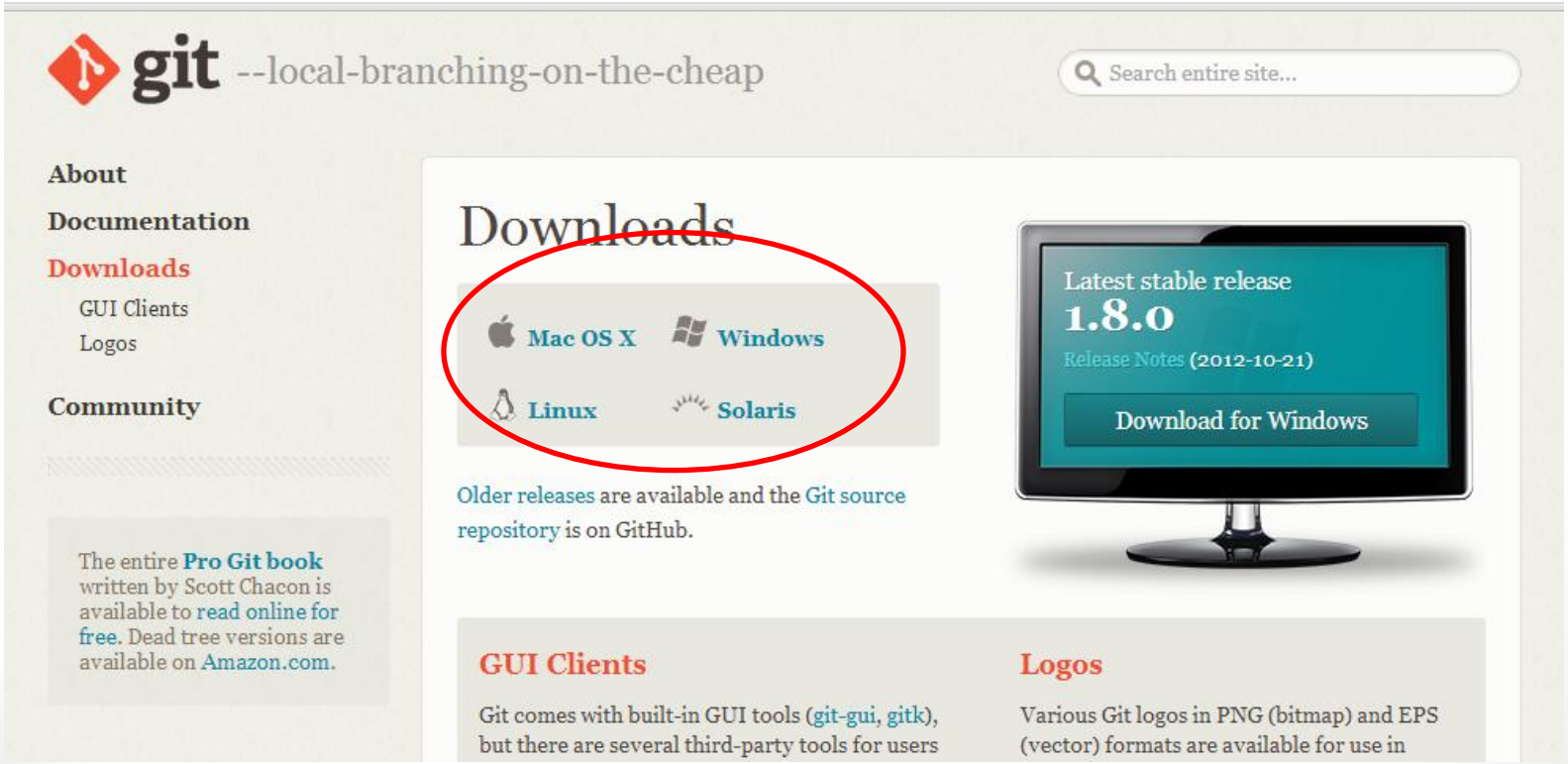
Sign-up with GitHub

- Set up a free account here: https://github.com/plans



Get Git

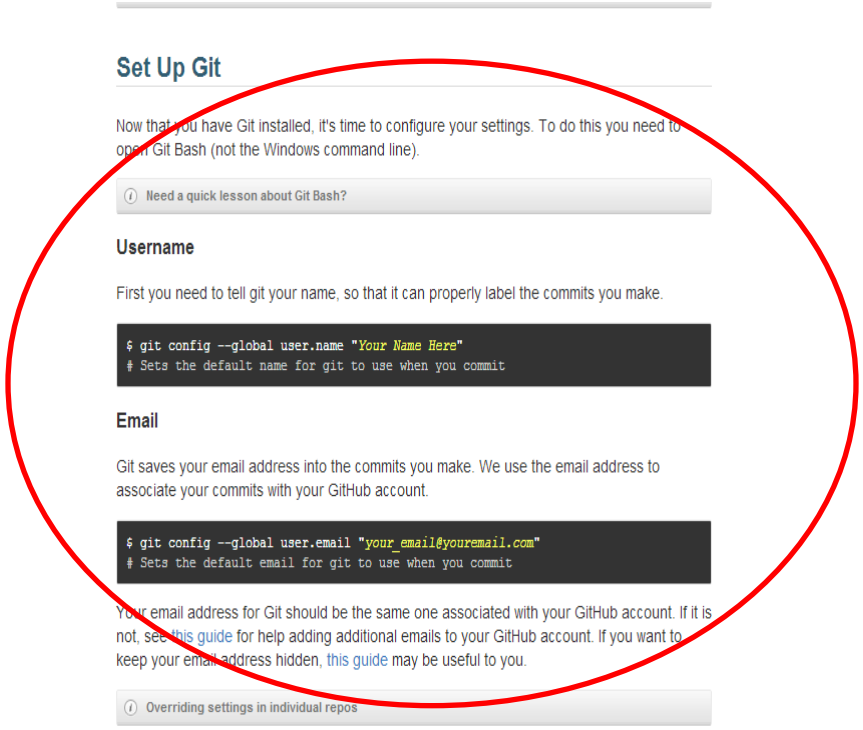
- Download Git here: http://git-scm.com/downloads
- Select The download link that corresponds to your operating system



Set Up Git: Part I

- Follow the instructions here https://help.github.com/articles/set-up-git beginning with "Set Up Git" portion
- Hint: Git Bash, 

, should have installed in the previous step and a shortcut icon placed on your desktop



Set Up Git

Now that you have Git installed, it's time to configure your settings. To do this you need to open Git Bash (not the Windows command line).

Need a quick lesson about Git Bash?

Username

First you need to tell git your name, so that it can properly label the commits you make.

```
$ git config --global user.name "Your Name Here"
# Sets the default name for git to use when you commit
```

Email

Git saves your email address into the commits you make. We use the email address to associate your commits with your GitHub account.

```
$ git config --global user.email "your_email@youremail.com"
# Sets the default email for git to use when you commit
```

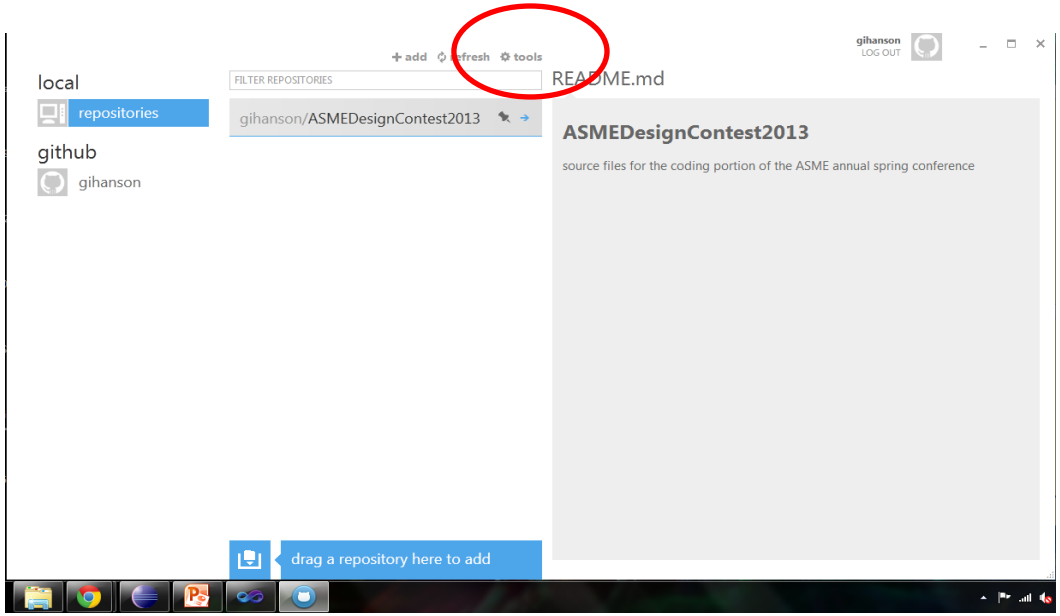
Your email address for Git should be the same one associated with your GitHub account. If it is not, see this guide for help adding additional emails to your GitHub account. If you want to keep your email address hidden, this guide may be useful to you.

Overriding settings in individual repos

Set Up Git: Part II

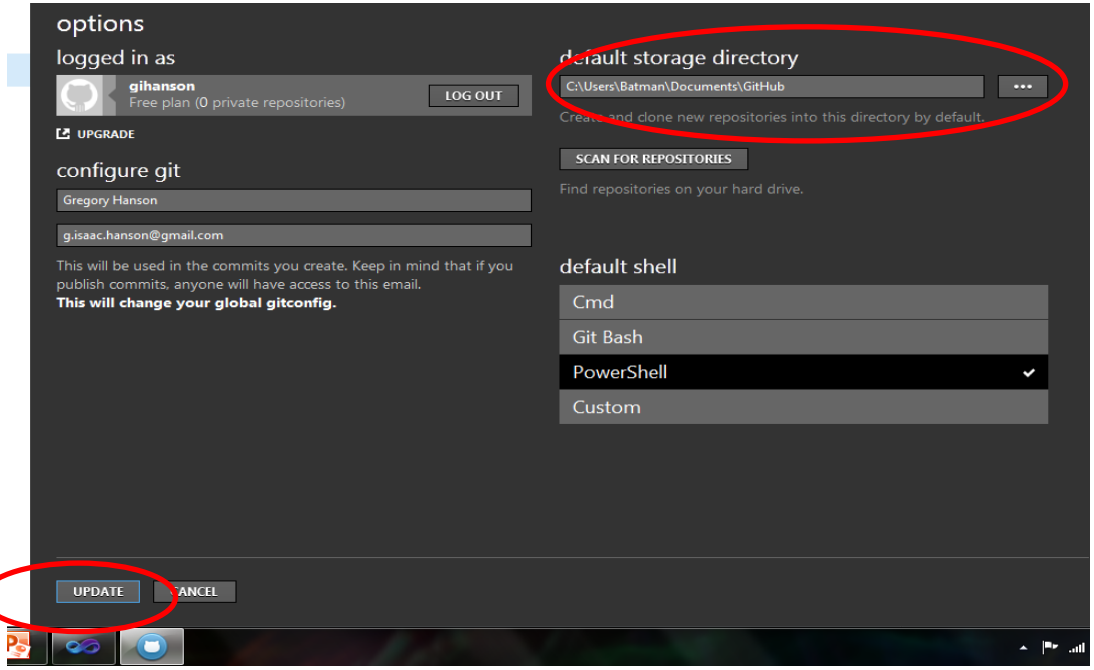
- Git has a very nice UI (User Interface) which was installed in one of the previous steps. There should be a shortcut on your desktop after installation 

- Open the shortcut and click on “tools” on the UI which appears and then click “options” from the drop down list



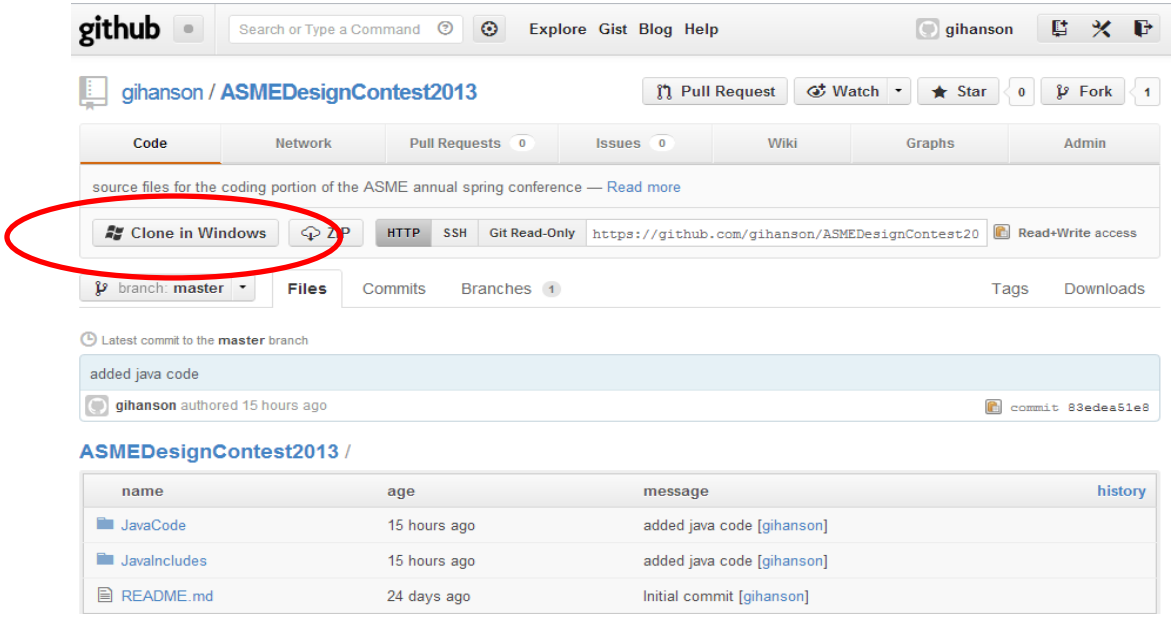
Set Up Git: Part III

- Note the location of the default storage directory – this is where any repos you clone will be placed
- If you decide to change the location, remember to click “update”!



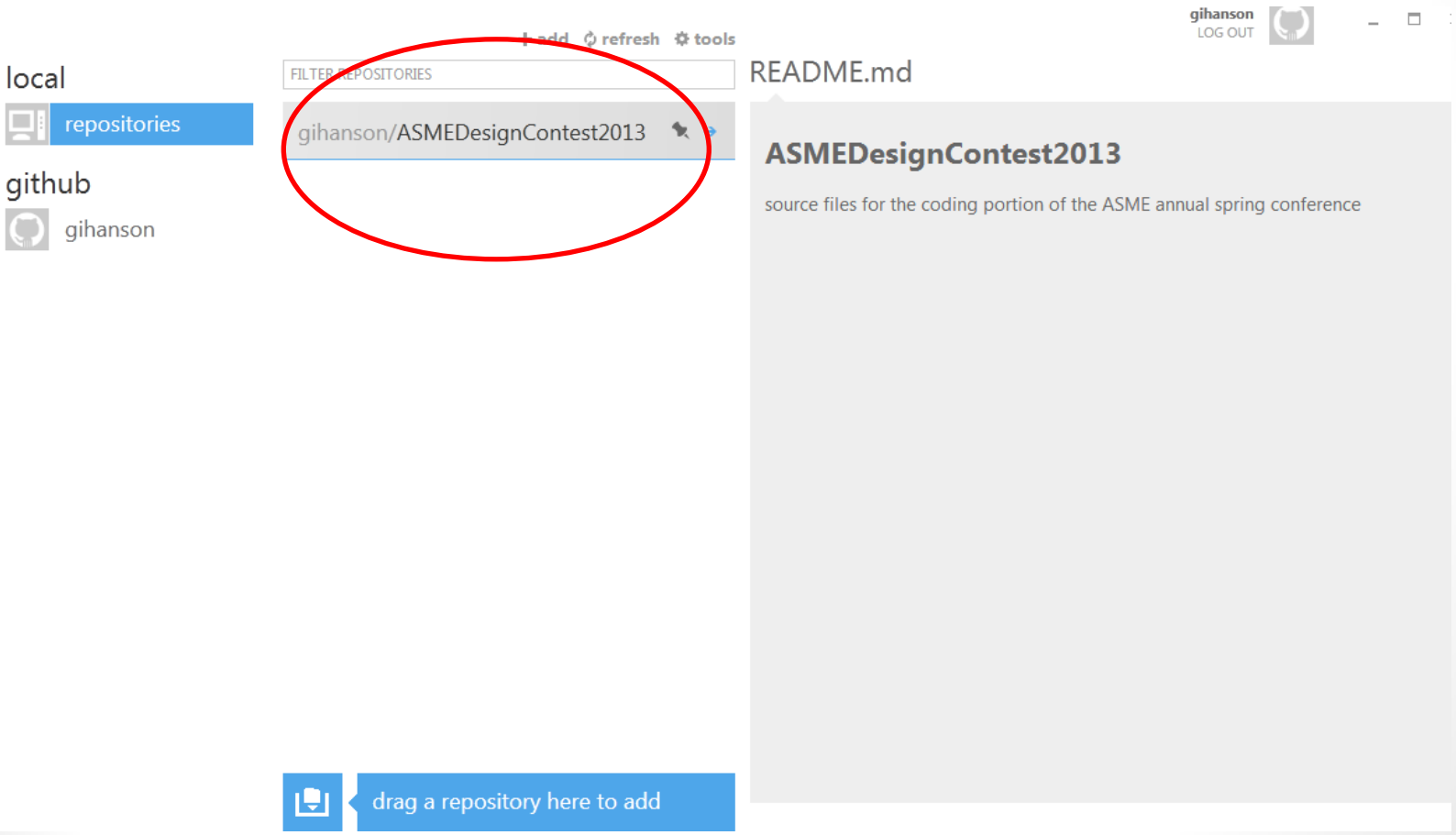
“Git” The Code

- I have uploaded some Java code to this *repo* (log in to your GitHub account before clicking link)*:* https://github.com/gihansonTest/ASMEDesignContest2013
- Select “Clone in Windows” (you may be prompted for administrator permission – click yes). This will open the UI from the slide Set Up Git: Part II and clone the repo



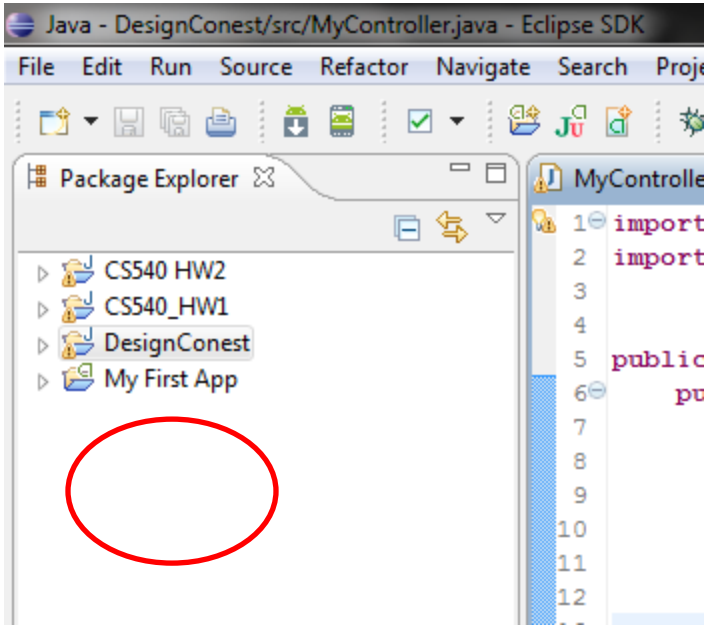
The Repo Has Been Cloned!

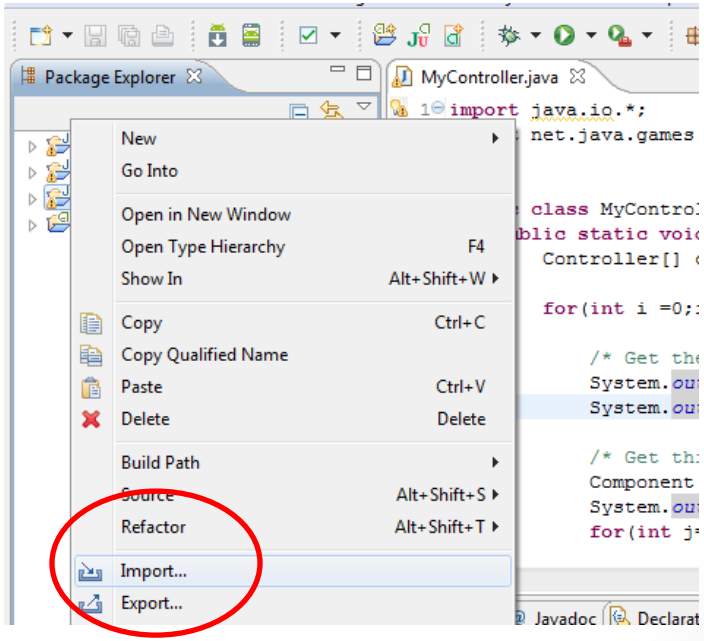
- Note that after a few second, now the UI should display the repo you cloned



Using the Code – Eclipse: Part I

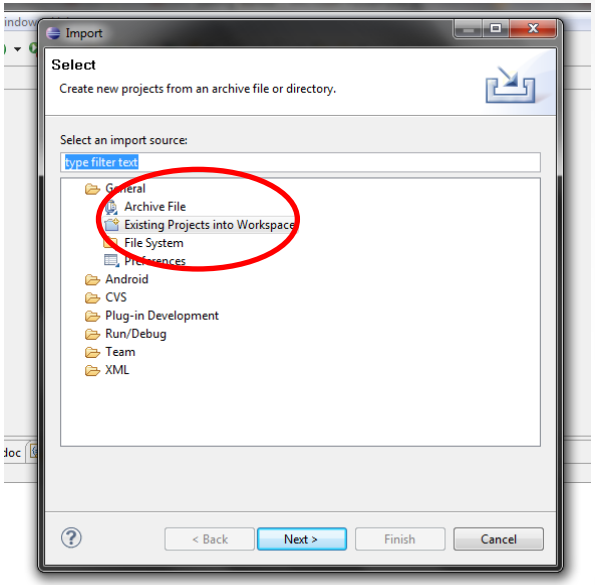
- Open Eclipse
- Right-Click in empty space in the Package Explorer, and select “Import”

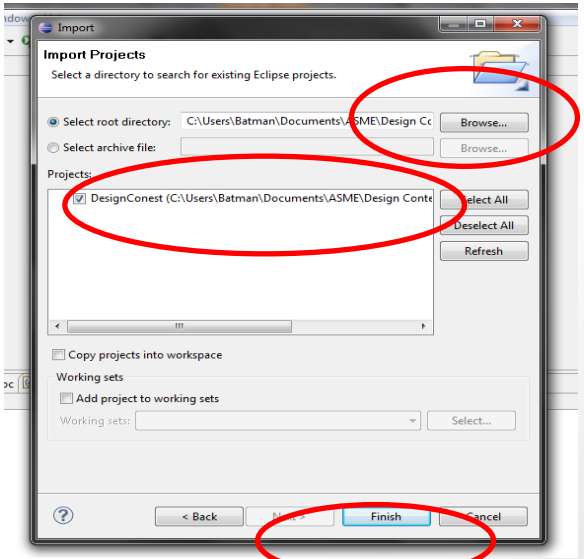




Using the Code – Eclipse: Part II

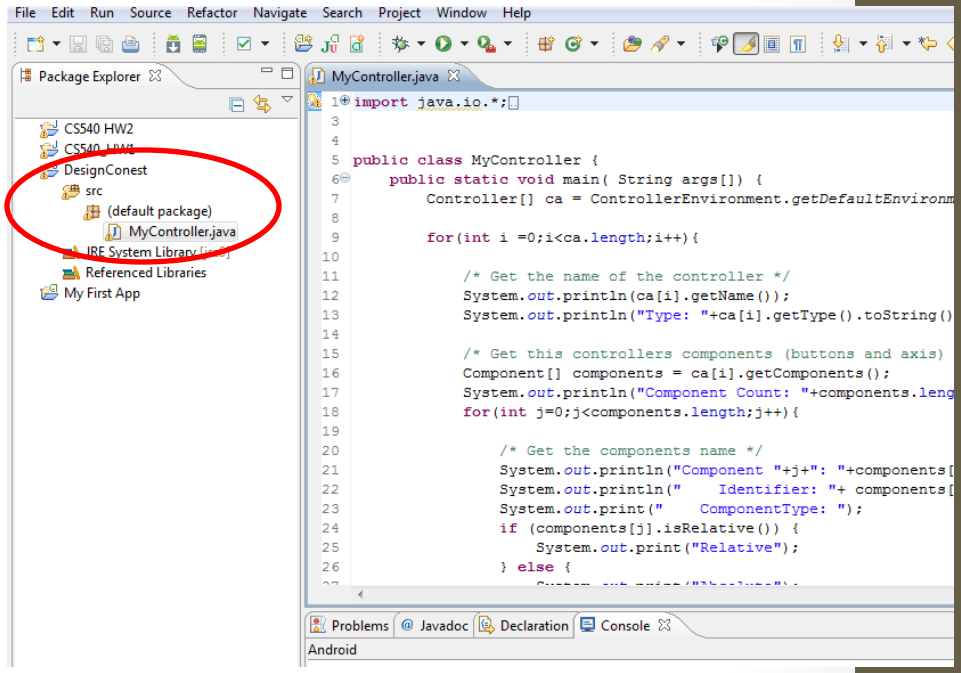
- In the pop-up, select “General->Existing Projects into Workspace”
- Browse to the location of the repo folder and browse to ASMEDesignContest2013\JavaCode\
- If the right folder is selected, DesignContest should appear in the Projects Box with a check box next to it
- Click “Finish” to add the project





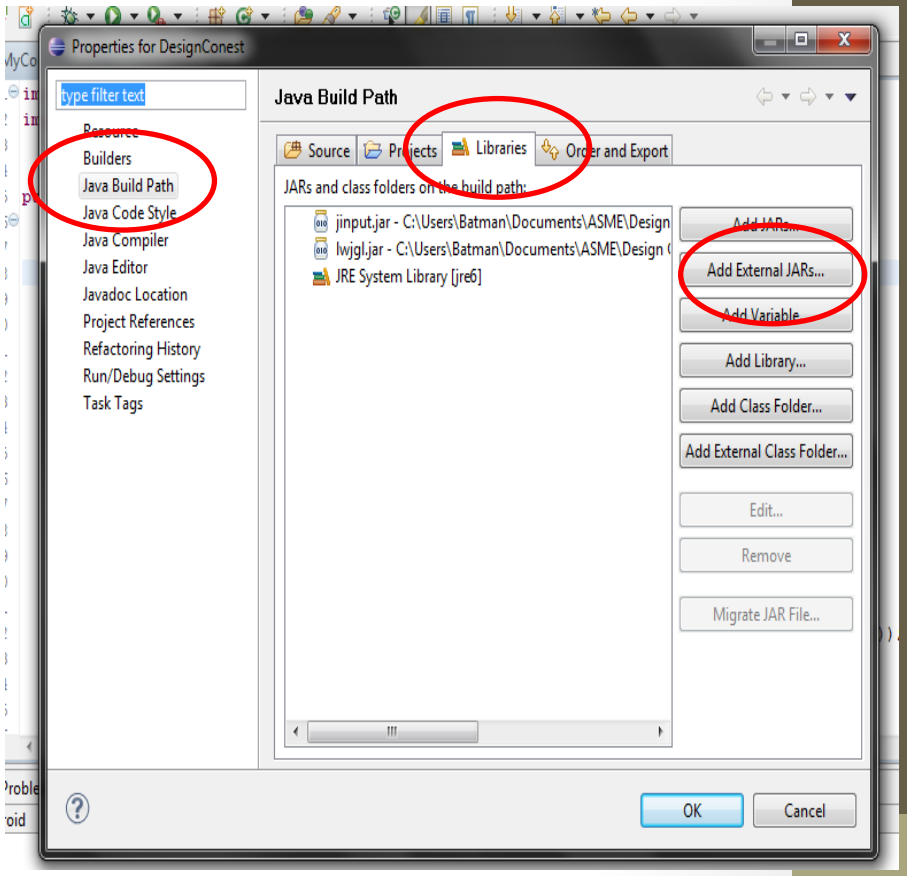
Using the Code – Eclipse: Part III

- The project should now appear in your package explorer
- Expand the folders until you get to DesignContest->src->default Package and then double-click MyController.java to open
- If there are any errors in MyController.java (i.e. things underlined in red) proceed the next slide Adding Libraries, else go to Running The Program



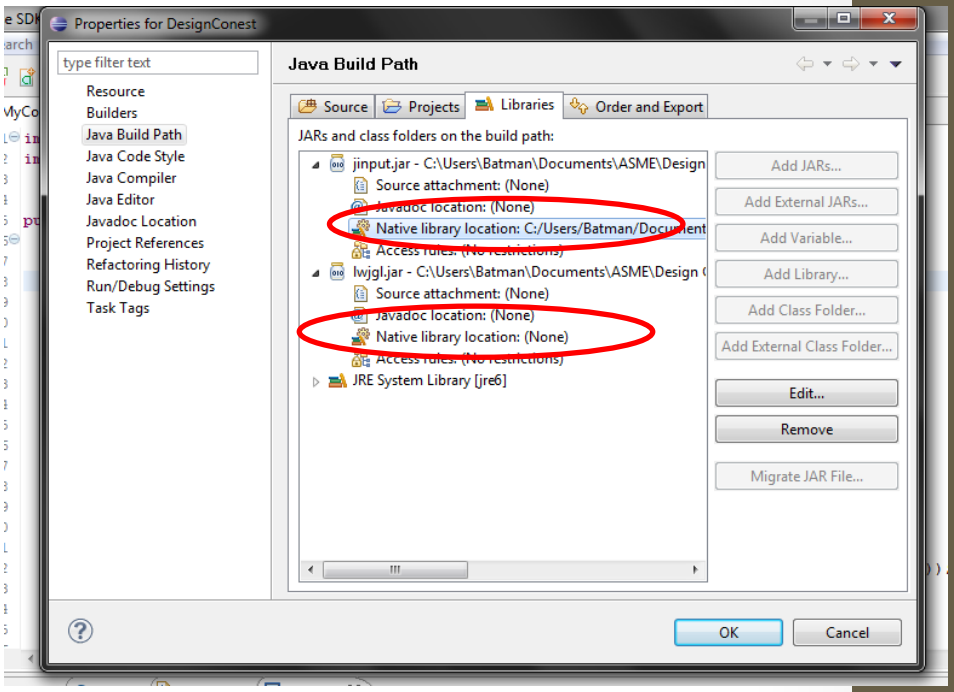
Adding Libraries: Part I

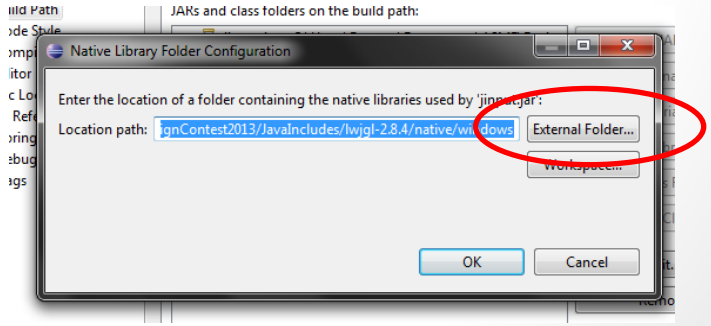
- Right-Click on DesignContest from the Package Explorer and select “Properties”
- From the pop-up, click on “Java Build Path” from the left menu
- Select “Libraries” tab
- If the jinput.jar and lwjgl.jar are already there, highlight them and then click “Remove”
- Click “Add External Jars”
- In the pop-up File Explorer, browse to your repo location and go to ASMEDesignContest2013\JavaIncludes\lwjgl-2.8.4\jar and highlight both “jinput.jar” and “lwjgl.jar”. Then click “Open”



Adding Libraries: Part II

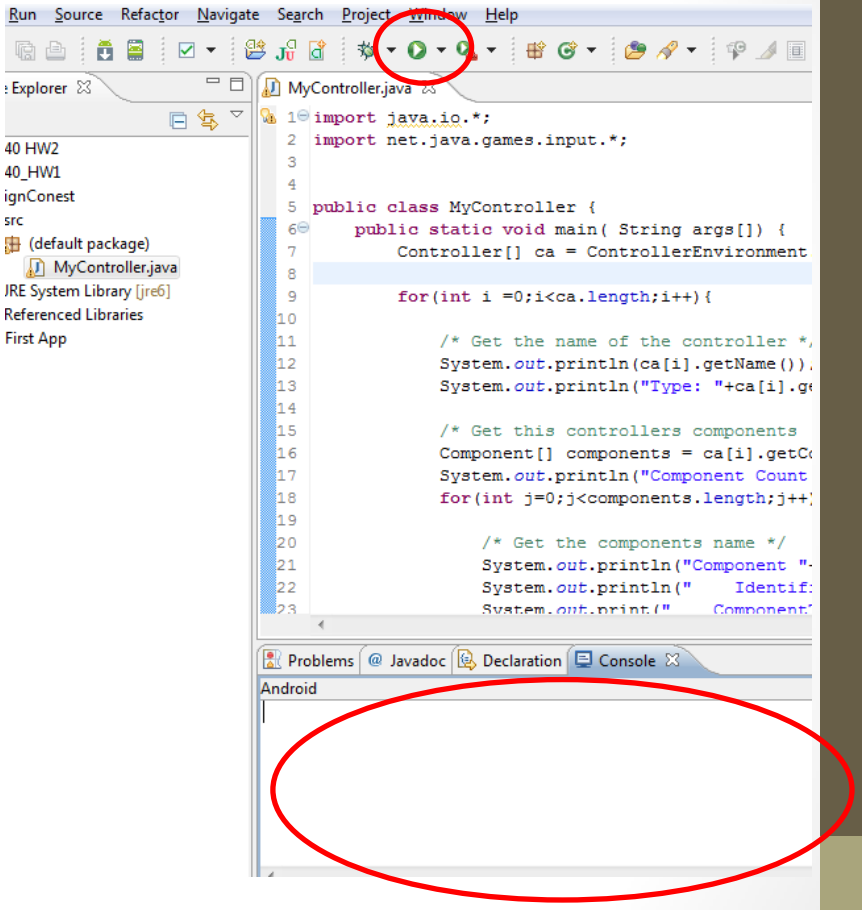
- Jinput.jar and lwjgl.jar should now appear under the Libraries tab.
- Expand the two jars – notice the Native Library Location is (None). Double-Click one to edit
- In the pop-up, select “External Folder…” and browse to your repo location and go to ASMEDesignContest2013/JavaIncl udes/lwjgl-2.8.4/native/{your operating system}. Click “Okay” and “Okay” again
- Repeat for second .jar file then click “Okay ” to exit Properties window
- Red lines should be removed from your program





Running The Program

- Click the drop-down arrow to the right of the green play/run button and select Run As->Java Application
- In the Console output box, the program will list off the various forms of input currently connected to your computer (i.e. mouse, keyboard) and the types of buttons/inputs associated with each
- The program is an infinite loop currently. To stop the program, click the red square found on the top right of the console output box



Going a Step Further

- If you own an XBOX 360 controller you may perform the following steps. If not, continue to the next slide.
- Plug a wired 360 controller into one of your computer's USB ports – your computer may automatically download the drivers for you. If not you can download the drivers here: http://www.microsoft.com/hardware/en-us/p/xbox-360-controller-for-windows#support
- You will know the drivers have successfully been installed when you plug in your controller and the light around the XBOX home button on the controller selects a player position
- Re-Run the java program. The Xbox controller should show up in the outputted list of input devices. Also, as you push buttons on the controller, it should print info out

Further Reading

- I don't have a tutorial yet for programming with the Arduino but in the mean time, you may download their programming environment here: http://www.arduino.cc/en/Main/software
- If you open the software, you can open up some example code to see some very basic Arduino programs by going to File->Example->Basics->Blink
  - Note you won't actually be able to run these examples unless you have an Arduino – they are just for you to get an idea of how to program an Arduino
- Also if you want to see how we will be controlling the motors, this site has a great explanation and some sample code: http://bildr.org/2012/04/tb6612fng-arduino/

Feeling Really Ambitious?

- Do you have a smartphone? After a comment someone made at the design meeting last week, I started looking into apps for converting your smartphone into a bluetooth webcam. You connect your pc to your phone via bluetooth and you can view the footage on your computer. I like the idea because it could remove the need for internet to communicate with the car and view the video feed. I tried SmartCam and DroidCam (both free apps from the app store). Both have something to install on your phone and pc. I wasn't too pleased with the delay times on my phone but if anyone is interested in trying one of these applications or another on their phone and gets good results you should let me know. I do not know if there is an iPhone app equivalent for this type of software since I have android.

REWARD! (of course I put it at the very end)

- Congratulations, either you have successfully read through the entire tutorial or skipped to the end (boo), either way here are some links to some simple HTML5/JavaScript games written by guys over at the UPL in the CS building

- https://mywebspace.wisc.edu/altekruse/web/mitchell.html
  - A/D: backwards/forwards, space: jump, left-mouse-click: fire laser
- https://mywebspace.wisc.edu/altekruse/web/gravity_simulator.html
  - Shoot the faces with mouse click
- https://mywebspace.wisc.edu/gihanson/web/CommanderKeen/Commander_Keen.html
  - This one's mine, instructions are on the screen