



Week 1 Discussion

Wednesday, 1/8/20



Reminders

PA 1 due Tuesday, January 14 11:59pm

Quiz 1 in discussion next Wednesday (January 15)

Today's agenda

Logistical note

Style guidelines

PA1 REVIEW

Environment Setup

Terminal + remote connection to ieng6 server

Shell commands that are good to know

Vim overview + commands

Java program compilation + execution

2d arrays

Structure of discussion

Mainly for reviewing PA details + relevant course concepts for PAs.

May have worksheet handouts certain weeks.

Slides will be posted online.

Read the writeup before discussion to get the most out of it.

Other logistical notes

Utilize Piazza efficiently. Search before posting.

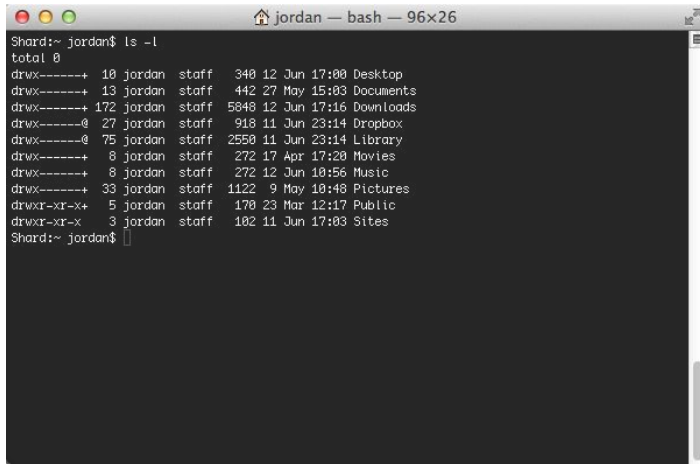
Autograder queue closed when on duty tutor finishes their scheduled hours. Does not guarantee that all tickets will be finished by the end of the tutoring hours.

PA1 will show all tests upon submission. This will **NOT** be the case for future assignments.

Style guidelines

1. File headers
2. Class headers
3. Method headers
4. Inline comments
5. Proper indenting
6. Proper variable name (no numbers & no single letter var except loop condition)
7. No magic numbers
8. Short methods
9. Short lines
10. Javadoc style comments

Terminal



```
Shard:~ jordan$ ls -l
total 0
drwx-----+ 10 jordan  staff   348 12 Jun 17:00 Desktop
drwx-----+ 13 jordan  staff   442 27 May 15:03 Documents
drwx-----+ 172 jordan  staff  5848 12 Jun 17:16 Downloads
drwx-----@ 27 jordan  staff   918 11 Jun 23:14 Dropbox
drwx-----@ 75 jordan  staff  2550 11 Jun 23:14 Library
drwx-----+ 8 jordan   staff   272 17 Apr 17:20 Movies
drwx-----+ 8 jordan   staff   272 12 Jun 18:56 Music
drwx-----+ 33 jordan  staff  1122  9 May 18:48 Pictures
drwxr-xr-x+  5 jordan  staff   178 23 Mar 12:17 Public
drwxr-xr-x   3 jordan  staff   102 11 Jun 17:03 Site
Shard:~ jordan$
```

An interface where you can interact with the computer using commands

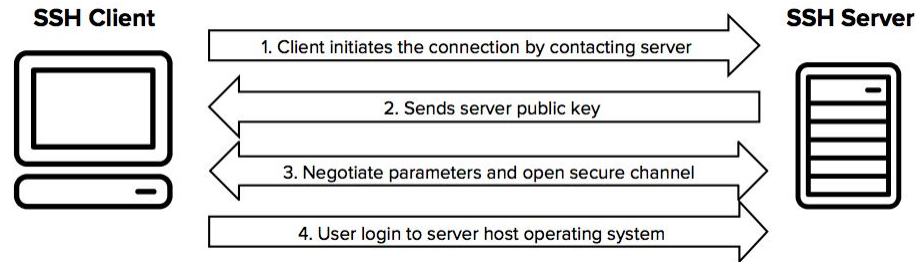
All computers (Windows, Macs, Linux) have a terminal

Differences in terminals across different operating systems

ieng6 server

ieng6 server is a computer system (with Linux operating system) at UCSD that contains resources for you to work on PSAs

Can access the server remotely through lab computers or personal computer



Connecting to ieng6 server

Through lab machine	Through Windows	Through Mac
<ol style="list-style-type: none">1. Open terminal2. Type in <code>ssh -X username@ieng6.ucsd.edu</code> <p>Highly recommended to use the lab machines for PSAs</p>	<ol style="list-style-type: none">1. Download + install MobaXterm2. Launch MobaXterm3. Create new SSH session4. Specify host as <code>ieng6.ucsd.edu</code> and username as your <code>ieng6</code> username5. Launch that SSH session	<ol style="list-style-type: none">1. Open terminal2. Download + install XQuartz3. Restart computer4. Launch XQuartz5. Type in <code>ssh -Y username@ieng6.ucsd.edu</code> <p>Only do steps 2-4 if you need to run a graphical program</p>

Terminal commands

ASSUMING YOU ARE USING LINUX OR MAC, DIFFERENT ON WINDOWS

Enter a directory: `cd directoryName`

Go back to its upper directory: `cd ..`

`.` is current directory and `~` is home directory

Create a directory: `mkdir directoryName`

Print out current directory: `pwd`

Terminal commands

- List files in the current directory
 - `ls`
 - `ls -a`
 - `ls -l`
- View a specific file
 - `cat fileName`
 - `more fileName`
- Create a file:
 - `touch fileName`

Vim overview



Vim is a text editor which you can use from the terminal.

For Mac and Linux, the system should already have Vim.

For Windows:

1. go to <http://www.vim.org> and download the vim version you want.
2. Make sure to check the box allowing vim to be used from command prompt
3. Open up your computer's environment variables
4. Add a new variable and enter vim's path as the value (ex: C:\Program Files (x86)\Vim\vim80)
5. Now you can use vim from your command prompt!

Vimrc file

The vimrc file provides configurations for Vim (very useful if you are going to spend tens of hours working on programming assignments).

Examples: auto completion, text highlighting, indentation, etc.

Where to find and save vimrc?

For Linux: /home/user/.vimrc (for a specific user)

 /etc/.vimrc (for all users)

For Windows: C:\Users_vimrc

Vimrc file

Highly recommended options:

- `set wildmenu`
- `set hidden`
- `set hlsearch`
- `set number`
- `set ruler`
- `set modeline`
- `set backspace=eol,start,indent`
- `set showcmd`

Turn on wild menu

Don't unload buffer

Highlight search results

Line numbers

Always show current position

Show what I'm doing

Allow backspaces

Shows what command you are typing

Vim commands + navigation

There are three modes of Vim: **command mode**, **insert mode**, and **last line mode**.

- **Command mode:** Press `esc` from other mode to enter command mode. The mode you start in when you open Vim. Here, you can issue commands to Vim.
- **Insert mode:** Press `i` from command mode to enter insert mode. Here, we can type and write code. Press `escape` to go back to command mode.
- **Last line mode:** Press `:` from command mode to get here. Allows us to perform operations (quit, save, search, etc.) You can press `escape` twice to go back to command mode.

Vim commands + navigation

Exiting Vim:

- `:q` Quit Vim. This fails when changes have been made
- `:q!` Quit without writing.
- `:cq` Quit always, without writing.
- `:wq` Write the current file and exit.
- `:wq!` Write the current file and exit always.

Vim commands + navigation

Inserting text:

- `a` Append text after the cursor.
- `A` Append text at the end of the line.
- `i` Insert text before the cursor.
- `I` Insert text before the first non-blank in the line.
- `o` Begin a new line below the cursor and insert text.
- `O` Begin a new line above the cursor and insert text.

Vim commands + navigation

Deleting text:

- `` delete characters under and after the cursor.
- `x` delete characters before the cursor.
- `dd` delete the whole line.

Vim commands + navigation

Other common used shortcuts:

- u Undo change
- U Undo all latest changes
- Ctrl + r redo last undo
- k Up
- h Left
- l Right
- j Down
- ^ To the first non-blank character of the line.
- \$ To the end of the line.
- /pattern Search words

Java program compilation

2-stage process to run Java program: compilation --> execution

Compile Java code using **javac**

To compile one Java file:

- `javac filenameOne.java`

To compile multiple Java files:

- `javac filenameOne.java filenameTwo.java`

Java program compilation

Compilation creates `.class` or `.jar` files

Execute Java code using `java`

To execute Java file with entry point (contains main method):

- `java filenameOne`

Note: Check your java version if you are not using lab machines.

- `java -version`

Java 2d arrays

	Column 0	Column 1	Column 2
Row 0	<code>x[0][0]</code>	<code>x[0][1]</code>	<code>x[0][2]</code>
Row 1	<code>x[1][0]</code>	<code>x[1][1]</code>	<code>x[1][2]</code>
Row 2	<code>x[2][0]</code>	<code>x[2][1]</code>	<code>x[2][2]</code>

Demo