Unix Boot Camp

(fun fact the plural of Unix is Unices)
(really)

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Connecting

SSH

Windows users: PuTTY
  (http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html)
Mac/Linux users: Use 'ssh' command at terminal
ssh your_id@dxcapp04.psc.edu

Files

Windows: WinSCP (simple) or Tectia (more complicated)
Mac/Linux: FileZilla, or 'scp' command at terminal:
scp –r your_id@dxcapp04.psc.edu:~myfolder /some/local/folder
scp myfile.c your_id@dxcapp04.psc.edu:~myfolder

Editing with `emacs`

- Open: `emacs [<file>]`
  - without a file name, you get an info page
- Type to edit
- Save: `Control+x` followed by `Control+s`
- Undo: `Control+x` followed by `u`
- Exit: `Control+x` followed by `Control+c`
  - if you forget to save, it'll ask you
- Let's edit our .bashrc files to set up Python!

Copying the corpus

- Make a directory for the corpus files to go in
  - `mkdir <dirname>`
- Copy the files from the shared directory
  - `cp ~naraehan/authorship/* ./<dirname>`
  - `*` is a wildcard: lets us grab everything

Running Python scripts:
- (Python 2) `python2 myscript.py [<args>]`
- (Python 3) `python myscript.py [<args>]`

Some Nice Terminal Shortcuts

- Pressing *tab* will **autocomplete** file and folder names!
- `Control+c` will **stop** execution of your current program!
  - To exit IDLE: *exit()*
- `Control+r` will let you **search** your command history!
- `Control+l` will **clear** your screen!
- Use the **up** and **down** arrow keys to **scroll through your command history**!

```
>>>
KeyboardInterrupt
>>>
KeyboardInterrupt
>>> exit()
(reverse-i-search)`p': python
```

Linux file pathing

- ~ is your **HOME DIRECTORY**
    - This is where you start from after you SSH in
    - On bash, you can also use $HOME
- . is an alias for your **PRESENT WORKING DIRECTORY**!
- .. is the file path for the **PARENT DIRECTORY** of your present working directory!
- / is the file path for the **TOP-LEVEL DIRECTORY**
    - You probably won't use this too much on PSC

ls <dir> - LiSt

- Lists the files in the present working directory, or, if specified, `dir`.
- `pwd` tells you your Present Working Directory.

```
[rma42@dxcapp04 ~]$ ls
authorship   #hmm_tagger.py#   hmm_tagger.py~          nltk_data
#.bashrc#    hmm_tagger.py     hmm_tagger_Python3.py
[rma42@dxcapp04 ~]$ pwd
/home/rma42
[rma42@dxcapp04 ~]$ ls nltk_data
corpora
[rma42@dxcapp04 ~]$ ls nltk_data/corpora
abc   abc.zip
[rma42@dxcapp04 ~]$ 
```

cd <directory> - Change Directory

- Changes your present working directory to `directory`
- Your main tool for navigating a Unix file system

```
[rma42@dxcapp04 ~]$ pwd
/home/rma42
[rma42@dxcapp04 ~]$ ls
authorship   #hmm_tagger.py#   hmm_tagger.py~          nltk_data
#.bashrc#    hmm_tagger.py     hmm_tagger_Python3.py
[rma42@dxcapp04 ~]$ cd nltk_data
[rma42@dxcapp04 nltk_data]$ pwd
/home/rma42/nltk_data
[rma42@dxcapp04 nltk_data]$ cd ../authorship
[rma42@dxcapp04 authorship]$ pwd
/home/rma42/authorship
[rma42@dxcapp04 authorship]$
```
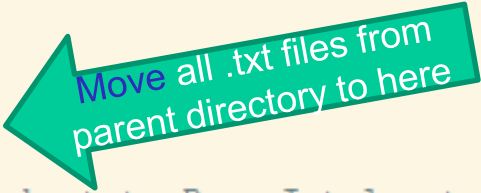
`mkdir <dirname>` - MaKe DIRectory

- Makes a directory `dirname` in your present working directory.
- Directories and folders are the **same thing!**

```
[rma42@dxcapp04 authorship]$ pwd
/home/rma42/authorship
[rma42@dxcapp04 authorship]$ mkdir originals
[rma42@dxcapp04 authorship]$ ls -d */
originals/
[rma42@dxcapp04 authorship]$ cd originals
[rma42@dxcapp04 originals]$
```

`mv <src> <dest>` - MoVe

- `cp` works similarly, but copies instead
  - for copying folders, use `cp -r`
- `dest` can be into an existing folder (preserves name), or a file/folder of a different name
- Also used to re-name files without moving them
- `src` can be either a file or a folder

```
[rma42@dxcapp04 originals]$ ls -la
total 33
drwxr-xr-x 2 rma42 ca4ifop  2 Oct 12 22:07 .
drwxr-xr-x 3 rma42 ca4ifop 79 Oct 12 22:07 ..
[rma42@dxcapp04 originals]$ mv ../*.txt .
[rma42@dxcapp04 originals]$ ls
PaperA_anita.txt   PaperC_vicky.txt   PaperF_vicky.txt   PaperI_tyler.txt
PaperA_eliza.txt   PaperD_cathy.txt   PaperF_yancy.txt   PaperI_vicky.txt
PaperA_floyd.txt   PaperD_david.txt   PaperG_cathy.txt   PaperI_yancy.txt
```

Move all .txt files from parent directory to here

chmod <permissions> <src>

- Change permissions of a file or directory
  - u (owner), g (group), o (others), a (all)
  - + (add permissions), - (remove)
  - r (read), w (write), x (eXecute)

```
[rma42@dxcapp04 hmm_tagger]$ chmod g-w,o-rwx hmm_tagger_Python3.py
[rma42@dxcapp04 hmm_tagger]$ ls -l
total 26
-rwxr-x--- 1 rma42 ca4ifop 1235 Apr  2  2015 hmm_tagger.py
-rwxr-x--- 1 rma42 ca4ifop 1241 Apr  2  2015 hmm_tagger.py~
-rwxr-x--- 1 rma42 ca4ifop  823 Apr  2  2015 hmm_tagger_Python3.py
[rma42@dxcapp04 hmm_tagger]$ chmod a+rwx hmm_tagger_Python3.py
[rma42@dxcapp04 hmm_tagger]$ ls -l
total 26
-rwxr-x--- 1 rma42 ca4ifop 1235 Apr  2  2015 hmm_tagger.py
-rwxr-x--- 1 rma42 ca4ifop 1241 Apr  2  2015 hmm_tagger.py~
-rwxrwxrwx 1 rma42 ca4ifop  823 Apr  2  2015 hmm_tagger_Python3.py
[rma42@dxcapp04 hmm_tagger]$
```

`rm <file1> <file2> … <filen> - ReMove`

- Essentially the delete utility
- To remove an (empty) directory, use `rmdir`
  - To remove a folder and its contents, use `rm -rf`
    - **Please be careful. Don't delete your project.**
    - **There is no "Trash" here. *It's gone*.**

```
[rma42@dxcapp04 ~]$ ls
authorship   #.bashrc#   hmm_tagger   #hmm_tagger.py#   nltk_data
[rma42@dxcapp04 ~]$ rmdir hmm_tagger/
rmdir: failed to remove 'hmm_tagger/': Directory not empty
[rma42@dxcapp04 ~]$ mv hmm_tagger/* .
[rma42@dxcapp04 ~]$ ls hmm_tagger
[rma42@dxcapp04 ~]$ rmdir hmm_tagger
[rma42@dxcapp04 ~]$ ls
authorship   #hmm_tagger.py#   hmm_tagger.py~        nltk_data
#.bashrc#    hmm_tagger.py     hmm_tagger_Python3.py
[rma42@dxcapp04 ~]$
```

What's in a file? (using `less`)

- `less <file>` will give you a scrollable interface for viewing large files **without** editing them.
  - To find something, use `/`
    - To view the next occurrence, press `n`
    - To view previous occurrence, press `N`
  - To quit, use `q`

`diff <file1> <file2>`

- Compare files
  - `file1` is `<` in the output; `file2` is `>`
- Could help for qualitative technique comparisons or version differencing

```
[rma42@dxcapp04 ~]$ ls
authorship   #hmm_tagger.py#   hmm_tagger.py~           nltk_data
#.bashrc#    hmm_tagger.py     hmm_tagger_Python3.py
[rma42@dxcapp04 ~]$ diff hmm_tagger.py hmm_tagger.py~
9c9
< # Brown corpus has 57340 sentences. Using first 50005 of them
---
> # Brown corpus has 57340 sentences. Using first 50010 of them
[rma42@dxcapp04 ~]$
```

man <thing>

- What is that command? What are its arguments? What does this library do? Check to see if it has a `man` page!
- Pages viewed with `less`
- Try it!
  - `man grep`
  - `man sed`
  - `man cat`
  - `man man`
  - etc.