CS100: Software Tools & Technologies Lab I

Linux Commands

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grep command

- The purpose of grep is to print the lines that match a particular pattern
- grep <string> [file]
- Example:
  - grep simple file
    - prints all lines that contain the word simple in the file file.

grep options (commonly used)

- grep -i - ignores case
- grep -v - inverts the match
- grep -o - shows only the matched substring
- grep -n - displays the line number

Regular expression

- A regular expression is a set of strings that match the expression.
- Regular Expressions use different syntax than shell expansion
- We enclose them in single quotes to distinguish them from shell expansion.

Regular expressions rules

- Some RegExp patterns perform the same tasks as earlier wildcards
- Single Characters
  - Wild card: [a-z] RegExp: [a-z]
  - Wild card: ? RegExp: .
    - Matches any single character
- Example:
  - grep ‘t.a’ - prints lines with things like tea, taa, and steap

Regular expressions rules

- * - matches 0 or more occurences of the expression
- \? - matches 0 or 1 occurrences of the expression
- \+ - matches 1 or more occurrences of the expression
- Examples:
  - grep ‘t*a’ - matches things like aste, taste, ttaste, tttaste
  - grep ‘"\?Hello World"\?’ - matches Hello World with or without quotes.

History

- history command is used to view the previously executed command.
- You can search through your command history using the shortcut Ctrl + R:
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Counting

- How many lines of code are in my new program?
- How many words are in this document?
- Options:
  - wc -l : count the number of lines
  - wc -w : count the number of words
  - wc -m : count the number of characters

Piping

- Bash scripting is all about combining simple commands together to do more powerful things. This is accomplished using the ”pipe” character
- <command1> | <command2>
  - Passes the output from command1 to input of command2

Piping

- ls -l /bin | less
- history | head -20
- history | head -20 | tail -10
  - Displays the 10th-19th last commands from the current session

Redirection

- To redirect Input/Output streams, use one of > >> <
- Input/Output Streams
- to redirect standard input, use the < operator

  command < file

  wc < file.txt
- to redirect standard output, use the > operator

  command > file

Remote Connection: ssh

- You can use “secure shell” (ssh) to connect to a remote machine.
- ssh [username@]<remote machine name or IP address>
- If the username is omitted, local username will be used.
  - Remote machine has to be configured to accept ssh connections:
  - ssh daemon (service) has to be running and listening on an open port (by default 22)

Remote Transfer: scp

- Copy files securely over a network using an encrypted ssh transport.
- copy file to remote machine
  - scp file [username]@remote machine:

- copy file from remote machine
  - scp [username]@remote machine:file .

Downloading

- wget [options] URL
  - Download a file from a remote location over HTTP.

Working with Process and Jobs

- A process is an instance of a running program
- Each process is assigned a unique ”Process ID” (or PID) when it is created
- These PIDs are used to differentiate between separate instances of the same program

ps

- ps [options]
- Reports a snapshot of the current running processes, including PIDs
- By default, ps is not all that useful because it only lists processes started by the user in the current terminal. Instead...
- ps Options
  - -ef – Lists every process currently running on the system with details.

Kill

- kill <PID>
  - Look up the process's PID with ps
  - Use that PID to kill the process

References

- Miscellaneous resources from internet
- Lecture notes from https://www.cs.cornell.edu/courses/cs2043/2014sp/

Thank you!