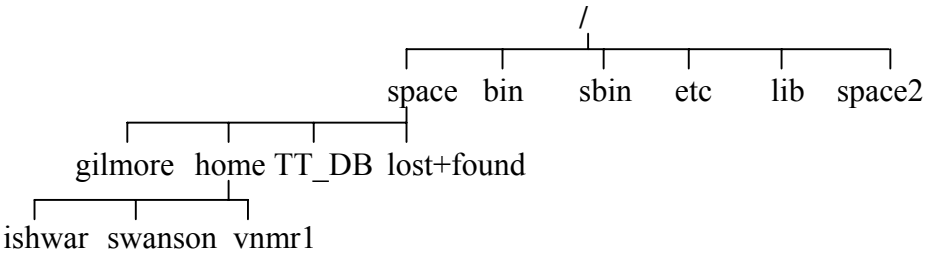
A Unix Primer

note: all unix commands are case-sensitive

UNIX Directory Structure:

The directory / is the "root" directory; this is the directory at the very top of a hierarchical . Here is a typical directory tree (it is taken from the computer that controls the Varian Inova NMR instrument):



In the directory structure shown above, the root directory has six subdirectories (or folders) named space, bin, sbin, etc, lib, and space2. The space directory has four subdirectories while home has three (ishwar, swanson, and vnmr1).

To go to the **swanson** directory, you need to give the command: **cd** /space/home/swanson (for **c**hange **d**irectory). To obtain a listing of contents in any directory type **ls** (short for **ls**t). Giving the command **ls** while you are in the home directory will return ishwar, swanson, and vnmr1 on the screen (*exercise*: what other directories are returned?). If you need to go up one level in a directory tree, give the command '**cd** ..' without quotes. In UNIX, the current directory is the period '.' while the directory one level above is '..' (*exercise*: the command **cd** /space/home/swanson will get you to the swanson directory from any directory; however, from which directory(ies) will the command **cd** ../swanson get you to the same directory? Why could this be useful?).

Brief Descriptions of Most Commonly Used UNIX Commands:

pwd	To determine which directory you are in
cp file1 file2	Copies an existing file called file1 to file2
mv file1 file2	Move or renames existing file called file1 to file2
rm file1	Removes an existing file called file1
mkdir dir1	Makes or creates a new directory called dir1 in the directory where the command is given
man command_name	Prints the manual page for any UNIX command; you can learn more about commands and options this way
df	Reports the amount of used and free disk space
history	Provides a history of commands that were given
cat file1	Prints the contents of a file called file1 on the screen (use this commands for ASCII or files containing text only; also do not give this command for large files!)
more file1	Print the contents of an ASCII file one screenful at a time

head file1	Print the first ten lines of a file
tail file1	Print the last ten lines of a file
vi file1	General purpose UNIX editor (for the brave; you need to know how to use it before you use it)

In Unix, every command spawns a process, which is given a process identification number (PID). If a process gets hung-up, there is a way to terminate the process (in UNIXspeak, processes are also referred to as jobs). First find out the PID for the process you want terminated as follows:

ps -uishwar	Reports process status along with PID (first column) and the command given to start the process for user 'ishwar'

Next, terminate the process using:

kill -9 PID	Where PID is the process ID of the job you want to terminate (the -9 option is meant for a "sure kill").

Tutorial:

1. When you log in to the inova computer as ishwar, determine your current working directory.
2. List the contents of this directory. Go to the temp directory and create a new directory in this directory. Name it after your last name.
3. Go to this new directory and list the contents of this directory.
4. Now create a new file called 'test' by giving the command '**vi** test' without quotes.
5. In the editor, type 'i' to go to the 'insert text' mode and type 'This is a test'. To return to the passive mode, hit the 'Esc' key. Save the file and quit the editor.
6. Go back to the window you were working in and list the contents of this directory.
7. Copy the file called 'test' to another file called 'test2'. List the contents of the directory.
8. Rename the file 'test2' and call it 'junk'. List the contents of the directory.
9. Remove the original file 'test'. List the contents of the directory.
10. Edit the file called 'junk' using **vi**. On another window, determine the process ID for **vi** using '**ps** -uishwar'.
11. Now exit the **vi** editor in the original window. Go back to the other window and see whether the **vi** process still exists using '**ps** –uishwar'.
12. To find out more about the **vi** command, type '**man vi**'. Use the spacebar to scroll through the 'man page' (i.e. UNIX manual description) for **vi**.
13. Go back to the original window and use commands **more**, **head** and **tail** for the file 'junk' and view the results.
14. Type **history** to get the full history of commands that you gave.
15. Type '**df** .' to get information about the amount of space that is available in the disk where your current directory lives.
16. End your window session by typing '**logout**'. The UNIX window should disappear.
17. Go to the other window and type '**cd** ~/vnmrsys' and note what happens.
18. Finally, go to /space2/home/ishwar directory and identify the directory where you will be permanently storing the NMR data you collect.