DUANE'S INCREDIBLY BRIEF INTRO TO UNIX

```
How to get help on unix:
 man <command-name>              Get full description of command
 man -k <keyword>                List commands mentioning keyword in title
Logging in and out:
 logout                          Terminate session
 exit                            Terminate current "shell"
 ssh <remote host>               Login securely to a remote host
File manipulation:
 emacs <file>                    Edit a text file (see "cheat sheet")
 mv <old> <new>                  Rename/move <old> file to a <new> name
 rm <file(s)>                    Delete file(s) from system
 cp <orig> <duplicate>           Copy <orig> to file named <duplicate>
 scp host:<orig> host:<dup>      Securely transfer files between machines
 sftp <remote host>              Secure batch file transfers between mach'ns
 cat <file>                      Display/catenate file contents to screen
 more <file>                     Display file, page by page (but: use less)
 less <file>                     Display file, page by page (avoid more)
 head <file>                     Display the first few lines of a file
 tail <file>                     Display the last few lines of a file
 grep <pattern> <file(s)>        Search for/display pattern within file(s)
 source <file>                   Read commands from <file> (also: . <file>)
 turnin -c <course#> <file>      Turn in a copy of file under CS course #
                                 (on upstairs unix boxes) e.g. turnin -c 237 x.c
Directory manipulation:
 cd <directory>                  Change focus of session to files in directory
 ls                              List files in current directory
 mkdir <name>                    Make a new subdirectory, called <name>
 rmdir <name>                    Remove an empty subdirectory
Printing & Mail:
 enscript <file>                 Print a pretty copy of file in unix lab
 enscript -d lw-cs-217a <file>   Print a pretty copy of file to max lab
 gs <postscript file>            Read a ".ps/.pdf" file w/"ghostscript" reader
Scripts:
 perl script                     Run a perl script called 'script'
 python3 script                  Run a python script called 'script'
 chmod a+x script                Make script executable
 ./script                        python3 script (line 1: #!/usr/bin/env python3)
C:
 gcc -Wall -o <exe> <file.c>     Compile file.c C program into exe; warnings: on
 gcc -g -c <file.c>              Compile C into debuggable object file <file.o>
 gcc -o <exec> <f.o> <g.o>       Link several object files together into exec
Java:
 javac file.java                 Compile Java program
 java file                       Run a Java program
 javadoc -d doc file.java        Build documentation from java in directory doc
Information about users and systems:
 w                               Who's on the system
 top                             What are top cpu processes
 ps                              List processes on this system
 whoami                          Who is logged in at this window
 finger <user>                   Get details on user (or user@host)
 last <user>                     List last time(s) user used this machine
 uptime                          Print stats on machine, also time since boot
 sign                            Change message on 312 sign
Web:
 http://www.cs.williams.edu      CS home page
 http://www.cs.williams.edu/~<yourname>  Your home page (put stuff in ~/www)

CS Machines (2/17):
aceh adaptaur ankole baila berrandas blaarkop boran brangus busa channi dangi
doran evolene fjall gaulau gudali gyr jaulan kerry lcriollo lineback lulu
malvi masai nanyang nelore oropa salers sussex yurino
```

Duane's Ten Ways To Make Your Unix Life More Reasonable

0. Walk away from the machine. Don't waste your time in front of a machine if you're not making any progress. Print a listing and walk away. Make and take a friend with you. Life will be better if you reconsider the situation without the pressure of a computer.

1. Read the man pages.
   Realize, if you haven't already, that you don't know everything. Learn. The world travels about 66,600 miles an hour about our Sun, and the Sun glides gracefully along its own path dragging us along. Hackers have no impact. None.

2. Learn the emacs keystrokes. It will save you when you have to use a system whose mouse is not working. Avoid the "arrow keys". Why?...ask Darwin.

3. Use emacs keystrokes in the shell. Many cursor manipulation keystrokes from emacs recall history in the "bash" shell:
   ```
   ^P = previous command, ^N = next command,
   ^R = search for command from the past by typing a few letters
   ^A = go to beginning of command line
   ^E = go to end of command line
   ^B = go back one character
   ^F = go forward one character
   ^D = delete this character
   <del> = delete previous character
   ^Y = yank cut text
   ^_ = undo
   ```
   Most of these commands work in most Mac applications, including TextEdit.

4. Learn about your environment. Shells like "bash" have survived evolution by helping their users do complex things. Type:
   ```
   man bash
   ```
   Good things to keep an eye out for are "aliases" and "shell scripts". Other things to read about: find, tar, awk, re_format.

5. Stay organized.
   Create directories to organize your belongings. Delete temporary files that you no longer need. Besides taking up space, they add friction to your life.

6. Use the facilities we provide.
   Using our labs allows us to help you if you have problems. They're also a good place to meet others that are suffering the same project. Leaving your room to do your work makes it a nicer place to return.

7. Practice. Yes, even more.

8. Write. Good writing is hard, and computer scientists write far too little real prose. A good, small place to start: comments on your code. Another place: write your name on everything you do. If it's really yours, copyright it (it's free)!

DUANE'S INCREDIBLY BRIEF INTRO TO EMACS
C-z means: hold Control and z at same time.
M-x means: type escape *then* x, or: Meta *and* x.

Starting Emacs

start emacs	emacs

Exiting Emacs

Suspend emacs	C-z
exit emacs	C-x C-c

Files

read file	C-x C-f
visit file other windw	C-x C-v
save file	C-x C-s
insert file	C-x i
write buffer to file	C-x C-w

Getting help

first time users	C-h t
second time users	C-h ?
help on keystroke	C-h k
help on function	C-h f
man page	M-x manual-entry

Error recovery

abort command	C-g
recover lost file	M-x recover-file
undo	C-_
restore buffer	M-x revert-buffer
redraw screen	C-l

Motion

Entity	back	forth
character	C-b	C-f
word	M-b	M-f
line	C-p	C-n
end of line	C-a	C-e
sentence	M-a	M-e
buffer	M-<	M->
screen	M-v	C-v

Marking (building regions)

set mark	C-spc
exchange point & mark	C-x x
mark buffer	C-x h

Registers

copy region to reg	C-x x
get region from reg	C-x g

Killing and Deleting

Entity	back	forth
character	Delete	C-d
word	M-Del	M-d
end of line	M-0 C-k	C-k
sent	C-x Del	M-k
region	C-w	
yank back	C-y	
zap to <char>	M-z <char>	

Transpose

characters	C-t
words	M-t
lines	C-x C-t

Searching

forward	C-s
backward/reverse	C-r
forward expression	C-M-s
reverse expression	C-M-r
exit search	Return
undo last search char	Delete
abort search	C-g

Query replace

start query replace	M-%
query replace word	C-u M-%
Within query replace...	
replace & search	Space
replace & stay here	,
backup to prev. match	^
don't replace, go on	Delete
replace remaining	!
exit	Return

Multiple Windows

keep just this window	C-x 1
split window	C-x 2
switch to other window	C-x o

Buffers

select another buffer	C-x b
list other buffers	C-x C-b
kill this buffer	C-x k
minibuffer	M-x

The minibuffer

complete	Tab
show completions	?
complete and execute	Return
previous input	M-p
next input	M-n
abort	C-g

Keyboard Macros

start defining	C-x (
stop defining	C-x)
execute macro	C-x e

Compiling something

Compile window (e.g. gcc -o x x.c)	M-x compile
Find next error	C-x `

Binding keys

To make control-x-' compile, add
(global-set-key "\C-x'" 'compile)
to ~/.emacs (or create file, as necessary)

Things you should never know about

dungeon	M-x dunnet
tetris	M-x tetris
hide & seek	M-x blackbox
psychotherapy	M-x doctor
gomoku	M-x gomoku
robot game	M-x landmark
pong	M-x pong
the snake game	M-x snake
peg solitaire	M-x solitaire