# Cheat Sheet for CSC60: Linux, vim, class work

**Linux Commands**

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| --- | --- |
| Linux Command | Description |
| cd «folder name» | Change directory – Move into the specified folder |
| cp «old file» «new file» | Copy – Make a copy of an existing file. Two files remain. |
| mv «old file» «new file» | Rename a file. One file remains. |
| cat «filename» | Display or create files |
| ls | Lists the files in current folder.  This command needs to use a lower-case L.  Options:  -a List all files, including hidden ones.  -d List directory names only, not ordinary files.  -l Show long listing with extended information.  Examples: ls ls -l ls -la |
| gcc «c file» | GNU C Compiler |
| gcc «c file» - o RunName | GNU C Compiler. Ex: gcc lab1.c -o lab1  (Then use *lab1* instead *a.out* ) |
| mkdir «folder name» | Creates a new directory with the specified name |
| pwd | Print name of current/working directory. |
| rm «filename» | Delete a file. |
| vim «filename» | Opens the specified file in the "vim" text editor |

**“vim” text editor command Reference Guide**

**File Commands:**

**:q!** To exit VIM and abandon any changes you have made to the file.

**ZZ** To exit VIM saving any changes to the file and return to the shell prompt.

**:wq** To exit VIM, write the changes to the file, and return to the shell prompt.

**Alternate ways of entering VIM:**

vim file-name Edit named file.

vim + n file-name Edit named file starting at line n.

vim + file-name Edit named file starting at last line.

vim + /string file-name Edit named file starting at first occurrence of string.

vim -r file-name Edit named file starting at first occurrence of string.

**Various VIM Modes**:

**Command mode** - Commands that require a colon (:). In Command Mode you

may use the arrow keys to move around.

**Insert mode** – Type **i** for **i**nsert mode**.** To leave Insert Mode, press **Escape.**

- Type **a** for **a**ppend mode**.** To leave Append Mode, press **Escape.**

**VIM Cursor Movement Commands**:

SpaceBar Forward one character position.

l Right (forward) one character position.

h Left (backward) one character position.

j Down to same position in line below; moves left to last position.

k Up to same position in line above; moves left to last position.

w Forward to first letter of next word.

W Forward to first letter of next blank-delimited word.

b Backward to first letter of previous word.

B Backward to first letter of previous blank-delimited word.

Return Forward to beginning of next line.

0 Back to beginning of current line. (It’s a zero.)

$ End of current line.

**(** Back to beginning of current sentence.

**)** Ahead to beginning of next sentence.

{ Back to beginning of current paragraph.

**}** Ahead to beginning of next paragraph.

**H** Home, or left end of top line on screen

**M** Middle, or left end of middle line on screen.

**L** Lower, or left end of lowest line on screen.

**G** Last line in work buffer.

***n*G** Indicated relative line *n* in buffer.

**Ctrl-U** Up half screen.

**Ctrl-D** Down half screen.

**Ctrl-F** Forward (down) almost a full screen.

**Ctrl-B** Backward (up) almost a full screen.

***Inserting Text***:

**i** Insert before Cursor

**I** Insert before first nonblank character on line.

**a** Insert after character.

**A** Insert at end of line

**o** Insert on next line down (open a line).

**O** Insert on next line up (open a line).

***Deleting Text***:

**x** Character at cursor.

**X** Character following cursor .

**dw** To end of word.

**dW** To end of blank-delimited word.

**db** To beginning of word.

**dB** To beginning of blank-delimited word.

**d *then* Return** Two lines; current and following.

**dd** Current line.

**d0** To beginning of line. (Use zero)

**D** To end of line.

**d)** To end of sentence

**d(** To beginning of sentence.

**d}** To end of paragraph

**d{** To beginning of paragraph.

***Changing or Replacing Text*:**

r replace character at cursor.

R Replace characters until Escape

is pressed.

cw To end of word.

cW To end of blank-delimited word.

cb From beginning of word to

cursor.

cB From beginning of blank-

delimited word to cursor.

cc Current line.

c0 From beginning of line to cursor.

c$ To end of line.

C To end of line.

c) To end of sentence.

c( From beginning of sentence to

cursor.

c} To end of paragraph.

c{ From beginning of paragraph to

cursor.

***Undoing an Edit***:

u Undoes the most recent change. Must be out of Insert Mode.

U Restores the current line to the way it was before making changes.

***vim Search Commands***:

/string followed by Return Search forward in work buffer.

?string followed by Return Search backward in work buffer.

n Find next string in same direction.

N Find next string in opposite direction.

***vim Search string special characters:***

^ Beginning of line.

$ End of line.

. Matches any character

\> Match the end of a word.

\< Match beginning of word.

[ ] Match any character within brackets.

***vim Yank Commands***:

Command Text “yanked”

**yw** To end of word.

**yW** To end of blank-delimited

word.

**yb** To beginning of word.

**yB** To beginning of blank-

delimited word.

**y** *followed by* **Return**

Two lines, current and

following.

**yy** Current line.

**y0** To beginning of line.

(Use zero)

**Y** To end of line.

**y)** To end of sentence

**y(** To beginning of sentence

**y}** To end of paragraph.

**y{** To beginning of paragraph.

***vim Put/Paste Commands***:

**Paste** is used after delete or yank to

recover lines.

**p** Paste below cursor – lower case

**P** Paste above cursor – upper case

**"2p** Paste from buffer 2 (there are 9)

Copy & Paste = Yank & Put

Cut & Paste = Delete & Put

**Logging on to *Linux***

**Logging in from home on a Windows machine.**

GlobalProtect is needed if you are not on a campus computer or on the campus network.

Download PuTTY or another terminal program to your computer.

Open PuTTY.

In the box labeled Host Name, type: **ecs-coding1.csus.edu**

**You can change that “1” to a 2 or a 3.**

Click on Open (lower right of the window).

You will get a window to **Linux** with a prompt to “Log in as”.

Enter your User Name.

Enter your Password. (Password will NOT show as your type it.)

You will now have a prompt such as the one I got**: [bielr@ecs-pa-coding1 ~]$**

**Logging in from home on a Mac machine.**

Open up a terminal/console window and type the following:

ssh [yourSacLinkname@ecs-coding1.csus.edu](mailto:yourSacLinkname@ecs-coding1.csus.edu)

My SacLink name would be **bielr….**the part before the @ symbol.

Press Enter.

When prompted, type “yes” to accept the server’s key.

Then enter your password. (Password will NOT show as your type it.)

**Accessing your file via OneDrive**

You can save your file to your campus OneDrive, and then download it onto your personal computer. Then you can upload it to Canvas.

**The Flow of Operations in creating a program**

*To copy a file from the instructor –* ***Non Mac*** *Users*:

Type: **cd csc60** to put you in the directory/folder where you will do your work.

If it is your first time to work on this assignment, create a directory/folder for this work.

Type: **mkdir labX** (where X is the assignment number)

Type: **cd labX** (to move to the new directory/folder)

Type (to copy the instructor’s files):

**cp /home/college/bielr/files\_csc60/TheFileName .**

**^***space*  *space & then ^ dot*

*To copy a file from the instructor –* ***Mac*** *Users*:

I will include copies of the files on the Canvas assignment page that you may copy directly to your Mac. This avoids logging into a Coding computer just to get files.

*To start writing a program***:**

Type: **vim TheFileName.c**

*To exit* vim**:**

**:wq** To exit VIM, write the changes to the file, and return to the shell prompt.

**:q!** To exit VIM and abandon any changes you have made to the file.

*To compile the program****:***

Type: **gcc TheFileName.c**

Type: **gcc -lm TheFileName.c [**NOTE: **“-lm”** is only needed when you use **math.h]**

[You only need -lm when you are using algebraic commands.]

*To run the program:*Type: **a.out** If you do not change the prompt, type: ./a.out

*Find your file to upload it to Canvas:*

1. ***Using File Transfer software, move your files from athena to your own computer*** Minimize the Linux window so you can see the icons on your screen.

Open up your file transfer software. Examples: WinSCP, filezilla, Cyberduck

Navigate so you have:

* your own computer folder in one sub-window
* your athena folder in the other sub-window
* drag the needed file from the athena window to your computer window.

Open a browser, get to Canvas, and upload the file from your computer.

1. ***Using email move your files from athena to your own computer***

Currently the Linux Machine has one email handler, Alpine.

1. ***Mac Users***

If you have a Mac computer, you may use **scp** to transfer the file. There is documentation on the Reference section of Canvas that will guide you step by step through the process. The file name is: *SCP Guide for Macs.docx*