File Location Commands

- which

  The which command takes a list of program names and looks for the files that would be executed if these names were given as commands.

  `which latex`

  `which gcc`

  `which man`

- whereis

  The whereis command locates source, binary, and/or reference page files for the specified program program.

  `whereis man`

- find

  find - search for files in a directory hierarchy

  `find ~ -name unix.tex`

- grep

  The grep command searches the specified files (standard input by default) for lines containing characters that match the specified patterns, and then writes matching lines to standard output.

  ```
  grep fish *
  grep imsl *.c
  find ~ -type f -exec grep -l -i fish {} \;
  ```

Disk Management Commands

- du — *Displays a summary of disk usage*

  `du`

  `du -s ~`

- tar — *Manipulates tape archives*

  `tar -cvf sortvec.tar sortvec*`

  `tar -xvf sortvec.tar`

- gzip —- *compress or expand files*

  `gzip sortvec.tar`

  `gunzip sortvec.tar.gz`

Dealing with Large Text Files

- cat — *Concatenates or displays files*

  `cat sortvec1.dat`

  `cat sortvec1.dat sortvec2.dat > sortvec3.dat`

  `cat sortvec1.dat >> sortvec3.dat`

- cut — *Displays specified parts from each line of a file*

  `cut -c 7-8 oxide.nh.dat`

- sort — *Sorts or merges files*

  `sort sortvec2.dat`

- uniq — *Removes or lists repeated lines in a file*

  `sort sortvec2.dat| uniq`

  `sort sortvec2.dat| uniq -d`

  `cut -c 7-8 oxide.nh.dat | sort | uniq -c`

Other Useful Commands

- date

  Displays or sets the date

- ps

  Displays current process status

  `ps -ef | grep herbie`

- psnup

  Postscript multiple pages per sheet

  `psnup -n 4 unix.ps`

  `psnup -r -n 4 unix.ps`

- chmod

  Changes permission codes

  `chmod go-r unix.tex`

  `chmod u+x unix.tex`

Making PDF Files from LaTeX

- Make sure to use only Type I fonts, and embed all fonts:
  - `latex unix.tex`
  - `dvips -Pwww unix.dvi -o`
  - `ps2pdf unix.ps`

Statlib

- `http://lib.stat.cmu.edu/`
- Contains
  - Lots of data
  - DASL
  - S code
  - and much more

Some Freeware alternatives

- CMLIB for IMSL
- R for S
- (both can be accessed through Statlib)

More Miscellaneous Items

- diff — *Compares text files*

  `diff sortvec1.dat sortvec2.dat`

  `diff multnorm.c multnorm2.c`

- accessing data CD-ROMs:
  - Mount with `ls /a/cdrom`
  - `cd /cdrom`
  - Unmount with `amq -u /a/cdrom`

- accessing DOS disks
  - `mdir a:`
  - `mcopy`

C++

- Variables may be declared anywhere
- Can use `new` to declare variable length arrays (but matrices are still difficult)
- Use streams for input and output
  - `cin`
  - `cout`
- Object-oriented programming
- Nearly all ANSI C code will run under C++
- Declaring fortran functions is different
- Compile with `g++`