

## Bash Shell for Researchers

### September 13, 2023

#### Getting in:

Mac: Open the Terminal app

Windows: Open the Command Prompt (backup plan: Install <https://gitforwindows.org/> )

To open a secure shell into your Linux Virtual Machine:

(using YOUR user account name, not user99)

```
ssh user99@18.236.212.229
```

Your password is: **bash4me**

(note that you won't see anything as you type the password)

Sometimes this will look like: **ssh -i mykeyfile.pem user99@18.236.212.229**  
and then you would not need to enter a password.

#### Getting around:

pwd            - print out the present working directory path (i.e. "where am I?!")  
cd {dirname} - change directory to {dirname}  
cd            - With no arguments, this puts you at /home/youruser . Equivalent to "cd ~"  
cd ..        - Go up a directory level  
ls            - list directory contents  
ls -a        - list directory contents including files starting with "."  
ls -l        - verbose ("long") listing of directory contents  
ls -al       - combines ls -a and ls -l  
mkdir {dirname} - make a new directory {dirname}  
rm {filename} - remove a file  
rm -r {dirname} - remove recursively a directory and its contents  
rmdir {dirname} - remove a directory (must be empty)  
mv           - move (also use this to rename a file)  
**sudo {command}    - do {command} as superuser**  
cat {filename} - print out the contents of a file  
history      - print out my history of commands  
Control-C    - cancel

#### Getting help:

{any command} --help        *usually* gives short-form help on the command  
man {any command}        manual page on the command

## **Finding things**

grep            - search for a pattern in files  
find            - find files (or directories) matching a certain pattern

## **Copying files to/from a server**

scp            - secure copy  
example: `scp mydata*.csv user99@18.236.212.229:/home/user99`  
example: `scp user99@18.236.212.229:/home/user99/mydata*.csv . # . = "here"`

## **redirect > and >>**

command1 > somefile.txt            writes the result of the first command to the specified file  
example: `cat file1.txt file2.txt > combined.txt`  
command1 >> combined.txt            appends the result of the first command to the specified file

## **"pipe"**

command1 | command2            - "pipe" results of command1 to command2 as input. For  
example: `ls -al | grep abc`

## **File permissions:**

chmod            - Change the "mode" (file permissions)  
example: `chmod +w file1.txt`

chown            - Change file ownership  
example: `chown myuser:myuser file1.txt`

## **Package management:**

(most everything in this document can also apply on a Mac; however, *not* package management)

apt-cache search {part of a package name}    - find packages with matching name  
apt-cache show {package name}                - show details for this installed package  
sudo apt-get upgrade                          - upgrade all installed packages  
sudo apt-get update  
sudo apt-get install {package name}  
sudo apt-get remove {package name}

## **vi (also known as vim) visual editor**

vi {filename} - open filename for editing (create it if it doesn't exist)

**vi has two modes: insert mode, and command mode.**

To get into insert mode, you can use:

i - start inserting before the current character  
a - append after the current character

To get OUT of insert mode and into command mode, hit Esc.

Once in command mode:

:q - quit  
:wq - write & quit  
:q! - quit without saving changes  
/abc - find the next occurrence of 'abc' in the file

### **Moving around:**

(arrow keys \*may\* work too, but not the mouse!)

h - move left  
j - move up  
k - move down  
l - move right  
w - move to the next word  
b - move back a word  
x - delete a character  
dd - delete a line  
dnd - delete 'n' lines (for example, d5d deletes 5 lines)  
G - jump to the bottom of the file  
nG - jump to line "n" (for example, 5G jumps to line 5)  
o - open the line below for insert  
O - open the line above for insert  
Y - "yank" (copy) the current line  
yny - yank 'n' lines (e.g. y10y yanks 10 lines)  
p - paste what you yanked below the current line  
P - paste what you yanked, above the current line