Introduction to Terminal

technical instructions for the course 76-271

created by Elliot Allard

Goals

The goal of these instructions is to familiarize users with the terminal application on Mac operating systems, as well as the following terminal commands:

ls, cd, mkdir, pwd

These commands will not only help students later on in the course, but also in their future in working with computers.

Readers should be familiar with Finder, or Mac OS's folder navigation application.

Background

These instructions are inspired by a version of the instructions formally distributed through the course 15110, and have been changed to better serve terminal beginners. The changes made are in response to my own experience of the course, and fellow classmate's feedback of this particular set of instructions. I improved the previous version through adding a narrative to the instructions, using screenshots to create a better mental model for the user, and leaving space for the user to try things out on their own.

1. Getting started: opening terminal

- A. To start, make sure you are at your desktop, or the first computer screen you see when you log in.
- B. Next, look for the **Terminal** application on either your application page, or through Spotlight Search. It should look like this:

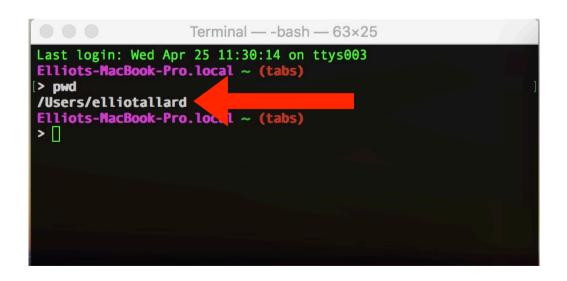


C. Open the **Terminal** application. It should look somewhat like this, with text in the left hand corner, and a > symbol.

ast login: Wed Apr 2 Cliots-MacBook-Pro.l e	5 11:30:14 on tty	-bash — 80×23 s003	
,			

2. Orienting yourself in the terminal

- A. Click in the **Terminal** application, and start typing words. You will see that they appear to the right of the > symbol.
- B. Delete whatever you may have wrote, as we will now start typing commands.
- C. Then, type **pwd** into the terminal, and press the *return* (or enter) key on your keyboard.
- D. Underneath from where you entered the command, there should be a line of text. This line of text is called your current directory, which is a fancy word for folder. At the end of the line of text (after the last /) is the current folder you are located in. This is what mine looks like:



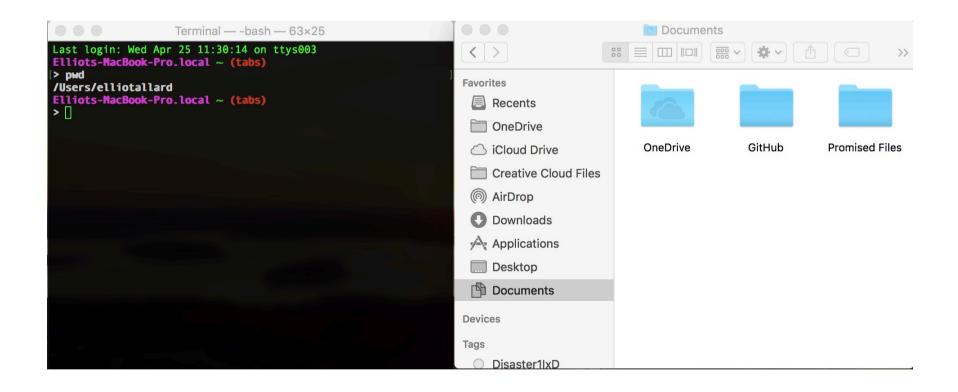
• The pwd command returns your location in your directory

3. Navigating through your directory

A. Next, open the **Finder** application, which is located on the dock. It should look like this:



B. Once the **Finder** window is open, place it's window adjacent to your **Terminal** window, as shown below:



- C. Then, type **Is** (in capital letters: LS) into the terminal, and press *return*.
- D. Take a look at what returns, and see if you can figure out what it is returning (*hint: look at what is displayed in the Finder window)*

D. It returns a list of folders that can be found on the left hand side of the **Finder** window. Similarities are shown in the red boxes below:

e e Terminal — -bash — 80×25			Documents	3	
Last login: Wed Apr 25 11:30:14 on ttys003 Elliots-HacBook-Pro.local ~ (tabs) > pwd /Users/elliotallard Elliots-HacBook-Pro.local ~ (tabs) > ls total 16 drwx@ 5 elliotallard staff 288 Feb 15 00:1 drwxrwxr-x@ 9 elliotallard staff 288 Apr 25 18:4 drwx# 9 elliotallard staff 288 Apr 25 18:4 drwx# 7 elliotallard staff 224 Oct 11 201 drwx# 7 elliotallard staff 12256 Apr 25 10:5 drwx# 6 elliotallard staff 12256 Apr 11 13:4 drwx# 6 elliotallard staff 123 Apr 21 108:4 drwx# 6 elliotallard staff 128 Aug 22 201 drwx# 1 elliotallard staff 192 Feb 17 15:3 drwxr-xr-x 5 elliotallard staff 148 Aug 30 201 drwxr-xr-x 21 elliotallard staff 672 Oct 18 201	Applications Creative Cloud Files Desktop Documents Downloads Library Movies Music Pictures Public dump.rdb hello_world.sql miniconda3			GitHub	Promised Files
	save.sql	Devices Tags O Disaster1IxD			

- The Is command returns a list of folders in which you can access
- E. Congratulations! You've learned 2 out of 4 commands. Pat yourself on the back.
- F. Next, we will switch into the Documents folder.

In the **Terminal**, type **cd Documents**, and press *return*.

G. Then, use the **Is** command in the terminal.

- G. Take a look at what **Is** returns, and see if you can figure out what it is (*hint: open the Documents folder in the Finder window, look at the folder names and compare to the Terminal output*)
- H. Everything in the Documents folder (in **Finder** window), is displayed in your terminal where you ran your **Is** command!

e e Terminal — -bash — 80×25		Docume	ents	
drwxrwxr-x@9 elliotallardstaff288 Feb15 00:12 Creative Cloud Filesdrwx+10 elliotallardstaff320 Apr25 18:58 Desktopdrwx+7 elliotallardstaff224 Oct112017 Documents	Favorites			1) 💿 🚿
drwx+382 elliotallardstaff12224 Apr 25 19:30 Downloadsdrwx@73 elliotallardstaff2336 Apr 11 13:46 Librarydrwx+6 elliotallardstaff192 Oct 31 08:48 Moviesdrwx++4 elliotallardstaff128 Aug 22 2017 Music	Recents	6		
drwx+6 elliotallardstaff192 Feb 17 15:36 Picturesdrwxr-xr-x+5 elliotallardstaff160 Aug 22 2017 Public-rw-rr1 elliotallardstaff914 Dec 6 21:40 dump.rdb-rw-rr1 elliotallardstaff148 Aug 30 2017 hello world.sql	 iCloud Drive Creative Cloud Files 	OneDrive	GitHub	Promised Files
drwxr-xr-x 21 elliotallard staff 672 Oct 18 2017 miniconda3 drwxr-xr-x 27 elliotallard staff 864 Dec 11 12:46 mongodb drwxr-xr-x 9 elliotallard staff 288 Jan 17 20:38 monty python	MirDrop			
<pre>-rw-rr-@ 1 elliotallard staff 0 Aug 30 2017 save.sql Elliots-MacBook-Pro.local ~ (tabs) [> cd Documents</pre>	Downloads			
Elliots-MacBook-Pro.local ~/Documents (tabs) [> ls total 0	Desktop			
drwxr-xr-x4 elliotallardstaff128 Oct 28 18:6GitHubdrwxr@12 elliotallardstaff384 Apr 11 08:5OneDrivedrwxr-xr-x2 elliotallardstaff64 Sep 16201Promised Files	Devices			
Elliots-MacBook-Pro.local ~/Documents (tabs)	Tags			

- The cd <Folder Name> command switches you into the folder, <Folder Name>. The <Folder Name> you switch into must be accessible, or shown when you enter the Is command.
- I. Nice! Now, for our next steps, we will make a new folder using terminal commands.

4. Making a directory

A. Now, we will make a new folder, named Practice, within our Documents folder.

Type **mkdir Practice** into the terminal, and press *return*.

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drwx+ 382 elliotallard staff 12224 Apr 25 19:30 Downloads drwx@ 73 elliotallard staff 2336 Apr 11 13:46 Library	< >			∱ ⊙ »
drwx+ 6 elliotallard staff 192 Oct 31 08:48 Movies drwx+ 4 elliotallard staff 128 Aug 22 2017 Music	Favorites			
drwx+6 elliotallard staff192 Feb 17 15:36 Picturesdrwxr-xr-x+5 elliotallard staff160 Aug 22 2017 Public-rw-rr1 elliotallard staff914 Dec 6 21:40 dump.rdb	Recents OneDrive			
-rw-rr 1 elliotallard staff 148 Aug 30 2017 hello_world.sql drwxr-xr-x 21 elliotallard staff 672 Oct 18 2017 miniconda3	 △ iCloud Drive 	OneDrive	GitHub	Promised Files
drwxr-xr-x 27 elliotallard staff 864 Dec 11 12:46 mongodb drwxr-xr-x 9 elliotallard staff 288 Jan 17 20:38 monty_python	Creative Cloud Files			1
<pre>-rw-rr-@ 1 elliotallard staff 0 Aug 30 2017 save.sql Elliots-MacBook-Pro.local ~ (tabs) [> cd Documents</pre>	AirDrop			
Elliots-MacBook-Pro.local ~/Documents (tabs)	Downloads			
i> ls total θ	Applications	Folder	Practice	
drwxr-xr-x 2 elliotallard staff 64 Apr 26 11:12 Folder	Desktop			
drwxr-xr-x 4 elliotallard staff 128 Oct 28 18:01 GitHub drwx@ 12 elliotallard staff 384 Apr 11 08:51 OneDrive	Documents			
drwxr-xr-x 2 elliotallard staff 64 Sep 16 2017 Promised Files Elliots-MacBook-Pro.local ~/Documents (tabs)	Devices			
<pre>> mkdir Practice Elliots-MacBook-Pro.local ~/Documents (tabs)</pre>	Tags			
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Woah! Look what popped up in our Documents folder! A brand new Practice folder!

- The mkdir <Folder Name> makes a new folder, named <Folder Name>, in your current location. Remember, you can find where you are in your computer with the pwd command.
- B. Now, switch into this folder by typing **cd Practice**, and pressing *return*.

- C. Then, perform the **Is** command. At the same time, in your *Finder* window, click into your Practice folder to see what's inside.
- D. As you can see in both **Terminal** and **Finder**, there is nothing in this new folder, Practice.

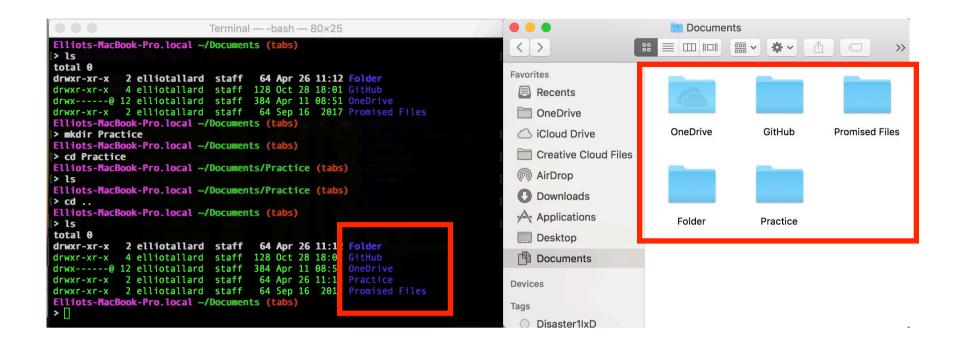
Terminal — -bash — 80×25		Practice
drwx+6 elliotallardstaff192 Feb17 15:36 Picturesdrwxr-xr-x+5 elliotallardstaff160 Aug22 2017 Public	< >	
-rw-rr 1 elliotallard staff 914 Dec 6 21:40 dump.rdb -rw-rr 1 elliotallard staff 148 Aug 30 2017 hello world.sql	Favorites	
drwxr-xr-x 21 elliotallard staff 672 Oct 18 2017 miniconda3 drwxr-xr-x 27 elliotallard staff 864 Dec 11 12:46 mongodb	Recents	
drwxr-xr-x 9 elliotallard staff 288 Jan 17 20:38 monty_python	ConeDrive	
<pre>-rw-rr-@ 1 elliotallard staff 0 Aug 30 2017 save.sql Elliots-MacBook-Pro.local ~ (tabs)</pre>	C iCloud Drive	
<pre>[> cd Documents Elliots-MacBook-Pro.local ~/Documents (tabs)</pre>	Creative Cloud Files	
[> ls total 0	AirDrop	
drwxr-xr-x 2 elliotallard staff 64 Apr 26 11:12 Folder drwxr-xr-x 4 elliotallard staff 128 Oct 28 18:01 GitHub	Downloads	
drwx@ 12 elliotallard staff 384 Apr 11 08:51 OneDrive drwxr-xr-x 2 elliotallard staff 64 Sep 16 2017 Promised Files	Applications	
Elliots-MacBook-Pro.local ~/Documents (tabs)	, Desktop	
<pre>[> mkdir Practice Elliots-MacBook-Pro.local ~/Documents (tabs)</pre>	Documents	
<pre>> cd Practice Elliots-MacBook-Pro.locr /Documents/Practice (tabs) > ls</pre>	Devices	
Elliots-MacBook-Pro.loca //Documents/Practice (tabs)	Tags	
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E. Now, for our last step, we are going to switch up to our Documents folder.

In your terminal, please type **cd** .. (cd, followed by two periods), and press *return*.

- F. Then, press **Is**, followed by another *return*.
- G. In your **Finder** window, hit the back button to go back up to the Documents folder.

H. As you can see, you are back up to your Documents folder!



- The cd .. command will switch you up one folder level.
- I. Also, you can delete the Practice folder in your **Finder** now, unless you like it.
- J. Look at that! You've learned how to move up a directory, officially using all 4 commands we set out to learn!

5. In conclusion

Congratulations! You are now a terminal professional! ... okay maybe not. But, you definitely know more now! You have learned the following commands:

pwd : displays your current working directory (where you are located in your files)

Is : list all files or directories in the current folder

cd <directory> : change into the specified
<directory> from your current directory

cd..: change to parent directory (move up a directory)

mkdir <directory> : make a new folder, named <directory>, in the present working directory

Hopefully you have a better idea of what the word *directory* means (it is a folder, or where your files are stored), and also the terminal in general. The terminal can be much faster for performing certain tasks (once you get used to it, of course), and some computer programs require its use. With that being said, you can repeat this tutorial for more practice, and start fiddling around with it on your own. Again, congratulations. You're well on your way to becoming fluent in terminal! Good luck in 15-110 :)