

Linux Advanced

CS101



This isn't your average every day Linux
This is... ADVANCED Linux

Input and Output

- `|` - Pass output to another program
 - `cat foo.txt | grep word` - Display the contents of `foo.txt`, and then send it to the `grep` program to search for the string “word”
- `>(>)` and `<` - Redirect standard in and out
 - `echo 'hello' > hello.txt` - Echo the string ‘hello’ to standard out, and then redirect standard out to the file `hello.txt`
 - `echo 'hello' 2>&1` - Redirect standard error to standard out
 - `>` overwrites and `>>` appends
- `Tee` - Redirect output to multiple places
 - `ping google.com | tee output.txt` - Ping google.com and then send the output to both standard out and `output.txt`

Files

- `chmod` - Change the file permissions for a file.
 - `chmod +x <file>` - Make a file executable for the user.
 - `chmod 755 <file>` - Change the file permissions for a file.
 - Permissions are split into values: `read` is 4, `write` is 2, and `execute` is 1.
 - Add up the permissions you want for each category: `user` `group` `everyone`.
 - Here, the permissions for `user` are read (4), write (2), and execute (1) is 7 (4 + 2 + 1), and for `group` and `everyone` are read (4) and execute (1) are 5 (4 + 1).
- `file` - Print information out about a file.
 - `file foo.txt` - Will print out that it is an ASCII file

Archives

- **tar** - Compress and uncompress tarballs (archive files).
 - **tar -xzvf foo.tar.gz** - Decompress the tarball **foo**.
 - **x** - extract
 - **z** - use gzip (use this option on .tar.gz files)
 - **v** - verbose
 - **f** - use archive file in the next argument (**foo** in this case)
 - **tar -czvf foo.tar.gz bar** - Compress file(s) **bar** into a tarball named **foo**.
 - **c** - compress
- **zip/unzip** - Compress and uncompress ZIP archives.
 - **unzip foo.zip** - Compress and uncompress ZIP archives.
 - **zip foo.zip bar** - Compress file(s) **bar** into a ZIP archive named **foo**.

Printing

- `grep` - Search for a string in given input.
 - `grep foo bar.txt` - Look for the string `foo` in the file `bar.txt`.
- `head/tail` - Print the first or last lines of a file.
 - `head/tail foo.txt` - Print first/last 10 lines of `foo.txt`
 - `head/tail -20 foo.txt` - Print first/last 20 lines of `foo.txt`
 - `head/tail -c 420 foo.txt` - Print first/last 420 characters of `foo.txt`

Processes

- `ps` - List running processes
 - `ps -au` - List running process with these options:
 - `-a` - Select all processes except both session leaders and processes not associated with a terminal.
 - `-u` - Select by effective user ID (EUID) or name.
- `kill` - Kill a process
 - `kill <PID>` - Kill the process with process ID `<PID>`
 - `killall foo` - Kill process by name `foo`
- `top/htop` - Provide information about the most CPU-intensive processes currently running (kinda like Task Manager)
 - `htop` is just a prettier version with more features

System

- `ifconfig` - Print out networking information
 - Your public IP address is in either `eth0/eth1/etc.` if you are on ethernet or `wlan0/wlan1/etc.`
- `uname` - Print out operating system information
 - `uname -a` - Print out the version of Linux you are using (including distribution, kernel, etc.)

Terminal

- `alias` - Make 'shortcuts' for commands
 - `alias dl="cd ~/Downloads"` - Whenever you type in `dl`, `cd ~/Downloads` will be run
- `ctrl+x+e` - Edit that last command in a text editor
- `sudo !!` - Rerun the last command as root

Web

- `curl` - tool for getting or sending data including files using URL syntax.
 - `curl foo.com` - Get the content from `foo.com` (and print to terminal)
 - `curl -I foo.com` - Get the response headers from `foo.com`. Useful for getting the response codes (e.g. 200, 404, 500, etc.)
- `wget` - tool to get content from websites
 - `wget foo.com` - Download all the files from `foo.com`
 - `wget -r -np foo.com` - Recursively download all files from `foo.com`
 - `-r` - Recursive, download all files and directories below this file in the file structure
 - `-np` - No Parent, don't download files/directories above this file in the file structure

More Resources

- [Explainshell.com](https://explainshell.com)
- Man(ual)Pages
 - `man <command>`

Questions?

Thanks for coming!