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**Lab #1 - Linux Files and Directories**

Directions: *Please use the following directory structure to answer questions 1 and 2:*

Diagram

Description automatically generated

1. Write the absolute pathname to the common area (*highlighted in yellow*). (5pts)  
   Answer:

/common

1. If you are currently in the common area and you enter the following command: ***cd ..*** Write the absolute pathname of your current location. (5pts)  
   Answer:

/

1. If you include the following syntax at the end of a command line what will happen? The syntax is : “ **| more**” (5pts)  
   Answer:

It redirects the outcat put of the previous command into the “more command,” which further converts it to txt and displays each attribute of the command one at a time in a list format.

1. What is the difference between the “>” operator and the “>>” operator when used in conjunction with the ‘cat’ command? (5pts)

Answer:

Both functions should have two files on either end of it when using the ‘cat’ command. The ‘>’ operator will overwrite the content of one file into the other file, while the ‘>>’ command will append one file’s content to the end of another.

1. Please provide the correct ***chmod*** command to set the following permissions: Use the entire command, Starting with **chmod** and ending with the filename. (5pts)

-rwxr--r-- 1 demissie staff 3 Dec 12 07:44 junk.txt  
Answer:

chmod u=rwx,g=r,o=r junk.txt

-r-xrwxr-x 1 demissie staff 3 Dec 12 07:44 junk.txt  
Answer:

chmod u=rx,g=rwx,o=rx junk.txt

-rwxr-xr-x 1 demissie staff 3 Dec 12 07:44 junk.txt  
Answer:

chmod u=rwx,g=rx,o=rx junk.txt

-rwxrwxrwx 1 demissie staff 3 Dec 12 07:44 junk.txt  
Answer:

chmod a=rwx junk.txt

1. If your current directory is **/home/mary/project1**, write the command to move to the /etc directory directly under the root? (5pts)  
   Answer:

cd /etc

1. After typing the ***ls –a*** command, you notice that there is a file whose filename begins with a dot (.). What does this mean? (5pts)  
   Answer:

The dot before files represents hidden files.

1. After typing the ***ls –F*** command, you notice a filename that ends with an asterisk (\*). What does this mean? (5pts)  
   Answer:

The -F flags executable files with an asterisk.

1. If resume is the name of a file in the home directory of the root of the files system and your present working directory is home, what is the relative name for the file named resume? (5pts)  
   Answer:

cd resume

1. What will the following wildcard regular expression return: ***file[a-c]?*** (5pts)

Answer:

This means the files the command should apply to should be those starting with characters ranging from a-c.

1. A user typed in the command ***pwd*** and saw the output ***/home/jim/sales/pending***. How could that user navigate to the ***/home/jim directory?*** (5pts)  
   Answer:

cd ~

1. Sue’s current directory in the directory tree is ***/home/classmarks/linux***. She then types the command ***cd ..*** What directory will appear if Sue types the ***pwd*** command? (5pts)  
   Answer:

/home/classmarks

1. What does the ***/var*** directory contain? (5pts)  
   Answer:

This folder contains variables files including spool directories and files, administrative and logging data, and transient and temporary files, some of which are not sharable across systems. e.g., /var/log, /var/lock, /var/run.

1. Given the following output from the ls command, how many files are linked with file1? (5pts)

drwxr-xr-x 3 root root 4096 Apr 8 07:12 Desktop  
-rw-r--r-- 3 root root 282 Apr 29 22:06 file1  
-rw-r--r-- 1 root root 282 Apr 29 22:06 file2  
-rw-r--r-- 4 root root 282 Apr 29 22:06 file3  
-rw-r--r-- 2 root root 282 Apr 29 22:06 file4  
-rw-r--r-- 1 root root 282 Apr 29 22:06 file5  
-rw-r--r-- 1 user1 sys 282 Apr 29 22:06 file6

Answer:

2 files

1. If your current directory is ***/home/bill/projects/acme/plans***, what is the safest way to change to the ***/home/bill/projects/acme*** directory? (5pts)  
   Answer:

cd ..

1. View information of the 4 files below (what command should you use to produce some output same to the figure below?) – what’s the difference of these 4 files? (5pts)

Text

Description automatically generated

Answer:

ln -s file1 soft1

ln -s file2 soft 2

ls -l

File1: a hard link that points to a file in the hard drive (information in the inode 935008), and when this file is changed, information in that inode will be changed as well. It is 6 bytes long.

File2: a hard link that points to the same spot on the hard drive (thus, is stored in the same inode, 935008 and is also 6 bytes). When this file is referenced or manipulated, the information in the hard drive will change, meaning that information in file1 will change as well. However, if you delete file1, file2 will remain intact.

Soft1: a soft link because it is a symbolic link. It does not point to a spot on the hard drive, but to file1, the name of the file. It is stored in inode 936795 but takes less space (5 bytes) and just acts as a pointer. If file1 is deleted, soft1 is left empty and is useless.

Soft2: a soft link like to soft1, but it references or points to file2 instead of to file1. This is stored in inode 936796. It also takes up 5 bytes since it only points to a file name and will be lost if file2 is deleted.

1. Are the contents of the 4 files the same? What command do you use to verify that? (5pts)  
   Answer:

***ls -i***

The content of the files are the same. You can tell this by looking at the inode number at the start of each line. Since the first 2 files have the same inode number, they have the same data stored in them. The soft links will subsequently have the same data since they point to 2 different files that point to the same spot on the hard drive.

1. Explain the following error message. Which filenames would a subsequent ls display? (5pts)

~$ ls  
abc abd abe abf abg abh  
~$ rm abc ab\*  
rm: cannot remove 'abc': No such file or directory

Answer:

By including ab\*, the rm command removes every file that starts with ab. Because the abc file was already deleted first, it cannot be deleted alongside other files that start with ab, thus the others will be deleted and that particular request would be flagged as an error. This is because it is no longer in existence to be deleted. The subsequent output from a ***ls*** command would display nothing; all files were deleted.

1. If you set the directory permission to 400, what does it mean? If you set the directory permission to 100, what does it mean? If you set directory permission to 200, what does it mean? (5pts)

Answer:

These are absolute modes or octal (base 8) numbers specifying a new permission that you want the file or directory to have. 400 means allowed read by the file’s owner; 200 means allowed write by the file’s owner; 100 means for all files, allow execution by the file’s owner and for directories, allow the owner to search in the directories.

1. How do you set permissions for the following scenarios? (5pts)
2. You can modify a file but cannot delete it.
3. You can see the files names (directory content), but you cannot read their contents or modify them.

Answer:

1. chmod 1777 filename
2. chmod 1000 filename