

Linux, vi, and Scala

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Opening Discussion

- Have you come up with any new questions about class?
- Today is a test run on ICPs, but I want to start getting people into the flow.
- Minute Essays
 - Why do we use Linux?
 - What happens if very few people come back for the second semester?
 - Will you be in trouble if you haven't done any programming previously?
 - Reading before or after?

Linux

- Go ahead and log in.
- Linux is just another OS, like Windows or Mac OS.
- Linux is primarily used in servers. Efforts are being put into making it a desktop OS.
- It has a GUI, but we will focus on doing things through the command line.
- Bring up a terminal.
- Change password with `passwd`.

Command Line

- You are likely used to the point and click interface of a GUI.
- To run a program you double click on it or a file associated with it. Any other information has to be given after the program opens.
- With the command line you type in the name of the program you want to run. You can also specify any other information you want through command line arguments.

Files and Directories

- What you call folders were originally directories.
- Commands:
 - `pwd` – See current directory.
 - `ls` – List the contents of a directory.
 - `mkdir/rmdir` – Make and remove directories.
 - `cp/mv/rm` – Copy, move, remove files.
 - `less/more/cat` – See contents of files.

Tips

- Tab completion for file/directory names.
- ! - for last matching command.
- Ctrl-r to search your history.
- The man command for manual entries. Use the -k option to search.

Permissions

- Do ls with -l option to see permissions.
- Sets of rwx for user, group, and others.
- Use whoami and groups to find identity.
- Use chmod and chown to change permissions or ownership.

Remote

- Use ssh to login into one machine from another.
- Use scp to copy files from one machine to another.
- The website has a link to Putty which will give you these abilities from Windows.

Other

- du – Lists disk usage
- grep – Searches for something inside of files.
- find – Find files.
- head – List the first several lines of a file.
- tail – List the last several lines of a file.
- top – Look at what is running on a machine.
- w – Look at who is logged into a machine.

I/O Redirection

- You can send a programs output to a file using `>` or `>>`.
- You can make a program use a file as input using `<`.
- You can do more interesting things by sending the output of one program to another with `|`.

Text Files/Editors

- Programs are typically written as plain text files and should be edited with a text editor.
- Notepad is a basic text editor on Windows.
- Word is NOT a text editor.
- Some text editors are better than others for programming.
- In this class we will use vi.

- The vi editor is standard on Linux which is one reason we like to use it.
- It is also good for programming.
- Has modes. Start in command mode. You type in an edit mode.
 - i – insert
 - I – insert at beginning of line
 - a – append
 - A – append at end of line
 - R – replace characters

Other Commands

- x – delete characters
- dd – delete lines
- yy – yank/copy lines
- p or P – paste before or after
- r – replace a single character
- J – join lines
- / and n – search for something and next
- cw – change a word
- . - repeat last command
- u and Crtl-r – Undo and redo

Scala Script/First Program

- Let's make a directory and use vi to write our first Scala program then run it.
- The standard first program is “Hello World.” and I don't want to break with tradition.

Minute Essay

- What are your first impressions of command line?
- Interclass problem: Make a directory called IcP in your home directory and edit a file in it that