Kristin Onorati

10874126

CPTS 224

**Questions**

Q1: (2 points) Explain what commands you used to set all this up.

To create a directory I used “mkdir 224HW” (created a 224 homework directory). Then I created a file using “vi realfile”. To create the hard link I used “ln realfile hardlink”. To create the softlink I used “ln –s realfile softlink”. To create the copy I used “cp realfile filecopy”.

Q2: (1 point) What is the output of ls -l on each file? Make some changes to the text in “realfile”. And then, what is the output of ls -l on each file? How they are different?

First run of ls –l:

-rw-rw-r-- 1 auser auser 36 Sep 11 10:09 filecopy

-rw-rw-r-- 2 auser auser 36 Sep 11 09:56 hardlink

-rw-rw-r-- 2 auser auser 36 Sep 11 09:56 realfile

lrwxrwxrwx 1 auser auser 8 Sep 11 10:05 softlink -> realfile

After changing realfile:

-rw-rw-r-- 1 auser auser 36 Sep 11 10:09 filecopy

-rw-rw-r-- 2 auser auser 65 Sep 11 10:11 hardlink

-rw-rw-r-- 2 auser auser 65 Sep 11 10:11 realfile

lrwxrwxrwx 1 auser auser 8 Sep 11 10:05 softlink -> realfile

The copy and the softlink have stayed the same but the last time the file was edited changed for the original file and the hardlink.

Q3: (1 point) What is the inode number of each file? (You can get the inode number with ls -i)

131630 filecopy 131633 hardlink 131633 realfile 131158 softlink

Q4: (1 point) Use the file command and record what type of file each is. Explain any differences.

Realfile, hardlink, and filecopy are all ASCII text files. Softlink is a symbolic link to realfile. The difference is that the hardlink is a direct link to the text file (which is why it is an ASCII text file), while the softlink is an abstract link to the original file.

(Note: Before doing Q5, record the permissions of "realfile". You will need these as the "before" for Q6.)  
Q5: (1 point) Make “hardlink” readable, writeable, executable by you, but not readable, writeable, executable by anyone else. What command did you use to do this?

chmod 700 hardlink

Q6: (1 point) What is the permission of “realfile” before and after you do Q5? How they are different? Why?

Before : -rw-rw-r—

After: -rwx------

The hardlink is a direct link to the original file so making any changes to the hardlink is the same as making changes to the original file

Q7: (1 point) cat each file. Are the results the same for each file?

The only file that is different is the copy. The copy does not have the new changes I made.

Q8: (1 point) Make some changes to the text in "softlink". Explain what happened to the file size of "hardlink", "realfile", and "softlink".

The file size of softlink stayed the same (because it isn’t really a file, just a link to the original file). The hardlink and realfile increased in size because I added text to the file.

Q9: (1 point) Move "realfile" to "realfile1". What is the output of ls -l. Explain what happened to "softlink" and "hardlink"? (Consider link count and inode number.)

131630 -rw-rw-r-- 1 auser auser 36 Sep 11 10:09 filecopy

131633 -rwx------ 2 auser auser 138 Sep 11 10:36 hardlink

131633 -rwx------ 2 auser auser 138 Sep 11 10:36 realfile1

131158 lrwxrwxrwx 1 auser auser 8 Sep 11 10:05 softlink -> realfile

The only change is that softlink is still linked to realfile even though realfile no longer exists (it has been moved). Hardlink is still linked to realfile1 because it has the same inode number