CS 246 Spring 2016 - Tutorial 0

September 10, 2016

1 Summary

- General Administration Stuff
- CS Undergradate Environment
- Configuring your system for the course
- Basic Commands
- .profile

2 General Administration Stuff

- Course E-mail: `cs246@uwaterloo.ca`
- Use `Piazza` for most questions
  - Questions containing potential solutions should be private or asked in office hours
  - If your question is made private by an instructor - keep it that way
- E-mail the course account or post on Piazza about topics you would like to see in upcoming tutorials
- This course uses `git` (a version control system) is the mechanism that this course will use to distribute assignments, lecture examples, tutorial material, and other related files.

3 Configuring your system for using the Undergraduate Environment

3.1 Linux

- Most Linux distributions come installed with typical applications that you will need (e.g. vim, ssh, scp)
- To log in to the Undergrad Envrionment:
  - Open a terminal
  - Execute the command `ssh userid@linux.student.cs.uwaterloo.ca`
  - Enter your CS environment password when prompted (you won't see the characters)
  - Done.
- Note: You may need to separately install git if you want to checkout a local version of the repository.

3.2 Mac

- Every Mac has a Terminal application which runs a text interface for Unix. You can just follow the same steps as for Linux.
- Note that most modern Mac's come pre-installed with a version of bash that is *mostly* compatible with the CS environment but not entirely. Use it at your own risk.
- You will need to install XQuartz for later assignments which can be downloaded here:
  http://xquartz.macosforge.org/landing
- Note: You may need to separately install git if you want to checkout a local version of the repository.

3.3 Windows

- You only need to use one of the following options
- Putty (Recommended)
  - An ssh client which can be downloaded for free here: http://www.chiark.greenend.org.uk/ sgtatham/putty/download.html
  - Use the host name `userid@linux.student.cs.uwaterloo.ca`. It is ideal to save this session so it does not have to be typed in each time.
  - If using Putty, you will likely want to install programs on your local machine: Xming and WinSCP. Xming (http://sourceforge.net/projects/xming) will be used later in the course for some assignments. WinSCP (http://winscp.net/eng/index.php) is used to copy files (like assignments) from your Linux account to your local machine.
  - Putty requires an Internet connection to work
- Cygwin
  - A Unix-like environment and command-line interface for Windows
  - Downloaded for free here:
    https://cygwin.com/index.html
  - When installing Cygwin, you will need to be sure to install a number of packages including: x11, vim, g++, gdb, make, git, and ssh.
  - Once installed, you do not need Internet access to do your work
- Other solutions
  - Use a virtual machine
  - Dual-boot Windows and Linux
  - Use one of the labs on campus
- Which should I choose?

4 Basic Commands

- Shell commands versus System Commands
  - Shell commands are executed by the shell
  - System commans are called by the shell (versus executed by the shell)
- Some basic commands that you may need for A0:
  - `cd`: Change directories. Followed by a path. ex: `cd cs246/1151`
  - `pwd`: Displays absolute path to your present working directory.
  - `exit`: terminates the shell
  - `echo`: write arguments, separated by spaces and terminated with a newline
  - `cat`: prints the contents of files
  - `ls`: Lists contents of the current working directory.
    - The `-l` option will cause `ls` to print a detailed list of the contents of the current working directory.
    - The `-a` option will cause `ls` to print hidden ("dot files") and non-hidden files
    - Hidden Files are denoted with a dot at the start of the filename and are typically configuration files

5 .profile

- When you log into the CS environment there are a number of files that get executed. One of these files is `.profile`, which configures your ssh session to behave how you like it (e.g., what your prompt looks like) and executes any additional code that you add to it.
- For your own convenience you should modify your `.profile` to execute the command `source /u/cs246/setup` every time you log in.
- To modify your .profile, do the following:
  - ssh into the CS environment
  - Execute `vim .profile`
  - Add the command `source /u/cs246/setup` to the bottom of the file
  - Save the file
- Note that your `.profile` may be empty, this is fine. There are several other configuration files that will have other details in them (i.e., `.bashrc`)

6 Text Editors

- For this course, you will need to use some kind of text editor that is not Microsoft Word or Notepad
  - Word is not usable since it is more complicated than just text, we want just text.
  - Notepad is just text but is not particularly useful due to limited functionality (and saves files in a Windows format)
- For this course, you should familiarize yourself with either `vim` or `emacs`. Both have a great deal of functionality – choice of editor will likely be preference.
- In this course, most of the staff will likely use `vim` but that's not to say other text editors are not useful or viable.

7 Tip of the Week

- Press on the up arrow to see previous commands
- The command `clear` will clear the terminal
- When typing in a command or file name, you can press tab to autocomplete the word if the remainder of the word is not ambiguous. Otherwise, it will fill in part of the word and pressing tab again will show the options for what word it could be.