**Command Line 101: UNIX (Linux) Commands**

1. Log on!

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On a computer in Room 208 – login using remote desktop

Click on the black square terminal icon at the bottom of the screen

1. Access your home directory on *nimoy.*

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In the terminal type:

**$ passwd**  s

Change your password

**$ hostname**  s

Check what the computer is called

1. Your Home Directory (or Folder)

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You will default login to your home directory.

To check the name of the working directory and the file path, type:

**$ pwd** s

(print working directory). This is the *absolute path* and name of your home directory.

The *absolute path* is a set of directions to the computer of where the current working directory is located within the tree of folders (directories) that make up your computer’s hard disk. See Diagram. The absolute path will take you to this directory regardless of where you are in the hard disk.

List what is already in your home directory:

**$ ls** s

(list directory)

List the hidden files

**$ ls -a** s

*ls* is a command that can take “options”, like *-a*

List the size of the files

**$ ls -lh** s

The -lh “options” ask for the date and size of the files, in a human readable format.

1. Complete the questionnaire that is in your home directory

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You can open MS Office files using the command: *soffice*

**$ soffice *username\_Questionnaire\_Beginning of Semester.docx*** s

NOTE: tab completion will auto complete the file name

On your desktop, locate the grey folder icon. Locate the Questionnaire. Upload your completed Questionnaire to D2L

1. Make a new directory for this class in your home directory

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Make a new directory called PHYS105A

**$ mkdir ./PHYS105A** s

./ refers to the working directory. You can also omit it and the command will still work.

**./PHYS105A is a *relative path***, meaning you are telling the computer where to go relative to your current location in the tree of directories.

Check that you made the directory by listing the contents of your home directory

**$ ls** s

Make a subdirectory called Lecture1 within this directory for today’s lesson

**$ mkdir PHYS105A/Lecture1** s

Change the working directory (*cd*) to Lecture1

**$ cd** **PHYS105A/Lecture1** s

Check the absolute path

**$ pwd**   s

List the contents of the PHYS105A directory, which is one level up.

**$ ls ..**   s

Since **./** refers to the working directory **..** indicates the directory one level above the working directory.

What would the commad **ls ./..** do?

On the Desktop: Locate the grey folder icon at the bottom of the screen and find the file you just created.

1. Locate the class directory /p105a

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Consult the Diagram to locate the class directory.

Go up one level (top level of your home directory: check with **pwd**)

**$ cd ..**  s

Go up another level (check with **pwd** and consult diagram)

**$ cd ..**  s

Change directory to the class directory

**$ cd p105a**  s

Check the absolute file path

**$ pwd**  s

You can always cd into this directory using this file path.

List the contents of the class directory

**$ ls**   s

1. Return to your home directory

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There are a few ways to return to the top level of your how directory from here:

1. A quick way

**$ cd**   s

cd written by itself will always return you to your home directory (no matter where you are in the path).

1. Write out the absolute path explicitly

**$ cd**   **/home/username**  s

Alternatively:

**$ cd**   **~**  s

The **~** alwaysindicates the absolute path to your home directory.

In other words, ~ is the same as /home/username/

You can always access folders in your home directory no matter your working directory by typing ~/foldername

Example: Return to your Lecture1 directory

**$ cd ~/PHYS105A/Lecture1** s

1. Exercise: Paths and Subdirectories (cd, pwd, ls, mkdir)

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You should be in the ~/PHYS105A/Lecture1/ directory (***pwd*** to check)

1. Use the *mkdir* command to create a series of “nested” directories Test1, Test2, Test3 such that Test3 has the following absolute path:

/home/username/PHYS105A/Lecture1/Test1/Test2/Test3

See the diagram.

1. Change directory to the Test3 folder, check the path, list the contents
2. Change directory to the Test2 folder, check the path, list the contents
3. Change directory to the Test1 folder, check the path, list the contents
4. Change directory to the top level of your home directory, list the contents
5. Open the GUI interface for folders on the Desktop again and locate the directories you just created.
6. Writing to a file and reading it quickly (echo and cat)

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Change working directory to ~/PHYS105A/Lecture1

**$ DO IT**  s

Write a line to a new file called README

**$ echo This is an exercise for PHYS 105A > README**  s

Where **>** redirects the output to a newly created file called README

Check that the new file was created in the directory (list directory)

**$ DO IT**  s

\*\* Note about naming files and directories. We will require you to use underscore ( \_ ) or capitalization, rather than spaces or symbols in a filename. But if you have to call a file or directory with spaces, you can still use commands if you put the name of the file/directory in quotes.

e.g. cd “Wrong File Name”

BUT better would be: GoodFileName or Good\_File\_Name

Print the contents of the README file to the screen

**$ cat README**  s

(concatenate – this is useful for short files)

\*\* Note. Tab can complete the file name. Type: **cat R then tab**

This is useful for longer file names.

Add another line to the same file

**$ echo I am appending a line! >> README**

Print the file to the screen

**$ DO IT**  s

Alternatively, if the code was a lot longer than *cat*  can handle, you could use the command **“more”** or “**less**” to page through the code.

**$ more README** s

1. Copying, moving and removing files

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You should be currently in the ~/PHYS105A/Lecture1 directory.

Check this (print working directory)

Make a copy of the README file

**$ cp README**  **README\_copy**

Check that it is in the directory (list directory)

**$ DO IT**  s

\*\* Note, if there are multiple files that all start with R, pressing **ls R then tab** will list all of them (and nothing else), this can help you locate a file.

Move the copied file to the Test1 directory and change its name to README\_copy2

**$ mv README\_copy Test1/README\_copy2**  s

Check that it is in the directory Test1 (list directory)

**$ ls Test1**  s

Copy README to the Test1 directory and change its name to README\_copy3

**$ cp README Test1/README\_copy3**  s

Check the contents of the Test1 directory (list directory)

**$ DO IT**  s

Copy all the README files in directory Test1 to directory Test2 (keeping the filenames the same)

**$ cp Test1/R\* Test1/Test2/**  s

\* is a *wildcard. R\** means all files and directories that start with R.

*\*R* would mean all files and directories that end with R

Check that the copied files are in the directory Test2 (list directory)

**$ DO IT**  s

Remove the README\_copy3 file from Test2

**$ rm Test1/Test2/README\_copy3**  s

Check that the file is gone from Test2 (list directory)

**$ DO IT**  s

1. Copying and removing directories

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You should be in the ~/PHYS105A/Lecture1 directory

Copy the directory Test1 to a new directory

**$ cp Test1/ Test1\_copy**  s

That didn’t work because the directory is not empty. Try this instead:

**$ cp -r Test1/ Test1\_copy**  s

-r is the option for the command cp that means recursive, allowing you to move the contents.

Change directory to Test1\_copy

**$ DO IT**  s

Make a new directory Test1a

**$ mkdir Test1a**  s

List the contents of Test1\_copy to see the new directory

**$ DO IT**  s

Remove the directory Test1a

**$ rmdir Test1a**  s

\*\* NOTE: If Test1a was not empty, this command would not work. You would need to first remove the files within the directory.

\*\* NOTE: If you forget a command that you recently used, the up arrow key will list the commands you recently entered.

1. Exercise: Writing, copying, moving files.

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1. Return to the ~/PHYS105A/Lecture1 directory
2. Append the answers to the following questions in the README file using ***echo >>***
3. **How comfortable do you feel using the command line ?**

1 2 3 4

What is that? Not comfortable Neutral Comfortable

1. **Write the contents of the directory ~/PHYS105A/Lecture1/**

if nothing is there write “nothing”

1. **Write the contents of the directory ~/PHYS105A/Lecture1/Test1/Test2**

if nothing is there write “nothing”

1. **Write the contents of the directory ~/PHYS105A/Lecture1/Test1/Test2/Test3**

if nothing is there write “nothing”

1. Rename your README file to *README\_username.txt* using *mv*

You can add .txt or .dat to a file name that will make it readable in with programs like “Text Editor”

1. Using the GUI interface: Upload your README\_username.txt file to D2L
2. LOG OUT of the Nimoy computer (upper right of the screen)
3. For Next Class: Read Chapter 1 of the Textbook.