Exercises 1

1. What is free software? List three characteristics of free software.

Free software is code that is available for free to everyone, but it is also free in the sense that it can be used and altered freely to the user's desires. It is free to be studied, redistributed, and modified.

1. Why is Linux popular? Why is it popular in academia?

Due to the operating system's distribution among universities, students were able to become used to it's sophisticated developing environment which helped these graduates succeed in the industry as UNIX was being spread throughout the world.

1. What are multiuser systems? Why are they successful?

Multiuser is a term that defines an operating system or application software that allows access by multiple users of a computer. They are so successful because they allow for collaborative projects to be conducted with much more ease and efficiency.

4. What is the Free Software Foundation/GNU? What is Linux? Which parts

of the Linux operating system did each provide? Who else has helped build

and refine this operating system?

The GNU is a completely free (in the freedom sense) operating system built by Richard Stallman and many of its components, except for the kernel, were completed in the early '90s. Linus Torvalds wrote the kernel for Linux, which was also intended to be a free operating system, in the early '90s. The two systems then were combined together to finish Linux, with it's original kernel and added features supplied by GNU. Linux was born off the internet with hundreds of people helping to develop it in its early years.

5. In which language is Linux written? What does the language have to do

with the success of Linux?

Linux is written in the C programming language, and this helps Linux be portable because C is written in a higher-level, machine-independent language.

6. What is a utility program?

It is system software that is designed to help analyze, optimize, configure, or maintain a computer.

7. What is a shell? How does it work with the kernel? With the user?

8. How can you use utility programs and a shell to create your own applications?

9. Why is the Linux filesystem referred to as hierarchical?

10. What is the difference between a multiprocessor and a multiprocessing

system?

11. Give an example of when you would want to use a multiprocessing

system.

12. Approximately how many people wrote Linux? Why is this project

unique?

13. What are the key terms of the GNU General Public License?

Exercises 2  
1. Briefly, what does the process of installing an operating system such as  
Ubuntu Linux involve?  
2. What is an installer?  
3. Would you set up a GUI on a server system? Why or why not?  
4. A system boots from the hard disk. To install Linux, you need it to boot  
from a CD/DVD. How can you make the system boot from a CD/DVD?  
5. What is free space on a hard disk? What is a filesystem?  
6. What is an ISO image? How do you burn an ISO image to a CD/DVD?  
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7. What is a virtual console? During installation, for what purposes can you  
use a virtual console? If the system is displaying a virtual console, how do  
you display the graphical installation screen instead?  
8. What steps would you take to have the system display all the things it is  
doing as it boots from a install Desktop CD/DVD?

Exercises 3  
1. The system displays the following message when you attempt to log in  
with an incorrect username or an incorrect password:  
Login incorrect  
a. This message does not indicate whether your username, your password,  
or both are invalid. Why does it not reveal this information?  
b. Why does the system wait for a couple of seconds to respond after you  
supply an incorrect username or password?  
2. Give three examples of poor password choices. What is wrong with each?  
3. Is fido an acceptable password? Give several reasons why or why not.  
4. What is a context menu? How does a context menu differ from other  
menus?  
5. What appears when you right-click the root window? How can you use  
this object?  
6. How would you swap the effects of the right and left buttons on a mouse?  
What is the drag-and-drop threshold? How would you change it?  
7. What are the primary functions of the Main menu?  
8. What is the input focus? When no window has the input focus, what happens to the letters you type on the keyboard? Which type of input focus  
would you prefer to work with? Why?  
9. What are the functions of a Window Operations menu? How do you display this menu?  
10. What is a panel? Name a few objects on the panels and explain what you  
can use them for. What do the Workspace Switcher applet and the Win  
dow List applet do?  
11. What are tooltips? How are they useful?  
12. How does the mouse pointer change when you move it to the edge of a  
window? What happens when you left-click and drag the mouse pointer  
when it looks like this? Repeat this experiment with the mouse pointer at  
the corner of a window.  
13. Assume you have started a window manager without a desktop manager.  
What would be missing from the screen? Describe what a window manager does. How does a desktop manager make it easier to work with a  
GUI?  
14. When the characters you type do not appear on the screen, what might be  
wrong? How can you fix this problem?

Exercises 4  
1. Which commands can you use to determine who is logged in on a specific  
terminal?  
2. How can you keep other users from using write to communicate with you?  
Why would you want to?  
3. What happens when you give the following commands if the file named  
done already exists?  
$ cp to\_do done  
$ mv to\_do done  
4. How can you find out which utilities are available on your system for editing files? Which utilities are available for editing on your system?  
5. How can you find the phone number for Ace Electronics in a file named  
phone that contains a list of names and phone numbers? Which command  
can you use to display the entire file in alphabetical order? How can you  
display the file without any adjacent duplicate lines? How can you display  
the file without any duplicate lines?  
6. What happens when you use diff to compare two binary files that are not  
identical? (You can use gzip to create the binary files.) Explain why the diff  
output for binary files is different from the diff output for ASCII files.  
7. Create a .plan file in your home directory. Does finger display the contents  
of your .plan file?  
8. What is the result of giving the which utility the name of a command that  
resides in a directory that is not in your search path?  
9. Are any of the utilities discussed in this chapter located in more than one  
directory on the local system? If so, which ones?  
10. Experiment by calling the file utility with the names of files in /usr/bin.  
How many different types of files are there?

11. Which command can you use to look at the first few lines of a file named

myfile.report? Which command can you use to look at the end of the file?

12. Re-create the clr1 and clr2 files.Test your files by running diff –u on them.   
13. Try giving these two commands:  
$ echo cat  
$ cat echo  
Explain the differences between the output of each command.

Exercises 5  
1. Is each of the following an absolute pathname, a relative pathname, or a  
simple filename?  
a. milk\_co  
b. correspondC:\Users\psxjoy\AppData\Local\Temp\OOY5$4OW5H`8`9%(9$)T67M.gifsiness/milk\_co  
c. /home/max  
d. /home/max![C:\Users\psxjoy\AppData\Local\Temp\)A[Y)I~](ZC9Z[3Y)IDK7LK.gif](data:image/gif;base64,)terature/promo  
e. ..  
f. letter.0610  
2. List the commands you can use to perform these operations:  
a. Make your home directory the working directory  
b. Identify the working directory  
3. If the working directory is /home/max with a subdirectory named literature, give three sets of commands that you can use to create a subdirectory  
named classics under literature. Also give several sets of commands you  
can use to remove the classics directory and its contents.  
4. The df utility displays all mounted filesystems along with information  
about each. Use the df utility with the –h (human-readable) option to  
answer the following questions.  
a. How many filesystems are mounted on your Linux system?  
b. Which filesystem stores your home directory?  
c. Assuming that your answer to exercise 4a is two or more, attempt to  
create a hard link to a file on another filesystem. What error message do  
directory is the parent of correspond and that the file cheese\_co is readable  
by everyone.  
a. cd correspondC:\Users\psxjoy\AppData\Local\Temp\OOY5$4OW5H`8`9%(9$)T67M.gifsiness/milk\_co  
b. ls –l correspondC:\Users\psxjoy\AppData\Local\Temp\OOY5$4OW5H`8`9%(9$)T67M.gifsiness  
c. cat correspondC:\Users\psxjoy\AppData\Local\Temp\OOY5$4OW5H`8`9%(9$)T67M.gifsinessC:\Users\psxjoy\AppData\Local\Temp\)QN1UH78VKP2T7)IA]ZM(FW.gifeese\_co  
you get? What happens when you attempt to create a symbolic link to  
the file instead?  
5. Suppose you have a file that is linked to a file owned by another user. How  
can you ensure that changes to the file are no longer shared?  
6. You should have read permission for the /etc/passwd file. To answer the  
following questions, use cat or less to display /etc/passwd. Look at the  
fields of information in /etc/passwd for the users on your system.  
a. Which character is used to separate fields in /etc/passwd?  
b. How many fields are used to describe each user?  
c. How many users are on the local system?  
d. How many different login shells are in use on your system? (Hint: Look  
at the last field.)  
e. The second field of /etc/passwd stores user passwords in encoded form.  
If the password field contains an x, your system uses shadow passwords  
and stores the encoded passwords elsewhere. Does your system use  
shadow passwords?  
7. Does the root directory have any subdirectories you cannot search as an  
ordinary user? Does the root directory have any subdirectories you cannot  
read as a regular user? Explain.  
8. What happens when you move a file within a filesystem?  
9. What does the .. entry in a directory point to? What does this entry point  
to in the root (/) directory?  
10. How can you create a file named –i? Which techniques do not work, and  
why do they not work? How can you remove the file named –i?  
11. Suppose the working directory contains a single file named andor. What  
error message do you get when you run the following command line?  
$ mv andor and\/or  
Under what circumstances is it possible to run the command without producing an error?  
12. The ls –i command displays a filename preceded by the inode number of  
the file. Write a command to output all the files in the working directory, sorted by inode number. (Hint: Use a  
pipe.)  
13. Do you think the system administrator has access to a program that can  
decode user passwords? Why or why not?  
14. Is it possible to distinguish a file from a hard link to a file? That is, given a  
filename, can you tell whether it was created using an ln command?  
Explain.  
15. Explain the error messages displayed in the following sequence of commands:  
$ ls -l  
total 1  
drwxrwxr-x2 max pubs 1024 2015-03-22 17:57 dirtmp  
$ ls dirtmp  
$ rmdir dirtmp  
rmdir: dirtmp: Directory not empty  
$ rm dirtmp/\*  
rm: No match.