Laboratory Experiment I

THE VI AND LINUX ENVIRONMENT

by Alex Shaw III

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LABORATORY SHEETS

LABORATORY EXPERIMENT I

LEHMAN COLLEGE
Of The City University of New York

Department of Mathematics and Computer Science

EXPERIMENT I

Objective: To become familiar with the Linux multiuser and multitasking environment.

Procedure:

Part I

1. Login to the Linux system with your ID.
2. Enter your password
3. Using the vi editor (or editor of your choice), enter the text provided.
4. Perform the editing functions shown.
5. Save the file you created.

Part II

1. Type the following command
   wc "filename" <cr>

   Explain and discuss the output from this command.

2. Type the following commands:
   wc –w "filename" <cr>
   wc -l "filename" <cr>

3. Count the number of characters in your file

4. Type the command

   wc –c "filename" <cr>

   Is your manual count of characters the same as displayed on the screen?

   Explain the similarity or difference.

Part III

1. Type the following command in your home directory:

   ls <cr>

2. Type the following command:
   ls -l <cr>

Sheet 1-1 Experiment procedures.

3. Type the following command:
   cat "filename" <cr>

4. Explain the similarities and differences of each. Use the more and less command on your file. What do you notice between the latter and the cat command?

Part IV

1. Return to your home directory by typing the following command:
   cd $HOME<CR>

2. Type the "who" command:.
   NOTE: Don't forget to hit <cr> to execute the command.

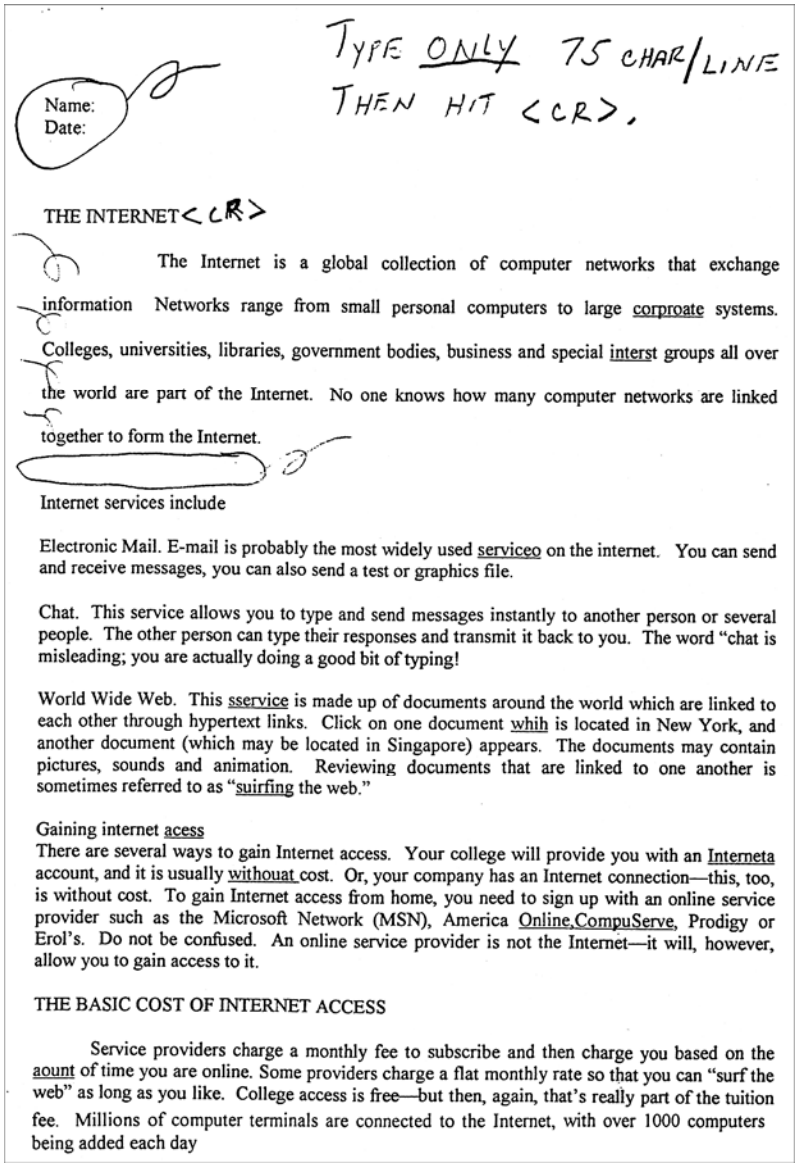
3. Type the "finger" command.
   Refer to **NOTE** on step 2

4. Explain the differences between the two commands

5. The following options are available with the "who" command:
   -u, -T, -l, -s, -r

   Discuss, using examples, each of the options. Compare the use of the options with the "finger" command.

Sheet 1-2 Experiment procedures (continued).



TYPE ONLY 75 CHAR/LINE
THEN HIT <CR>.

Name:
Date:

THE INTERNET<CR>

The Internet is a global collection of computer networks that exchange information Networks range from small personal computers to large corproate systems. Colleges, universities, libraries, government bodies, business and special interst groups all over the world are part of the Internet. No one knows how many computer networks are linked together to form the Internet.

Internet services include

Electronic Mail. E-mail is probably the most widely used serviceo on the internet. You can send and receive messages, you can also send a test or graphics file.

Chat. This service allows you to type and send messages instantly to another person or several people. The other person can type their responses and transmit it back to you. The word "chat is misleading; you are actually doing a good bit of typing!

World Wide Web. This sservice is made up of documents around the world which are linked to each other through hypertext links. Click on one document whih is located in New York, and another document (which may be located in Singapore) appears. The documents may contain pictures, sounds and animation. Reviewing documents that are linked to one another is sometimes referred to as "suirfing the web."

Gaining internet acess
There are several ways to gain Internet access. Your college will provide you with an Interneta account, and it is usually withouat cost. Or, your company has an Internet connection—this, too, is without cost. To gain Internet access from home, you need to sign up with an online service provider such as the Microsoft Network (MSN), America Online,CompuServe, Prodigy or Erol's. Do not be confused. An online service provider is not the Internet—it will, however, allow you to gain access to it.

THE BASIC COST OF INTERNET ACCESS

Service providers charge a monthly fee to subscribe and then charge you based on the aount of time you are online. Some providers charge a flat monthly rate so that you can "surf the web" as long as you like. College access is free—but then, again, that's really part of the tuition fee. Millions of computer terminals are connected to the Internet, with over 1000 computers being added each day

Sheet 1-3 This sheet contains data to type and format in VI, while following the instructions listed on this page.

Instructions[1]

Perform the following instructions after you create the CONNECT file, shown in **Sheet 1-3**:

1. Open "CONNECT" file
2. Type your name
3. Click the show/hide button on the standard toolbar to display codes then set left and right margins at 1.5"
4. Center and set the title to 14-point bold
5. Set the body of the text to 11 point font size
6. Spell check
7. Single space the first and last paragraph
8. Move the sentence and make changes as indicated in attached sheet
9. Change the first heading to 14-point size font bold italic. Note: Not the title
10. Using the replace feature, search for the word "service" and replace it with "feature"
11. Using the "change case" feature, change the heading "Internet features include" to uppercase
12. Using the "change case" feature, change the heading "Gaining internet access" to uppercase
13. Indent paragraphs using the Tab key
14. Insert an Enter to separate the heading "Gaining internet access" and the paragraph following it.
15. Bold and underline all headings
16. Preview your work
17. Print one copy
18. Close the file; save the changes

Note: Text to be copied or moved must first be highlighted

1. These instructions were converted from the original sheet presented by the professor.

1

2
DATA SHEETS

LABORATORY EXPERIMENT I

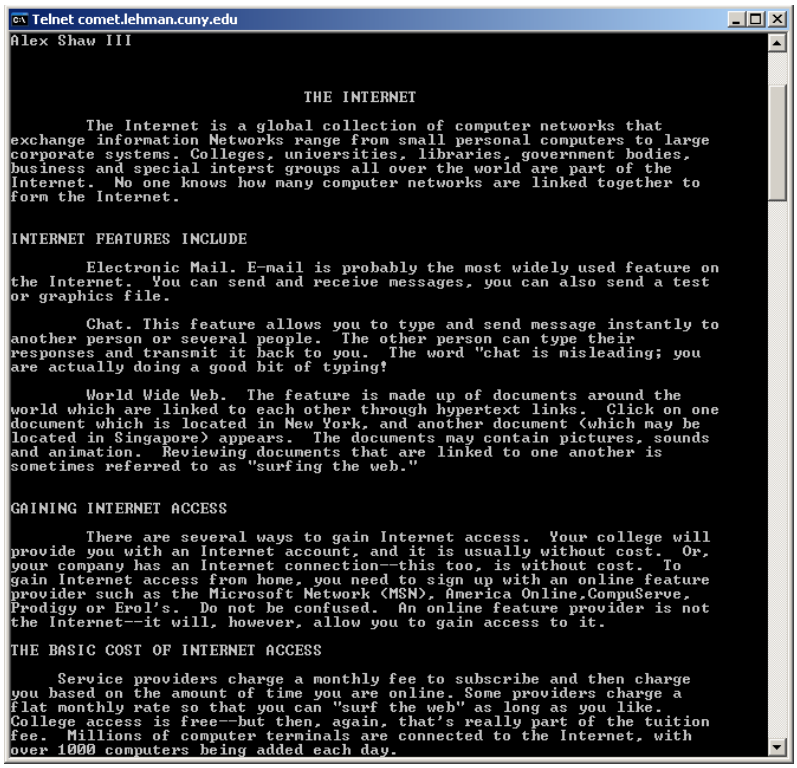
Part I

The table below illustrates the command used in VI and Microsoft Word to carryout the specific instruction:

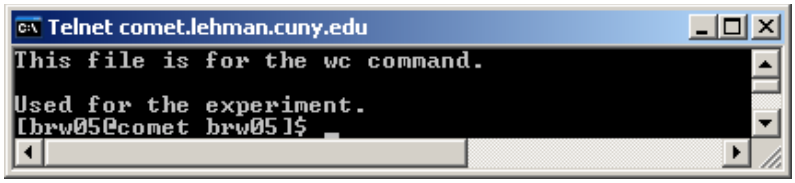
Instruction	VI	Word [1, 3]
Open "CONNECT" file	vi CONNECT [2]	Press *ctrl-o*
Type your name	Alex	Alex
Click the show/hide button on the standard toolbar to display codes then set left and right margins at 1.5"	**Not completely available** [4]	Use page setup to change margins; click ¶ to show codes
Center and set the title to 14-point bold	:center 75 [5] [1] **Font change not available**	Press *ctrl-e*
Set the body of the text to 11 point font size	**Not available**	Use Formatting toolbar
Spell check	:!aspell –c % [4] [2]	Press *F7* key
Single space the first and last paragraph	dd [4, 5]	Press *ctrl-1*
Change the first heading to 14-point size font bold italic Note: Not the title	**Not available**	Use Formatting toolbar
Using the replace feature, search for the word "service" and replace it with "feature"	:1,$s/service/feature/g [4, 5]	Press *ctrl-h*
Using the "change case" feature, change the heading "Internet features include" to uppercase	25~ [5]	Press *shift-F3*
Using the "change case" feature, change the heading "Gaining internet access" to uppercase	23~ [5]	Press *shift-F3*
Indent paragraphs using the *Tab* key	Press *Tab*	Press *Tab*
Insert an *Enter* to separate the heading "Gaining internet access" and the paragraph following it	o [5]	Press *Enter*
Bold and underline all headings	**Not available**	Use Formatting toolbar
Preview your work	**Not available** [4]	Use *File…Print Preview* menu
Print one copy	:1,$ print [4, 5]	Press *ctrl-p*
Close the file; save the changes	:wq [5]	Press *ctrl-s*; *ctrl-F4*

Table 2-1 Illustrates the difference between VI and Microsoft Word based on prepared instructions

Notes: Numbers inside brackets refer to the reference used to obtain that information; it is not part of the command.
1. Abbreviated list; there may be multiple steps to each instruction
2. Executed from the shell prompt
3. Commands are not case-sensitive
4. See analysis section
5. Executed in command mode



Output 2-1 Data screen after input and instructions were performed.



Output 2-2 Contents of the WCFILE file (with exception to the last line).

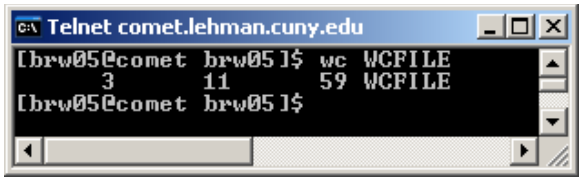
After I performed all the instructions, I produced the output shown in **Output 2-1**.

Part II

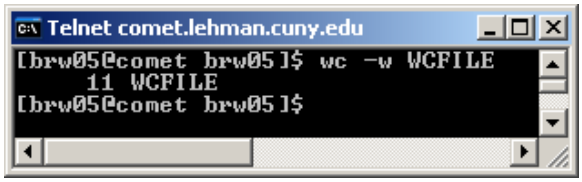
This portion of the experiment deals with the **wc** command. Reading the lab sheet in the previous section, I realized a manual character count of a file was required for comparison purposes.

I decided to create a new file (WCFILE), more suitable for this part (**Output 2-2**). Besides, I want to preserve my eyesight.

Outputs from the **wc** command, using various options, are displayed below:



Output 2-3 Results of the **wc WCFILE** command. Displays line, word and character count, and the filename. This particular file has 3 lines, 11 words, and 59 characters.



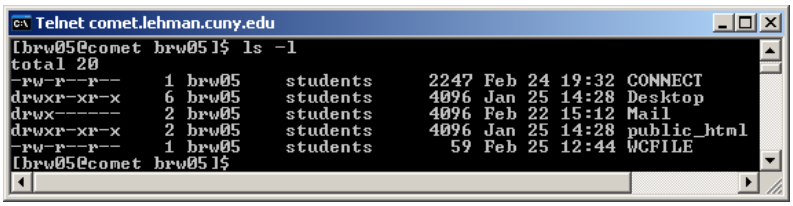
Output 2-4 Results of the **wc -w WCFILE** command. Displays the number of words in the file, which is 11.

Output 2-5 Results of the **wc -l WCFILE** command. Displays the number of lines in the file, which is 3.

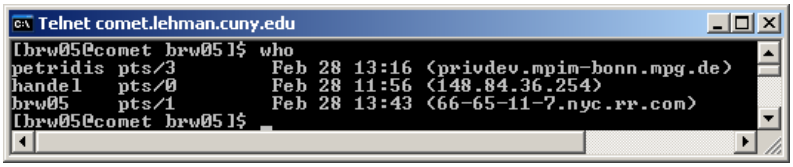
Our manual character count of WCFILE yields 57, including the space between the two lines. Below (**Output 2-6**) is the character count using **wc**.

Output 2-6 Results of the **wc -c WCFILE** command. Displays 59 characters, which differ from our manual count of 57 characters.

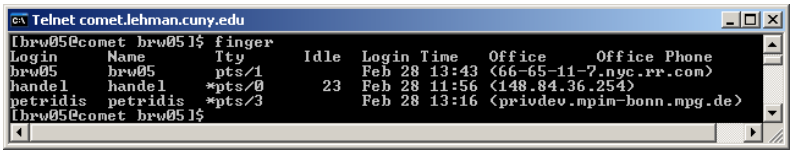
Output 2-7 Results of the **ls** command. Displays five files or directories (see Analysis section).



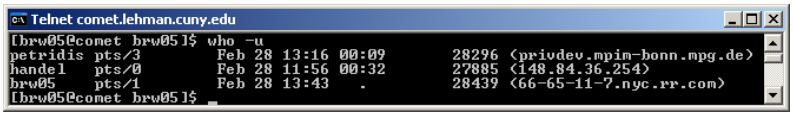
Output 2-8 Results of the **ls -l** command. Displays same five files or directories (see Analysis section).



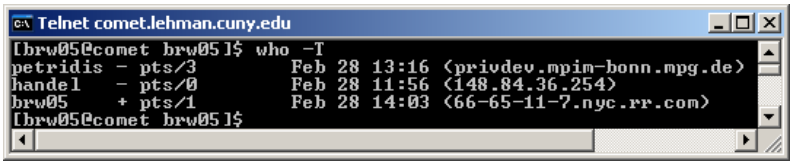
Output 2-9 Results of the **who** command; three users are listed during my session.



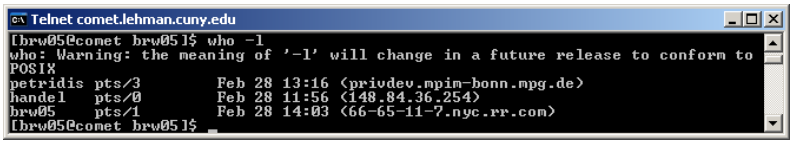
Output 2-10 Results of the **finger** command, with the same three users listed.



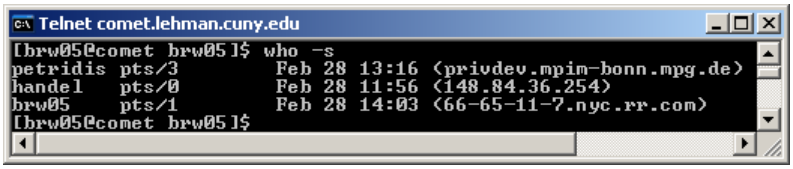
Output 2-11 Results of the **who -u** command.



Output 2-12 Results of the **who -T** command.



Output 2-13 Results of the **who -l** command.



Output 2-14 Results of the **who -s** command.

Part III

This part focuses on the **ls** and **cat** commands.

In my home directory, I issued the **ls** command, which produced the results in **Output 2-7**.

The **ls –l** command produces the result shown in **Output 2-8**.

The **cat CONNECT** command produces output shown in **Output 2-1**, on the previous page.

Both the **ls** and **cat** command display the contents of a particular source. The **ls** command, however, lists the directory contents, and the **cat** command usually displays the contents of a (text) file.

I utilized the **more** and **less** command to display the contents of the CONNECT file also.

Unlike **cat**, **more** and **less** browses a text file. **More** displays the percentage of the file viewed. **Less** displays a prompt for the next action to take.

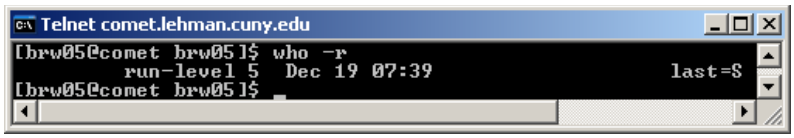
Part IV

The command **cd $HOME** changes to my home directory.

The **who** (**Output 2-9**) and **finger** (**Output 2-10**) commands display a list of users who are currently logged in.

The **finger** command displays a title for each column. It also has a column for Office and Office Phone.

Output 2-11 to **Output 2-15** (next page) displays the result of the **who** command when used with the **-u**, **-T**, **-l**, **-s**, and **-r** options (see analysis section for details).



Output 2-15 Results of the **who -r** command.

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ANALYSIS

LABORATORY EXPERIMENT I

Part I

In Part I of the experiment, Microsoft Word was more capable of performing more commands than VI, particularly commands associated with formatting. Although Word can save files in various formats, including text, VI is more suitable for creating ANSI text files.

Below are a few issues that arose during the experiment:

1. Although there is no show/hide button in VI, the **:help** command will enable you to obtain a list of commands.
2. The print preview feature is not available in VI; however, you can use the **more**, **less**, or **cat** command to display contents of a file, similar to a print preview.
3. The **:1,$ print** command prints to the currently set or default printer. However, you can use the **lpr** command for the same purpose.
4. I was not able to single space an entire block of text; therefore, I navigated between each line and issued a **dd** command, which deletes an entire line.

Errors

1. In my first attempt to replace "service" with "feature", I typed **:1,$s/service/feature g**, forgetting the / between the 'e' and 'g', which caused "service" to be replaced with "feature g". Therefore, I had to issue another search and replace command—**:1,$s/feature g/feature/g**—to fix the situation.

Part II

In the file (WCFILE) I created for the manual count, I did not insert any tabs, which were part of the instructions for the CONNECT file. Possibly, this could have an affect on the character count.

Pressing tab to create paragraph indentation gives the appearance of multiple spaces; when in fact, tab is considered one character also.

My manual count of WCFILE was off by two characters from the **wc** command's count. Possibly, I did not take into consideration the *Enter* key or the end of file marker, both of which generate an extra character.

Part III

1. The **ls** command with the **-l** option lists the directory contents in long format. It lists the file type (either file or directory), file descriptor, permissions, user name, workgroup, file size, date and time, and filename.

   It is more difficult to distinguish between files and directories with the **ls** command without options.

2. Using **more** or **less**, I was able to press *Enter* or *Spacebar* to browse the CONNECT file.

   Less is more powerful than **more**, allowing you to move to the beginning (g) or end (G) of the file. You can find text also, either forwards (/) or backwards (?).

Part IV

The following table lists the description for each option used with the **who** command in this experiment:

Option	Description
-u	Lists users who are currently logged on
-T	Along with output from the -s option, "state idle", "pid", and "comment" are listed
-l	List the lines on which the system is waiting for someone to log in
-s	Default—list the "name", "line", and "time"
-r	Display the current "run-level" of the init process

References

Most of the commands for this experiment were found from references [3] and [4] listed below:

1. VIM Book: http://www.truth.sk/vim/vimbook-OPL.pdf.

2. Stosberg, M. My Life with Text Editors: http://mark.stosberg.com/Tech/text_editor_review.html

3. Sarwar, Syed Mansoor, Robert Koretsky, Syed Aqeel Sarwar. Linux: The Textbook. Boston: Addison Wesley Longman Inc., 2002.

4. Edutrends, Inc. Addison-Wesley's Interactive Linux Tutorial and Reference. Boston: Addison Wesley Longman Inc., 2002.