Linux/Unix Tutorial: Introduction

The purpose of this tutorial is to give you a short introduction to the Unix and Linux operating systems.

Unix is an operating system developed in the early 1970s that is widely used by programmers. Linux is a open-source version of the Unix OS developed in the 1990s. Many computers run this operating system and a lot of programming code has been developed to run on Unix-like systems, so it is good for Bioinformaticians to be familiar with this OS.

After this tutorial, complete a more extensive tutorial here:
http://www.ee.surrey.ac.uk/Teaching/Unix/

More information on Unix and Linux
Unix: http://en.wikipedia.org/wiki/Unix
Linux: http://en.wikipedia.org/wiki/History_of_Linux

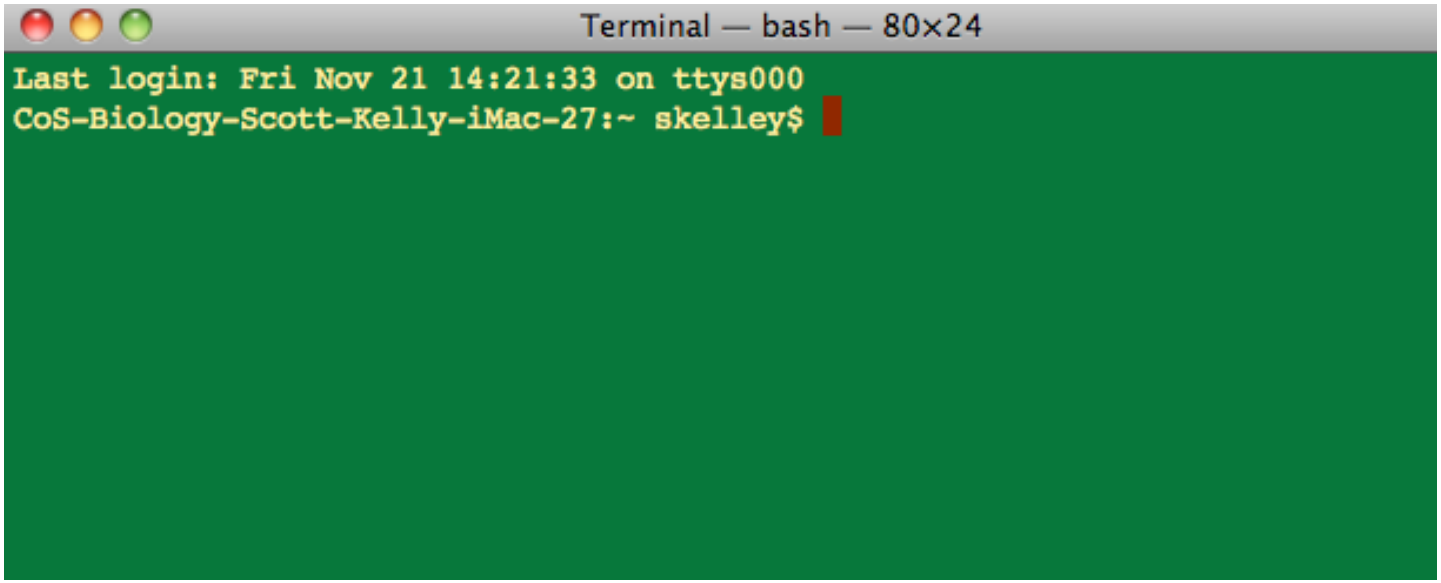
Macs come with terminals, but if you want to play around on Windows, you need to download and install a Unix-like emulator on your PC.

Linux/Unix Tutorial: Opening a terminal window

Unix-like systems can always be accessed by opening a Terminal window and typing on the command line. The MacOS is built upon a “flavor” of the Unix operating system.

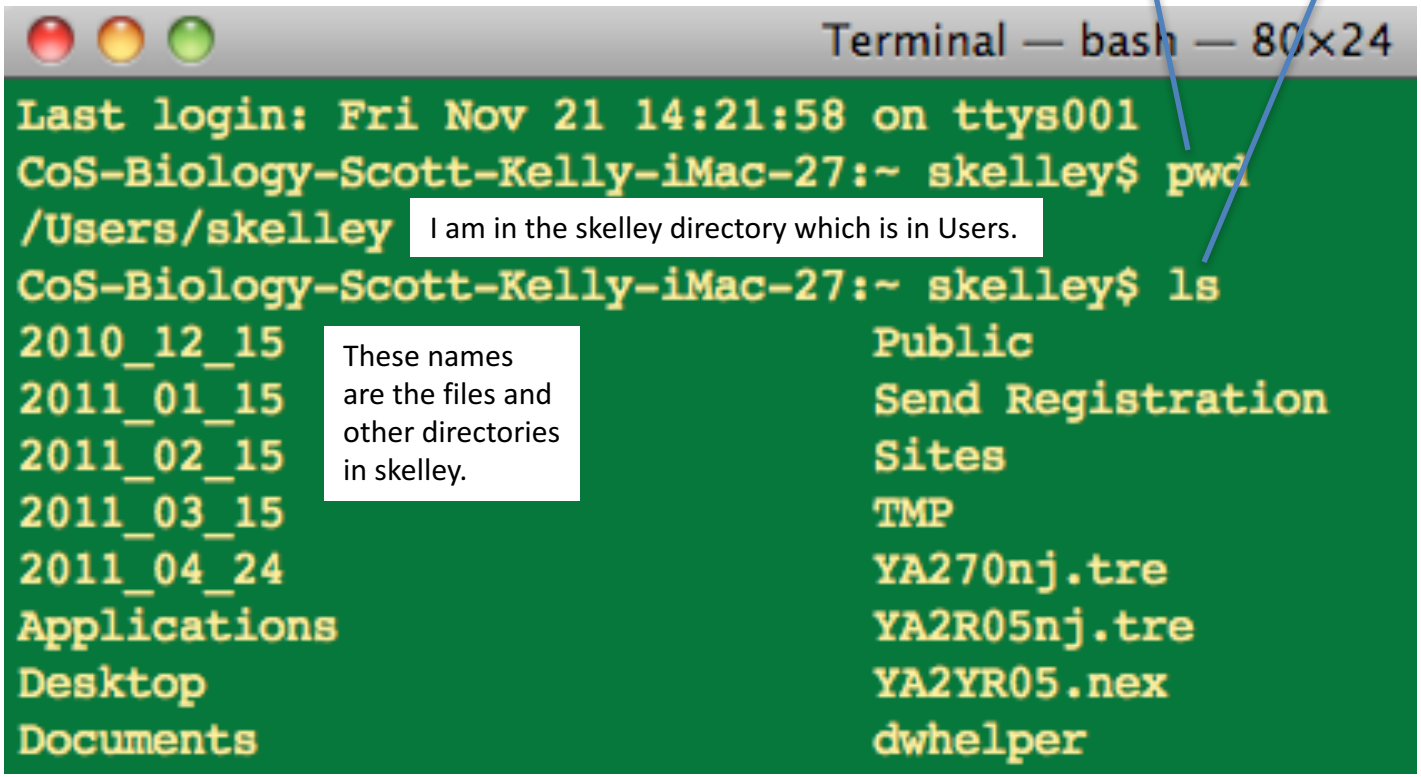
Unix-like systems have a clear hierarchical directory system and everything is accessible from the command line as long as you know the file path to what you want.

To start playing around in Unix, open a Terminal window like this:



Linux/Unix Tutorial: Entering commands

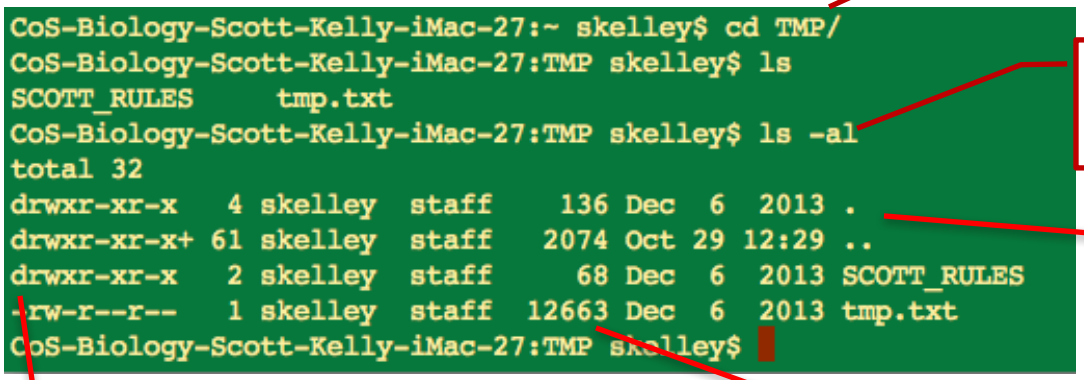
In the Terminal window, you type in commands and hit “Enter” and things happen! Here I’ve typed in some commands “pwd” and then “ls”. The “pwd” command stands for “print working directory” and tells me the directory path of my current directory. The “ls” command lists all the files and directories in the current directory.



Linux/Unix Tutorial: More commands

There are lots of commands you can use to navigate the operating system. Around 30 of them are used all the time. Unix is tedious at first, but it is so much faster than clicking through a lot of folders and windows.

Here are some examples.



"cd" means "change directory. Here I have moved in the TMP directory.

Adding some options to the ls command "-al" and I can see more details about my folders and files.

"." Means the current directory.
".." Means the directory one-step above (in this case "skelley").

The "d" tells me that SCOTT_RULES is a directory.

This is the file size.

Linux/Unix Tutorial: And more commands

```
CoS-Biology-Scott-Kelly-iMac-27:TMP skelley$ head tmp.txt
>200334    1231 bp    TEXT                9-MAY-2012, 1231 bases,
GAGTTTGATCCTGGCTCAGGATGAACGCTGACAGAATGCTTAACACATGC
AAGTCGACTCGAGTCTTCGGACTTGGGTGGCGCACGGGTGAGTAACGCGT
AAAGAACTTGCCTCTTAGACCGGGACAACATCTGGAAACGGATGCTAATA
CCGGATATTATGGTTTTCGCATGGAGAATCATGAAAGCTAGATGCGCTAA
GAGAGAGCTTTGCGTCCCATTAGCTNGTTGGTGAGGTAACGGCCCACCAA
GGCAATGATGGGTAGCCGGCCTGAGAGGGTGAACGGCCACAAGGGGACTG
AGACACGGCCCTTACTCCTACGGGAGGCAGCAGTGGGGAATATTGGACAA
TGGACACAAGTCTGATCCAGCAATTCTGTGTGCACGATGACGTTTTTCGG
AATGTAAAGTGCTTTCAGTCGGGAAGAAGTCAGTGACGGTACCGACAGAA
CoS-Biology-Scott-Kelly-iMac-27:TMP skelley$ cd ..
CoS-Biology-Scott-Kelly-iMac-27:~ skelley$ pwd
/Users/skelley
CoS-Biology-Scott-Kelly-iMac-27:~ skelley$ cd TMP/
CoS-Biology-Scott-Kelly-iMac-27:TMP skelley$ ls
SCOTT_RULES     tmp.txt
CoS-Biology-Scott-Kelly-iMac-27:TMP skelley$ cp tmp.txt tmp2.txt
CoS-Biology-Scott-Kelly-iMac-27:TMP skelley$ ls
SCOTT_RULES     tmp.txt         tmp2.txt
CoS-Biology-Scott-Kelly-iMac-27:TMP skelley$ rm tmp2.txt
CoS-Biology-Scott-Kelly-iMac-27:TMP skelley$ ls
SCOTT_RULES     tmp.txt
CoS-Biology-Scott-Kelly-iMac-27:TMP skelley$ cd ..
CoS-Biology-Scott-Kelly-iMac-27:~ skelley$ mkdir TMP2
CoS-Biology-Scott-Kelly-iMac-27:~ skelley$ less temp.sh

#!/bin/sh

# temp.sh
#
#
# Created by Scott Kelley on 6/11/12.
# Copyright 2012 __MyCompanyName__. All rights reserved.


echo "Demultiplexing"
rm -rf split_library_output ;  split_libraries.py -m nicu_office_m
 -q nicu_Example.qual -o split_library_output
```

head – show first 10 lines of a file.

cd .. – move up one directory.

cp – make a copy of a file. Here we copy the contents of tmp.txt to tmp2.txt

rm - stands for “remove” and it deletes files.

mkdir - makes a new (empty) directory

The “less” command lets you scroll through the contents of a file one page at a time.