



## Lab 4: The Unix File System

The goal of this lab is to become proficient with system commands for viewing the directories and different file types that make up a Unix file system.

### Forum

Browse to: <http://oslab.cishawks.net/forum/>

Check the forum for any late breaking news about this lab. The forum is also the place to go if you get stuck, have a question or want to share something you have learned about this lab.

### Warm up

Log on to the Opus server so that you have a command line shell at your service. Be sure you are in your home directory to start this lab. The questions asked immediately below are to check your understanding of that particular step. You do not need to record or submit these answers.

- Display a listing of the files in your home directory. Are they in any special order?
- Use **ls -a** to display the contents of directory *Lab2.0*  
Which filenames do not follow the Unix file naming conventions?
- Use **ls -F** to determine what kind of files you have in your home directory.  
Do all directories begin with an uppercase letter?
- Use the **file** command to analyze the following files: *Poems*, *proposal2*, *timecal*, and *empty*.
- Display the contents of the *mission* file on your screen.
- Display the contents of the *letter* file on your screen.  
Is it more appropriate to use `cat` or `more`?
- List the filenames stored under the root (`/`) directory. Are these files or subdirectories or both?
- Determine the absolute pathname of your home directory. Use this pathname as an argument to the **ls** command. What are two other ways of getting the same listing?
- List the contents of your *Poems* directory using a relative pathname.  
Do the same thing using an absolute pathname, i.e. beginning with a slash (`/`)
- Display the contents of the *jerusalem* file stored under the *Blake* directory, which is under the *Poems* directory.

- Use a single **more** or **less** command to browse each of the files stored under the *Yeats* subdirectory. Why did you choose the command you used? How can you tell where one file ends and the next begins?
- Use the **head** and **tail** commands to look at the top and bottom ten lines of *bigfile*.
- Use the **ls** command to see what is stored in the */bin* directory. Do you recognize any of the filenames? What kind of files are these?
- Display the contents of the file *what\_am\_i*. Which command did you use?
- Use **ls -lia** to do a long listing of the files in the *Miscellaneous* directory.
- Use **ls -lid** to do a long listing of the *Miscellaneous* directory itself.
- Use **wc** on some of the sonnets in the *Shakespeare* directory. Use **man wc** to understand the results or try different options. Is the operation of the man page similar to the **more** or **less** command?

### Answer the following questions (1-25) to submit for grading

Download the *lab04.txt* template file (<http://simms-teach.com/docs/cis90/lab04.txt>). Edit this file with your answers to the following questions. Note, we have not learned about Unix text editors yet so you may use a TEXT editor on Windows (e.g. notepad) or Mac (e.g. TextWrangler) to record your answers. Keep your answers to a single line.

These questions worth one point each:

- 1) Write down the absolute path of your home directory.
- 2) Relative to your home directory, what is the pathname of the *tiger* file in the *Blake* subdirectory?
- 3) What command allows you to see hidden files in your current directory?
- 4) What command shows the pathname of your current working directory?
- 5) Are any of your hidden files directories? If so, which ones?
- 6) What does the **cd** command do when it is invoked with no arguments?
- 7) Assuming you are in your home directory, what command will change your current working directory to the directory that holds Shakespeare's sonnets?
- 8) What is the inode number of the */home/cis90* directory?
- 9) Who is the owner of your home directory?
- 10) What's the name of the largest text file in your home directory?
- 11) What's the name and size of the smallest file in your home directory?
- 12) How many subdirectories does the *Poems* directory have?
- 13) What is the first line of the file *old* in the *Poems/Yeats* directory?
- 14) What is the last line of *sonnet3* in the *Shakespeare* directory?
- 15) What is the name of a regular file in your home directory that is not intended to be viewed with the **cat** or **more** commands?
- 16) What key should you type when you want to exit from the **more** command?
- 17) What **ls** command allows you to see the permissions of your home directory while you are in your home directory?
- 18) What Unix command will allow you to look at the contents of a data (binary) file?
- 19) From your home directory what is the relative path to *sonnet1*?
- 20) Which file in */boot/grub* has inode number 394903?

These questions worth two points each:

- 21) What command will create your Opus prompt? The Opus prompt is your current working directory path, a space, a \$ and one more space. Hint: test your command

by setting your prompt to "Command please: " then use your command to restore your Opus prompt.

- 22) How many lines are in Shakespeare's *sonnet1*?
- 23) What English word do you see between hex offset 00000f0 and 0000100 of the file *what\_am\_i*?
- 24) What file in the *Miscellaneous* directory is a symbolic link to another file?
- 25) What is the inode number of the file being linked to?

Bonus question (2 points extra credit):

- 26) With what command can you list only the hidden files (and nothing else) of your home directory?

### Submit your work

Copy and paste your edited *lab04.txt* template file into a message and:

Email to:

**rsimms@oslab.cis.cabrillo.edu**

*your-Opus-username-here@oslab.cis.cabrillo.edu*

With a subject of: **CIS 90 Lab 4**

Note that you are emailing your work to the instructor and yourself on Opus. On Opus, please check that your submittal arrived, is readable and can be graded.

You may send this message from your regular non-Opus email (e.g. yahoo mail, gmail) or for extra credit you can send it using the **mail** command on Opus.

### Grading Rubric (30 points total)

- 1 point for each correct answer to questions 1 to 20.
- 2 points for each correct answer to questions 21 to 25.

Remember, there is no credit for work turned in after the deadline!

### Extra Credit

- 2 points extra credit for answering the bonus question above correctly
- 2 points extra credit for using the mail command on Opus to submit your work