Introduction to Unix and the Unix Toolbox

Who Are You?

- Name?
- Where are you From?
- Undergrad?
- Research Interest?
- Hobbies?
- Programming Experience?

Change your passwords

- Open Terminal
- Type: yppasswd
- Enter old password
- Then new password twice

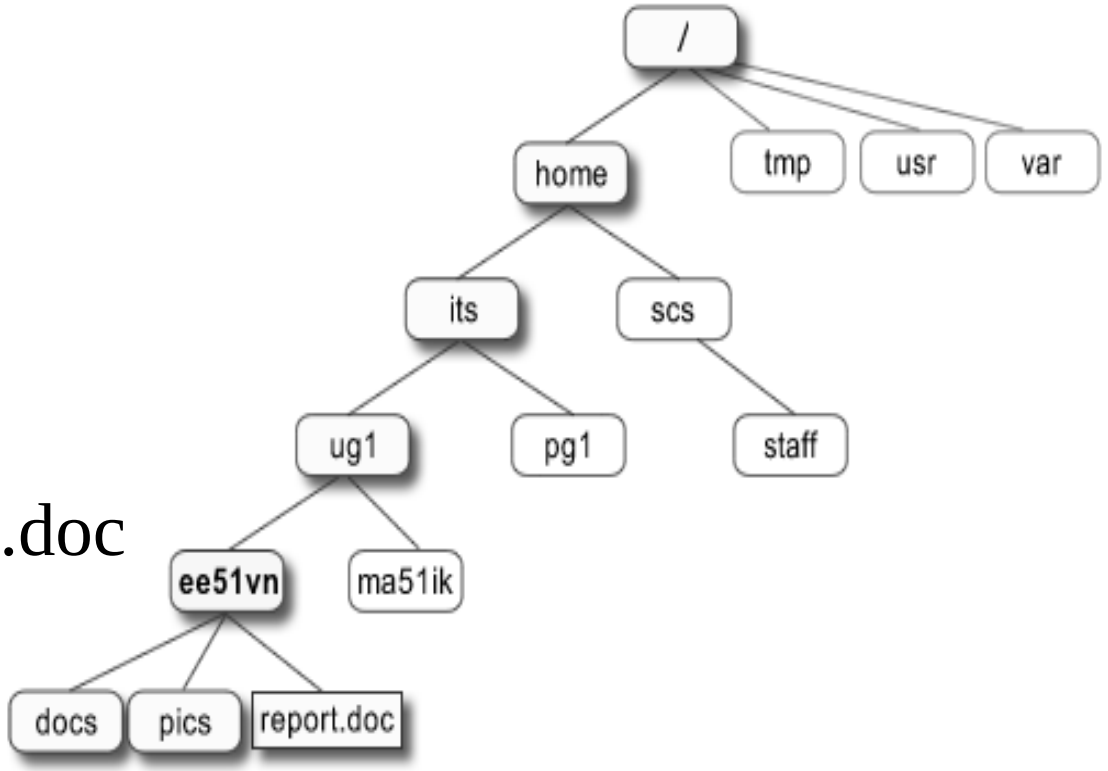
Terminal

- Opening a terminal puts you in your home dir: /home/newton11/username
- Useful Terminal Tricks
  - Up arrow to cycle through commands
  - [Tab] to auto-complete
    - Tab will autocomplete up to the first ambiguous character:
      - In your home directory, typing: cd D[tab] will stop and D and tell you all possible directories you can change to that start with “D”

        e.g. Desktop, Downloads, Documents
      - Typing: cd De[Tab] will auto complete to cd Desktop
- You can access your home directory directly with '~' or another user's directory with '~username'

Directory Structure

- Inverted Tree layout.
- Top of tree is called root(/)
- All user accounts in /home/newton11
- Report.doc is in: /home/its/ug1/ee51vn/report.doc



Common Navigation Commands

- ls – **l**i**s**t files and directories
- mkdir – **m**a**k**e **dir**ectory
- cd – **c**hange **d**irectory
- pwd – **p**rint **w**orking **d**irectory

- Try it out:
  - Make a directory in your users home directory called **Bootcamp**
  - List all directories in your home directory
  - Change directory to **Bootcamp**
  - Print you current directory

Directory Shortcuts

- User home directory is '~'
- Current directory is './'
- Parent directory is '../'
  - Up one directory from current

Directory Shortcuts

- User home directory is '~'
- Current directory is './'
- Parent directory is '../'
  - Up one directory from current
- What do these commands do?
  - ls ~
  - cd ~
  - cd ~/../

Directory Shortcuts

- User home directory is '~'
- Current directory is './'
- Parent directory is '../'
  - Up one directory from current
- What do these commands do?
  - ls ~ (list files/directories in the User home dir)
  - cd ~ (change your directory to the User home dir)
  - cd ~/../ (change your directory to the User home PARENT dir)

Relative & Absolute Path

- Note that pwd prints out something like:

  /home/newton11/username/Bootcamp

- This is the absolute path the top of the directory tree
  - These always begin with '/'
- You can also use relative paths, based on your working directory
- From you home, these two are identical
  - /home/newton11/username/Bootcamp/subdirectory
  - Bootcamp/subdirectory

Common File Commands

- mv – move or rename file
  - mv my_file my_dir/subdirectory
  - mv my_file another_name

Common File Commands

- mv – move or rename file
  - mv my_file my_dir/subdirectory
  - mv my_file another_name
- cp – copy files or folder
    - cp source_file destination_file
  - -r flag: Copy recursively (for copying directories)
    - cp -r ~jfabritius/Bootcamp ~/Bootcamp

Common File Commands

- mv – move or rename file
  - mv my_file my_dir/subdirectory
  - mv my_file another_name
- cp – copy files or folder
    - cp source_file destination_file
  - -r flag: Copy recursively (for copying directories)
    - cp -r ~jfabritius/Bootcamp ~/Bootcamp
- rm – remove (delete) file or directory
  - rm my_file
  - rm -r my_dir
    - The -r option is necessary to delete directory

Common Viewing Commands

- ls options: l, t, a, r
  - List, sort by time, show all files (including hidden), sort in reverse order
  - Ls -latr
- cat – concatenate file to screen
- less – show part of file on screen

Shell Variables

- Variables can be stored in the shell with
  - *var*=value
  - Cannot have spaces around the equals sign!
- Variables are accessed by using $
- Use the 'echo' command to see variables
  - echo *var*
  - echo $*var*

Redirection and Piping

- Suppose you want to save the output of a command to a file:
  - Redirection (>) send the output to a file instead of the screen
    - ifconfig
    - ifconfig > myfile.txt
  - Redirection works the other way too. Send “myfile.txt” as input to sort command:
    - sort < myfile.txt
  - Piping (|) sends the output of one program to the input of another:
    - ls -ltar | less

Connecting From Outside

- Use a Secure Shell from terminal (SSH)
  - ssh username@newton.physics.drexel.edu
  - Type command `exit` or press Ctrl+D to quit
  - Use -X option to forward graphics
    - ssh -X username@newton.physics.drexel.edu
  - After logging in to Newton, tunnel to one of these work stations
    - ssh xphy#
    - # can be 1-15

And Much More!

- Find the commands we went over and more at ~jfabritius/Bootcamp/Info/UnixSystem.txt
- If you don't remember how a command works, you can use 'man command'
  - Brings up the manual page
- Many Unix guides online