# CS 246 Spring 2018 — Tutorial 0

**May 2, 2018**

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# 1 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). `git` is the mechanism that this course will use to distribute assignments, lecture examples, tutorial material, and other related files.
  - Details on `git` are presented in A0.

# 2 CS Undergraduate Environment

- To log into the CS Undergrad Environment, you need to set up a password that is separate from your WatIAM/Quest password
  - Go to `https://www.student.cs.uwaterloo.ca/password/` to set up your password
- The Undergrad Environment requires the Internet to access (and can sometimes be a little slow) but it has several benefits:
  - Regular backups of your files (`.snapshot`)
  - Required software is pre-installed
  - Compatibility with our testing framework (Marmoset)

# 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.

## 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 Macs 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[1] for later assignments.

## 3.3 Windows

- You should use Putty[2] or other ssh clients to connect to the student environemnt. Note that in this case you do not have a local terminal.
  - 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 Xming on your local machine: Xming. Xming [3] will be used later in the course for some assignments.
- If you have Windows 10, there is bash on Ubuntu on Windows[4] that can be used to ssh and connect to the student environment

## 3.4 Transfering Files

- You may want to transfer some files from the student environment to your local machine and vice versa (e.g. saving a copy of a pdf file in your local machine).
- If you have access to a local terminal (e.g. using Linux or Mac), open a terminal and enter the following command in **your local machine**:

  `scp <source-path> <destination-path>`

[1] `http://xquartz.macosforge.org/landing`
[2] `http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html`
[3] `http://sourceforge.net/projects/xming`
[4] `https://docs.microsoft.com/en-us/windows/wsl/install-win10`

- To specify a remote path (i.e. a path in student environment), use the following format:

  `userid@linux.student.cs.uwaterloo.ca:<path-in-remote-environment>`

- See `man` page of the `scp` command for more information.

- If you decide to just use a ssh client (e.g. using Windows), you should use WinSCP[5] to transfer files between the CS undergraduate environment and your local machine.

# 4 Basic Commands

See `linuxCommands.pdf` file from the `1185` repository.

# 5 `.bash_profile`

- When you log into the CS environment there are a number of files that get executed. One of these files is `.bash_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.

- To modify your .bash_profile, do the following:

  - ssh into the CS undergraduate environment
  - Execute `vim .bash_profile`
  - Add the desired commands (e.g. the ones presented in A0) the bottom of the file
  - Save the file

- Note that your `.bash_profile` may be empty, this is fine. There are several other configuration files that will have other details in them (i.e., `.bashrc`)

- Moreover, changes made to `.bash_profile` will only take effect on the next login

# 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 that is not compatible with the Linux format).

- For this course, you should familiarize yourself with either `vim` or `emacs`. Both have a great deal of functionality – the choice of editor will likely be a matter of preference.

# 7 Tips of the Week

- Press on the up arrow to see previous commands.

- Press Ctrl-L or enter the command `clear` will clear the terminal.

[5] `https://winscp.net`

- When typing in a command or file name, you can press the `tab key` 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.
- **Every directory under the student environment has a hidden subdirectory called `.snapshot` where the hourly, daily and weekly backups are stored. To recover a deleted file, simply find the file within `.snapshot`, and `cp` it out. For details, see** `https://cs.uwaterloo.ca/cscf/howto/snap`