CS BOOTCAMP

Introduction to Linux and Code Editing
Some quick things

- If you have used Linux and worked with it remotely (Ubuntu, Debian, RedHat, etc.) this presentation isn't meant for you.
- Please stop me to ask questions.
- Use your resources. This will be recorded, and the slides/materials will be publicly posted for your viewing pleasure.

- Student Resources - Maintained by the CSIT Department
Linux

- Linux is another type of operating system, just like Windows or MacOS.
- Command Line Overview
- Linux and Kutztown
  - The CSIT faculty and students have access to multiple servers
  - The two main ones:
    csitrd - (a.k.a. acad, csit, login, unixweb) &
    Mcgonagall (a.k.a. Kupapcsit01)
Connecting to CSIT

- **Windows – Additional Setup Required**
  - Personal Laptop
    - Follow link to install PuTTY in materials
    - Profile Setup Walkthrough
  - Lab Computers
    - Profiles already setup, open PuTTY and double click "acad no x11"

- **MacOS / Linux**
  - Just need to use the terminal
  - `ssh username@host`
    - *i.e.* `ssh pearl464@csit.kutztown.edu`
After Login

■ Scenario One:

Enter these commands

```
wget http://csit.kutztown.edu/~pearl464/bootcamp/.bashrc
source .bashrc
```

- Your bash should be properly setup now

■ Scenario Two:

If your prompt looks like this, you’re golden :-)
Some terminology:
- **Directory (a folder)** - Just like your folders in Mac's Finder or Window's File Explorer. Stores multiple files
- **"~"** - Your home directory

Structure of command:
- `ls [space] -al [space] ~`
- `command [options] [file]`
Common Commands

- **pwd**
  - "Print working directory"
  - Current directory that your bash prompt is at

- **ls**
  - "List directory contents"
  - Shows files and directories within the given directory. Defaults to the current working directory
  - Common options:
    - `-a` – Lists all files and directories (Even hidden if you have permission)
    - `-l` – Formats the output as a list

- **mkdir**
  - Creates a new directory
  - Example: `mkdir ~/csc135`
    - Will make a new directory called "csc135" located in your home
Command Commands (cont.)

- **rm**
  - Remove file
  - Options:
    - `-r` - Recursive. Used to remove multiple files
    - `-f` - Force removal of a file
  - NOTE: Be careful using the `-f` option. Once a file is deleted, there is a slim chance it can be recovered.
  - Example: `rm test.txt`

- **man**
  - Provides the manual page for a given command. Very useful if you need to understand how a command works and what the options for it are.
G++

- GNU Compiler
- Basic format: g++ <filename>
  - Results in a.out
- G++ has many options and flags built in, two important ones are shown below. You can find more information about them and the different flags in the man page.
- -o allows you to name your compiled program:
  - Example: g++ p1.cpp -o p1 will give you an executable called p1
- -g to enable debugging
  - This will keep function/variable names with the executable allowing you to debug your program (Don't worry if you don't know all these terms yet)
File Transfer – Work with files locally

- FileZilla Client – MacOS and Windows - https://filezilla-project.org/
  - https://wiki.filezilla-project.org/FileZilla_Client_Tutorial_(en) Tutorial (For Later Reference)

  - https://winscp.net/eng/docs/start - Documentation (For Later Reference)
Picking a Text Editor

- Pick the right tool for your job
- Make things better for yourself:
  - ***Learn keyboard shortcuts***
  - Plugins
  - Themes
- Make your editor part of your workflow
- Shortcuts speed things up
- Command Line vs GUI
Text Editing – Command Line

**emacs**
- Most of the faculty use it
- Flexible and powerful – An IDE
- Exiting: Cntl-X Cntl-C

**vim**
- Quick and fast
- Editor
- Exiting: <ESC> :q

More Resources:
**Emacs Guide Tutorial:** [https://www.gnu.org/software/emacs/tour/](https://www.gnu.org/software/emacs/tour/)
**Interactive Vim Tutorial:** [https://www.openvim.com/](https://www.openvim.com/)

Handy Keyboard Shortcuts

■ Select next instance of word (multi-cursor):
  - Sublime, VSCode: CTRL+D

■ Duplicate Line:
  - Sublime: CTRL+Shift+D
  - VSCode: Shift+Alt+Down or Shift+Alt+Up
  - Notepad++: CTRL+D
  - Emacs: C-a  C-SPACE  C-n
  - M-w  C-y

Emacs Commands:
  - C (short for CTRL)
  - M (short for Meta, either Alt or ESC)

■ C-a – move cursor to start of line
■ C-SPACE – sets a mark to begin selection ("start highlighting")
■ C-n – move cursor to next line
■ M-w - copy highlighted region
■ C-y – paste (stands for "yank")
■ C-k – cut ("kill") the rest of the line

The point is to learn ways of speeding up repetitive tasks!
Notepad++

Pros
- Free forever
- Fast/lightweight
- FTP Capabilities

Cons
- No Git support
- Windows only
- Bad plugin support
- Dated UI
VSCode

Pros

■ Free/Open Source
■ Great plugin options
■ Built-in terminal
■ Git support
■ Modern and customizable UI
■ Windows, macOS, Linux

Cons

■ No default FTP (3rd party plugins available)
■ Built on Electron, a RAM hog