PHYSICS 2G03
Scientific Computing

Connecting
To
Phys-ugrad

Connecting to phys-ugrad from **off campus**

You need VPN to connect from off campus. See: https://uts.mcmaster.ca/services/computers-printers-and-software/virtual-private-networking-students/

This gives you a program provided to mac students/employees from CISCO that fakes that your computer is on campus. It works for phys-ugrad, the libraries and so on...

Connecting to phys-ugrad

From Getting Started:

1. Install Mobaxterm (windows), Xquartz (MacOS)
2. Start local terminal in Mobaxterm (or xterm under MacOS/Linux)
3. Connect to phys-ugrad (unix machine):

   ssh macid@phys-ugrad

4. Enter your temporary password 2g03

You are now on phys-ugrad

Connecting to phys-ugrad **from a Mac/OSX**

Install Xquartz from https://www.xquartz.org/

1. Start Xquartz (click the big X in the dock) or right click on the big X if its already there and select new xterm
2. New xterm window pops up
3. Enter: ssh –Y macid@phys-ugrad

   enter your password
4. You are now on phys-ugrad

Connecting to phys-ugrad **from Windows**

Download Mobaxterm from
https://mobaxterm.mobatek.net/download-home-edition.html

1. Choose installer edition
2. Extract the files from the zip
3. Run: MobaXterm_installer_20.3
4. Should install a shortcut to Mobaxterm – double click it
5. Click: star local terminal
6. Enter: ssh macid@phys-ugrad
   enter your password

You are now on phys-ugrad

The Unix Command prompt

When you log in, Unix defaults to a text interface

You type commands follow the prompt (after the $ symbol below) and hit enter to execute them

```
ssh wadsley@phys-ugrad
Password:
Last login: Tue Sep  2 17:03:37 2014 from imp.phy
[wadsley@phys-ugrad ~]$
```

New Passwords!

- When you are connected to phys-ugrad change your password:

  use the passwd command

- It must not be a simple English word
- The system administrator will disable accounts without a new password

```
ssh wadsley@phys-ugrad
Password:
Last login: Tue Sep  2 17:03:37 2014 from imp.phy
[wadsley@phys-ugrad ~]$ passwd
```

Unix Files
(look at them with ls)

`ls` <enter> by default shows your files

`ls /home/2G03` <enter> shows files in the directory /home subdirectory 2G03

Directories /home are like Windows folders

Unix separates directories with a /

Unix for the user

- On a unix system you can run many programs simultaneously
- Normally this is done by entering commands at the prompt
- There are commands to look at files, users, processes, etc…

Info Commands

- Some commands/programs are just for looking at the machine and who's there
- e.g. whoami, hostname, who

A few unix Commands to try (hit enter after each one)

```
$ whoami
wadsley
$ hostname
phys-ugrad
$ who
$ more /proc/cpuinfo
$ gedit &
$ xemacs &
$ xterm &
$ xeyes &
$ env | grep SHELL
$ top   (q to exit)
```

Unix Shell

- The shell is the program that looks at your commands and works out what you want to run
- We use **tcsh** for the shell
- Tcsh manages the command prompt that appears in an xterm

Multiple terminals on phys-ugrad

- Sometime more than one terminal is useful:

  Type **`xterm &`** to make a new one
- For programming I like to have an xterm for compiling and running and an gedit or emacs window for editing the program

Unix Commands

- Unix commands have a generic structure:

Command [options] [arguments]

`ls` ls command

(to look at files)

`ls -a` ls command with –a option

`ls -a /home/2G03`

ls command with –a option and a single argument

Finding out more about commands

- Manual pages provide a way to discover what commands do and what options are available
- There is always google of course. There are also reference books.

For example:

```
man ls
```

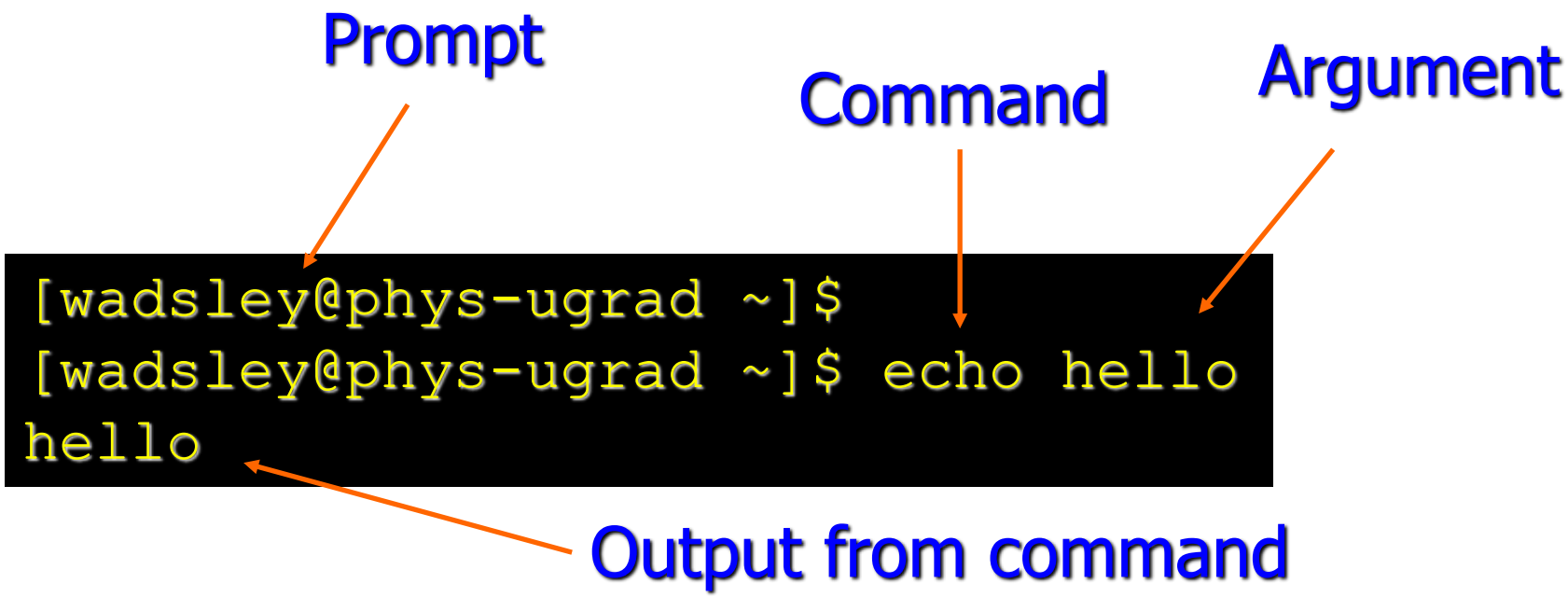
ls Manual Page

```
LS(1)                          User Commands                          LS(1)

NAME
       ls - list directory contents

SYNOPSIS
       ls [OPTION]... [FILE]...

DESCRIPTION
       List  information  about  the FILEs (the current directory by default).
       Sort entries alphabetically if none of -cftuSUX nor --sort.

       Mandatory arguments to long options are  mandatory  for  short  options
       too.

       -a, --all
              do not hide entries starting with .
```

q quit, space page down, /string search for text

Unix Shells

- When you log in using ssh, phys-ugrad starts a tcsh shell program to interpret what you type at the command prompt



Files

Tcsh has a simple set of *regular expressions* for matching files

`ls /home/2G03`	everything
`ls /home/2G03/*.pdf`	everything ending in .pdf
`ls /home/?G03`	everything starting with any one character and ending in G03
`ls HW[123]`	Matches HW1,HW2,HW3
`ls [a-z]*`	Anything starting with a lowercase letter

File commands

`ls`	List files
`mv`	Move or rename files
`cp`	Copy files
`rm`	Delete files

Note: Two styles for cp, mv

`cp file1 file2` Copy single file

`cp file1 file2 … fileN directory`

Copy many files to directory

Special Directories

~/ My home directory

~bob/ Bob's home directory

./ The current directory

../ The directory above this one

e.g. /home is the directory above /home/bob

Directory commands
Directories are Windows Folders

`pwd`	My current directory
`cd`	Change to new directory
`mkdir`	Make a new directory
`rmdir`	Remove empty directory

Note: Your current directory is probably part of your prompt:

```
[wadsley@phys-ugrad ~]$ cd tmp
[wadsley@phys-ugrad ~/tmp] pwd
/1/home/wadsley/tmp
```

Text file utilities

Utilities to look at files that are text:

`gedit`	like windows notepad editor
`micro`	in window edits (less laggy)
`xemacs`	window for emacs editor
`more file`	Look at file one page at a time
`less file`	Like more but smarter
`head file`	Look at the top 10 lines
`tail -5 file`	Look at the last 5 lines

Experiment!

People learn Unix by doing things

I encourage you to try things

Remember that man pages exist to give you help on commands, also refer to the handout and internet resources: google!

You don’t need to be an expert on all of unix/linux – just a few basic commands such as the ones here are enough.