

Practices of Scientific Programming

Week 1

Craig Rasmussen (Research Support Services, University of Oregon)

Unix Shell Commands: *Taxonomy*

- Help
- Directories and navigation
- Files
- Permissions and resources
- Network
- Users and groups
- Processes
- Terminal
- Data discovery

Shell Command Taxonomy: *Help*

- `man` - format and display the on-line manual pages
- `whatis` - search the `whatis` database for complete words
- `apropos` - search the `whatis` database for strings
- `which` - locate a program file in the user's path

Shell Command Taxonomy: *Directories and Navigation*

- mkdir - make directories
- rmdir - remove directories
- cd - change current directory
- ls - list directory contents

Shell Command Taxonomy: *Files /*

- ls - list directory contents
- touch - change file access and modification times
- rm, unlink - remove directory entries
- file - determine file type
- cp - copy files
- mv - move files
- cat - concatenate and print files
- more - display a file
- less - better version of more

Shell Command Taxonomy: *Files II*

- head - display first lines of a file
- tail - display the last part of a file
- cut - cut out selected portions of each line of a file
- make - utility to maintain groups of programs
- gzip - compression tool using Lempel-Ziv coding
- gunzip - decompression tool using Lempel-Ziv coding
- zip - package and compress (archive) files
- unzip - list, test and extract compressed files in a ZIP archive

Shell Command Taxonomy: *Permissions and resources*

- chmod - change file modes or Access Control Lists
 - look at file permissions (mode) with “`ls -l`”
- quota - display disk usage and limits
- df - display free disk space
- du - display disk usage statistics

Shell Command Taxonomy: *Network*

- ssh - remote login program
- scp - secure copy (remote file copy program)
- ftp - internet file transfer program
- wget - non-interactive network downloader

Shell Command Taxonomy: *Users and groups*

- finger - user information lookup program
- chgrp - change group
- groups - show group memberships

Shell Command Taxonomy: *Processes*

- top - display and update sorted information about processes
- ps - process status
- kill - terminate or signal a process

Shell Command Taxonomy: *Terminal*

- clear - clear the terminal screen

Shell Command Taxonomy: *Data discover*

- echo - write arguments to the standard output
- wc - word, line, character, and byte count
- grep - file pattern searcher
- sort - sort lines of text files
- awk - pattern-directed scanning and processing language
- cut - cut out selected portions of each line of a file
- find - walk a file hierarchy

IPython Notebook

- Download and install the Anaconda Python distribution from:
 - <http://continuum.io/downloads>
- The Python Notebook combines within a single document:
 - code execution
 - text
 - mathematics
 - plots
 - rich media

Running the IPython Notebook

- `ipython notebook`
 - this will open a notebook and run it from your browser