USING *UNIX/LINUX* or A (VERY BRIEF) INTRODUCTION TO *UNIX/LINUX*

M. De Robertis – September 2020

*Unix* (or *linux*) is an operating system used by a number of computers within the Faculty of Science, including *cosmos.sci.yorku.ca*. Unix will seem frustrating at first (perhaps eternally), but with a little work, you will achieve some proficiency with it. (Note that the popular operating system *linux* is very similar to *unix* in this context.)

Users can obtain more detailed help with Unix from:

<https://www.cs.sfu.ca/~ggbaker/reference/unix/> or

<https://www.tutorialspoint.com/unix/unix-basic-utilities.htm>

When you log into a *linux* or *unix* machine, e.g., cosmos.sci.yorku.ca, the file /usr/local/config/generic.tcshrc (or equivalent) runs transparently which initializes a number of parameters, contains aliases, environment variables, logical assignments, etc. You can access cosmos from many of the (Windows) Computing Labs at York University, including the William Small Centre. You need to be in the X-windows environment, however. In order to access an X-window from a PC at York University, you can use the Cygwin-X utility or PuTTY. See “Using IRAF for the First Time” for more information about accessing X-Windows from a PC.

One begins one's session at the system prompt, e.g., % , or with the current directory followed by “$ ”.

Please note that *unix* / *linux* are case sensitive; i.e., “A” and “a” are treated differently.

ESSENTIAL COMMANDS

Here are a few essential commands in alphabetical order which one can use at the prompt on the command line: (commands within quotation marks indicate a name)

|  |  |
| --- | --- |
| **Command** | **Description** |
| alias delete 'rm -i' | Let 'delete' stand for the unix command 'rm -i' |
| cat 'filename' | Type 'filename' on the screen |
| cd 'directory' | Change to directory 'directory' |
| clear | Clear screen |
| cp 'file1' 'file2' | Copy 'file1' to 'file2' |
| date | Prints date and time on screen |
| find . -name 'f\*' –print | Find all files beginning with 'f' at or below this directory |
| exit | Log out of shell |
| grep 'string' 'filename' | Search for string 'string' in file 'filename' |
| grep –i | Same as grep but case insensitive |
| history 'n' | Lists last 'n' commands you issued |
| jobs | Lists background jobs (if any) |
| less `filename' | Type 'filename' on the screen one page at a time |
| ls | List the files in the current directory |
| ls –a | List all the files in the current directory |
| ls -1 | List all files in the current directory in a single column |
| ls –l | List the properties of the file(s) (e.g., size and date created) |
| man 'command' | Type the helpfile for command 'command' |
| mkdir 'directory' | Make a subdirectory called 'directory' |
| more 'filename' | Type 'filename' on the screen one page at a time |
| mv 'file1' `file2' | Rename 'file1' to 'file2' (you lose `file1') |
| passwd | Reset your password |
| pwd | Type the current working directory |
| quota –v | Shows the user’s quota and disk space remaining |
| rm –i 'filename' | Remove or delete the file 'filename’ when prompted |
| rmdir 'directory' | Remove or delete the (empty) directory 'directory' |
| set term=xterm | Sets terminal type to 'xterm' (could use vt100...) |
| which xdvi | Displays which version of 'xdvi' is to be used |
| whoami | Displays current effective user name |
| xhost +zeke.yorku.ca | Adds 'zeke.yorku.ca' into the xhosts file |

PRINTING

Printing evolves on short time-scales at York (and may not be relevant during COVID-19). You can work in an X-window environment in some of the York University computing labs, e.., the William Small Computing Commons lab, and should be able to print from there using the appropriate incantation. No promises.

Normally, if you had a text file, ‘space.txt’, you should be able to print it from a computing lab via:

lpr –P ‘printer’ space.txt

where “–P ‘printer’” explicitly directs the job to the printer with the name ‘printer’ e.g., ‘Parking-lab’ or whatever. To determine whether your job is in queue, type:

lpq ‘username’

The queue is automatically flushed after a short time and you won't be charged for jobs which aren't released/printed. Of course, it is a wise idea to preview the file using the 'cat' or 'more' or 'less' command if possible.

If 'space.txt' is very large, a much better way is to print it two pages at a time.

a2ps ‘filename’ | lpr

EDITORS

There are a variety of editors on cosmos. These are, vi, emacs, jed, and pico (among others). To use one of these editors on a file called myfile.txt, simply type (for example),

pico myfile.txt (or emacs myfile.txt or...)

and you will find yourself in the editor, working on the appropriate file. (The file will be blank if it is a new file.)

It is recommended that inexperienced users use “pico” as an editor. (There are man –help – pages for vi, emacs and pico.)

COMPILERS

There are also various compilers available for your use on Cosmos (though these are almost entirely irrelevant at this point). If you have a FORTRAN program, e.g., myprog.for or myprog.f, you can compile and link it by issuing

f77 myprog.f (or, to use the gnu-FORTRAN compiler, g77 myprog.f)

at the command line. If you compile a program in this fashion, the executable file produced will be "a.out", and you may run the executable by typing "a.out" at the command line. If you'd like your executable to have a different name, "myfexe" for example, then you can type

f77 myprog.f -o myfexe

and run the executable by typing "myfexe" at the command line.

The C compiler works in much the same fashion, e.g.

cc mycprog.c -o mycexe

compiles and links the source code in "mycprog.c" to the executable "mycexe".