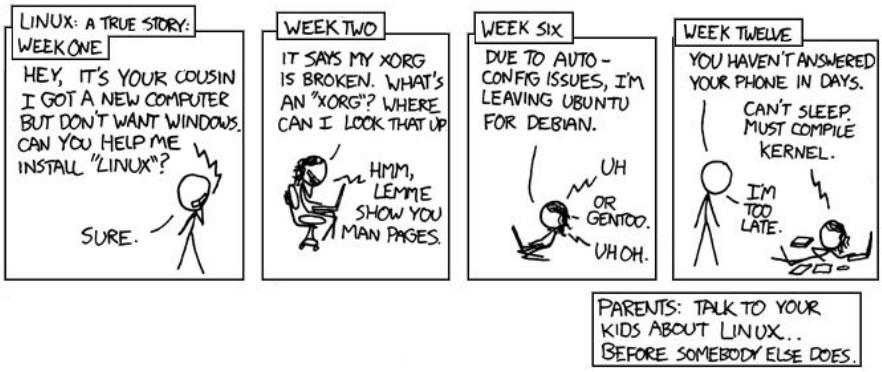
Intro to Linux



Basic Terminal

ssh	• short for **s**ecure **sh**ell
	• **usage:** `ssh [host]@[computer].[otherIPStuff]`
	  ○ for lab computers: `ssh [CSID]@[comp].cs.utexas.edu`
	  ○ can get a list of active computers from the UTCS web page by searching “lab machines”
	• works natively for Macs and Linux machines
	• for Windows machines will need to use Putty
	  ○ WinSCP is also a great program for Windows
	• there is also a secure shell extension for Chrome

[ctrl] + [alt] + t	• this will open up a new terminal window for you • is super convenient on the computers in the lab
[up arrow]	• this will bring up the last command you used in the your terminal ○ if used multiple times will keep going up in your command history • can be useful when using long/ repeated commands • the down arrow will go back through commands in the other direction
history	• this will print out a list of your previous terminal commands • can be useful if you are trying to remember a complex command you did previously but can’t quite remember
clear	• this will totally clear your terminal screen • can be useful when have just run something really complex and would like a clean slate

man	• short for **man**ual
	• **usage:** `man [something confusing]`
	  ○ example: `man grep`
	• will give you helpful usage information about certain commands/ system calls
	  ○ is especially useful to look at the flags for commands

echo	• this will basically just print something to your terminal window • **usage:** `echo “hello world”`

	• is really useful in bash scripts ○ **NOTE**: bash scripts are a way to run a collection of terminal commands as a single command
[ctrl] + c	• this will stop whatever is currently running in your terminal • can be especially useful when you accidently run a program with an infinite loop ○ Or any other long running program/ script that you want to stop
[ctrl] + [shift] + c	• this will let you copy something from you terminal • useful if trying to Google what an error means
[ctrl] + [shift] + v	• this will let you paste into the terminal • useful if just Googled a way to do something cool
sudo	• short for **s**uper **u**ser **do** • will allow you to run commands you normally aren't allowed to • **usage:** `sudo [command]` ○ **NOTE:** you cannot run sudo on the lab machines
exit	• will close out of the terminal window without having the hit the little x in the corner

Directories and Files

ls	• short for **l**i**s**t • lists all the files/ directories in the current directory • you might also want to try the sl command on the lab machines

ls -al	• will list all the files in the current directory along with their permissions
	• permissions:
	  ○ read - can view the stuff
	  ○ write - can edit the stuff
	  ○ execute - can run (for scripts and such)
	• 3 sets
	  ○ (owner) (group) (anyone)

pwd	• short for **p**rint **w**orking **d**irectory • any easy way to know where you are in the file hierarchy if you forget

cd	• short for **c**hange **d**irectory
	• used to navigate between directories in your file structure
	• **usage:** `cd [directory]`
	  ○ can use "cd .." to go back up the directory structure
	  ○ can also put in a full path instead of just a directory name
	  ■ "/" at front of directory will be an absolute path from your root

	directory ■ no “/” at front of directory will be a relative path ■ “.” just means current directory so ./hello.txt is the same as hello.txt
[tab]	• this will autocomplete whatever you are currently doing in the terminal • ex: `cd Doc + [tab]` would autocomplete Doc to Documents without you having to type out the whole thing
mkdir	• short for **m**a**k**e **dir**ectory • will make a new directory for you • **usage:** `mkdir [directory name]` ○ **NOTE:** can also use relative vs. absolute paths instead of just a directory name
cp	• short for **c**o**p**y • a way to make a copy of something in a different directory • **usage:** `cp [source/file name] [destination]` ○ again can use relative or absolute paths for the source and destination ○ **NOTE:** This copies to destinate and keeps the original in source as well
scp	• short for **s**ecure **c**o**p**y • a way to copy files between computers • **usage:** `scp [source] [destination]` ○ from other computer: `scp [host]:[source/file name] [destination on your computer]` ○ to other computer: `scp [source/file name] [host]:[destination on other computer]`
mv	• short for **m**o**v**e • a way to actually move files/directories around on your computer ○ also an easy way to rename directories • **usage:** `mv [source] [destination]` ○ as usual you can use either a relative or absolute path for the source and destination
rm	• short for r**e****m**ove • deletes a file • **usage:** `rm [file name]` • helpful things: ○ `rm -rf [directory name]` ■ will delete a directory and everything inside it ■ use with caution, if you don’t give a destination for this it will delete EVERYTHING from your current directory down
touch	• will either create a new file or update the last modified date on a file to the current date

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<tr><td></td><td>

- **usage:** `touch [file]`

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<tr><td>cat</td><td>

- short for **cat**enate
- will print a file's contents to the terminal
- **usage:** `cat [file]`

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<tr><td>chmod</td><td>

- used to change permissions
- **usage:** `chmod [new settings] [file]`
- new setting options

<table>
<tr><th>Reference</th><th>Operator</th><th>Mode</th></tr>
<tr><td>u - user
g - group
o - others
a - all (everybody)</td><td>add
remove
= set exactly</td><td>r - read
w - write
x - execute</td></tr>
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<tr><td>grep</td><td>

- a way to search through file(s)
- **usage:** `grep [search for] [file]`
  - can search for things using regex
- helpful flags:
  - -n lists the line number next to matches
  - -r search recursively
  - * instead of a file name will search the whole directory

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<tr><td>find</td><td>

- used to find out where a file lives in your file hierarchy
- **usage:** `find [path] -name [file]`
  - if path is not given then will search the current directory and every directory it contains

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<tr><td>diff</td><td>

- short for **diff**erence
- shows the difference between 2 files
- **usage:** `diff [file 1] [file 2]`
- helpful flags:
  - -b ignore white space diffs
  - -i ignore case
  - --side-by-side - see differences next to each other

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Redirection Input/ Output

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- will make the output from command on the left the input for the command on the right
- ex: `man hello | grep "hello"`
  - will search for the word hello in the man pages for hello (this will actually work on the lab machines)

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> and >>	• will redirect output on left into the file on the right • single > will will replace the contents of the file with the given output and double >> will append to the file • ex: `echo "hello" > hello.txt` • ex: `cat [file1] [file2] > [file3]`
<	• will redirect thing on the right to be the input for the thing on the left • ex: `ProgramTakesInAge < 12` • is really good for testing projects that take in user input

Java Specific

java -version	• will tell you what version of Java is currently installed on your machine • will also tell you if java is not installed on your machine at all
javac	• used to compile a java program • **usage:** `javac [file]` ○ must have the .java extension • if successful will create a .class file with the same name as the original Java file

java	• used to run a compiled Java file
	• **usage:** `java [name of .class file]`
	  ○ ex: java Test
	  ■ don't put .class at the end of the file name
	  ■ this would have come from compiling a file called Test.java

UTCS Specific

lpq	• short for **l**ist **p**rinter **q**ueue
	  ○ or at least that is how I remember it
	• will give you a list of pending jobs on a given printer
	• **usage:** `lpq -P[printer name]`
	  ○ no space between the -P and the printer's name
	  ○ the Linux printer in the 3rd floor lab is lw301

lprm	• can use to remove all your pending jobs from a printer's queue • **usage:** `lprm -P[printer name] [CSID]` • very useful if the printer is backed up/ not working and you need to run to class soon without worrying about wasting paper
chkquota	• short for **ch**eck **quota** • each UTCS student only gets a certain amount of space so it is important to check how much you are using at any given time • if you reach 100% you will stop being able to save files/ do certain things • **NOTE:** caching on certain browsers can cause this quota to fill up

	quickly, to fix just clear your cache folder
du -sk ~/* ~/.??* | sort -n	• will basically tell you which files are using the most memory • super useful if your disk quota is at 100% and you need to figure out what to delete

Fun Stuff

cal	• will give you a little ASCII calendar of the current month with the current day highlighted • can be useful when you are having a tired moment and forget what your life looks like
date	• will give you the current date and time as a string • again useful if you are having a tired moment and just need to know time still works properly
yes	• will print the same phrase repeatedly in your terminal until you hit `[ctrl] + c` • **usage:** `yes [some words]`

cowsay	• will take a phrase and print a little ASCII art cow saying that phrase
	• **usage:** `cowsay "[some words]"`
	• can also pipe things into cowsay
	  ○ you could have a cow tell you your grep output
	• there are also many other animals you could do
	  ○ for a list do cowsay -l
	  ○ **usage for different animal:** `cowsay -f [animal file] [some words]`
	  ■ ex: `cowsay -f dragon-and-cow "hello"`

fortune	• will print a random fortune to your screen ○ there are some fun flags for this like, you should man fortune to see what they are • these are particularly fun to pipe into cowsay
xeyes	• will pop up a screen with little eyes on your screen that will follow your cursor around • can be entertaining when you are super stressed/ tired • **NOTE:** won't work over ssh

SUGGEST AN EDIT