4/23

Shell is a user interface for running commands, interactive language, script language
Default shell is usually *Bash*, other includes s*k, ksh,tcsh,zsh* and *fish*

Getting information

- whoami - username
- id - user ID and group ID
- uname = operating system name (-a prints all the system info)
- ps - running processes (-u root) (-e display all of the process running)
- top - resource usage (-n 3)
- df - display disk space (-h)
- man - display reference user manual (q to quit)
- date - today's date

Here are some of the popular format specifiers that you can try out:

Specifier	Explanation
%d	Display the day of the month (01 to 31)
%h	Displays the abbreviated month name (Jan to Dec)
%m	Displays the month of year (01 to 12)
%Y	Displays the four-digit year
%T	Displays the time in 24 hour format as HH:MM:SS
%H	Displays the hour

```
date "+%"
```

Working with files

- cp - copy file
- mv - change file name or path
- rm - remove file (rm -i display.sh)
- touch - create empty file, update file timestamp
- chmod - change/modify file permissions

The `chmod` (change mode) command lets you change the permissions set for a file.

The change of permissions is specified with the help of a combination of the following characters:

Option	Description
`r`, `w` and `x`	permissions: read, write and execute, respectively
`u`,`g` and `o`	user categories: owner, group and all others, respectively
`+`, `-`	operations: grant and revoke, respectively

The command below removes read permission for all users (user, group and other) on the file `usdoi.txt`:

```
chmod -r usdoi.txt
```

- we - get count of lines, words, characters in file
- wc - get count of lines, words, characters in file (-l, lines) (-w, words) (-c characters)
- grep - return lines in file matching pattern

Some of the frequently used options for `grep` are:

Option	Description
`-n`	Along with the matching lines, also print the line numbers
`-c`	Get the count of matching lines
`-i`	Ignore the case of the text while matching
`-v`	Print all lines which do not contain the pattern
`-w`	Match only if the pattern matches whole words

Prints all lines from the `/etc/passwd` file, which do not contain the pattern `login`.

```
grep -v login /etc/passwd
```

Navigating & Working with directories

- ls - list files and directories (-l)

Here are some popular options that you can try with the `ls` command.

Option	Description
`-a`	list all files, including hidden files
`-d`	list directories only, do not include files
`-h`	with `-l` and `-s`, print sizes like 1K, 234M, 2G
`-l`	include attributes like permissions, owner, size, and last-modified date
`-S`	sort by file size, largest first
`-t`	sort by last-modified date, newest first
`-r`	reverse the sort order

To get a long listing of all files in `/etc`, including any hidden files, enter:

```
ls -la /etc
```

Each file and each directory has permissions set for three permission categories: the 'owner', the 'group' and 'all users'.

The following permissions are set for each file and directory:

Permission	symbol
read	`r`
write	`w`
execute	`x`

To see the permissions currently set for a file, run the command `ls -l`.

For example, to see the permissions for the file named `usdoi.txt` in your current directory, run:

```
ls -l usdoi.txt
```

- find - find files in directory tree (-iname “ ”)
- pwd - get present working directory
- mkdir - make directory
- cd - change directory
- rmdir - remove directory

Print file and string contents

- cat - print file contents
- more - print file content page by page (press space bar for next page)
- head - print first n lines of file (head -3 usdoi.txt)
- tail - print last n lines of file
- echo - print string or variable value (-e (\n new line) (\t insert tab))

Compression and archiving

- tar - archive a set of files

The `tar` command allows you to pack multiple files and directories into a single archive file.

The following command creates an archive of the entire `/bin` directory into a file named `bin.tar`.

The options used are as follows:

Option	Description
-c	Create new archive file
-v	Verbosely list files processed
-f	Archive file name

```
tar -cvf bin.tar /bin
```

To see the list of files in the archive, use the `-t` option:

```
tar -tvf bin.tar
```

To untar the archive or extract files from the archive, use the `-x` option:

```
tar -xvf bin.tar
```

Use the `ls` command to verify that the folder `bin` is extracted.

```
ls -l
```

- zip - compress a set of files
- unzip - extract files from a compressed zip archive

Networking

- hostname - print hostname
- ping - send packets to URL and print response (ctrl+c to stop)
- ifconfig - display or configure system network interfaces
- curl - display contents of file at a URL
- wget - download file from URL

Question 5

The cd command enables you to change directories with either an absolute path to the directory, which always starts from the base or “slash” directory, or as relative path, which starts from your _____.

root directory

user directory

home directory

- present working directory

Question 8

Which one of the following four statements regarding file archiving and compression is false?

- You would archive your file if you want it to fit on your hard drive.

An archive file is a collection of data files and directories that are stored as a single file.

File compression involves reducing the size of a file by taking advantage of redundancy in its information content.

Archiving and compression are distinct processes which are usually combined.