CSC3320 System Level Programming
Lab Assignment 3 (Post-Lab)

Due at 11:59 pm on Wednesday Sept. 15 [th], 2021
Instructor: Bello Babatunde

Purpose: Learn how to set permissions for the files and directories. Practices on editing a file via the vi editor.

Note: Please follow the instructions below step by step, and then write a report by answering the questions and upload the report (named as Lab3_FirstNameLastName.pdf or Lab3_FirstNameLastName.doc) to Google Classroom, under the rubric Lab 3 Out-of-lab Assignemnt.

Please add the lab assignment NUMBER and your NAME at the top of your

file sheet. Part 1: VI Editing - Small file

Open your terminal and connect to snowball server. Change your directory to your home directory (cd ~), and then create a new directory named as "Lab3" (mkdir Lab3). After that, go to directory Lab3 (cd Lab3) and please download the file "Try.c" (content shown in table below) by the following command (internet access required):

cp /home/bbello1/Public/Try.c Try.c

Be sure it succeeds using "ls" to see the file name "Try.c" listed.
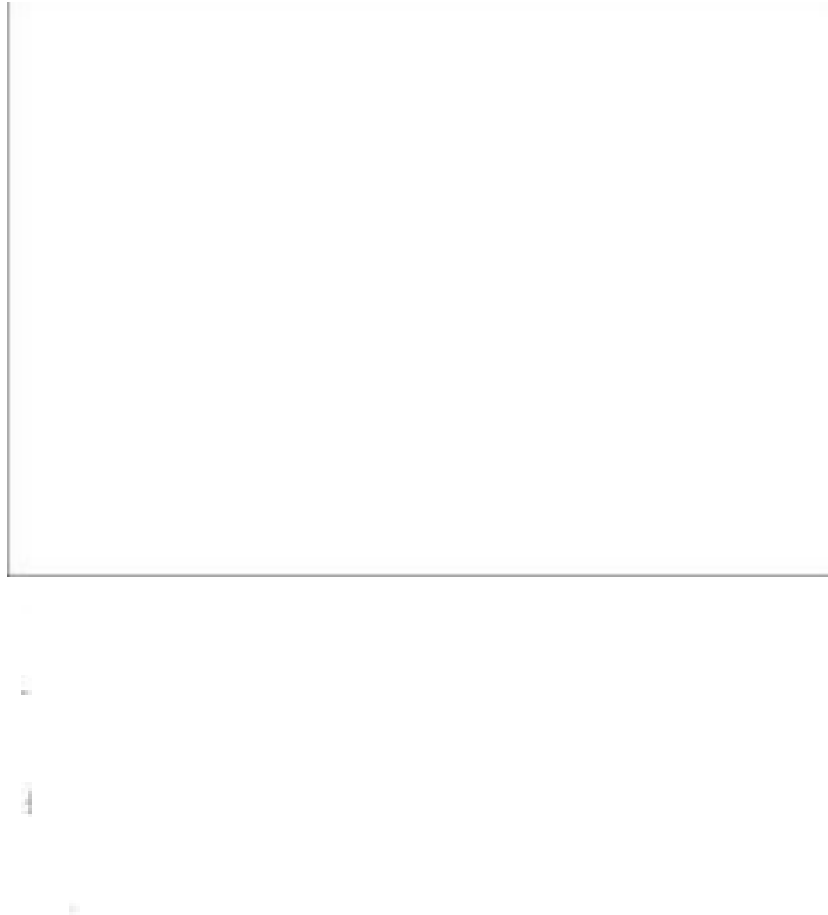
Try the following steps by issuing some commands in your vi
editor 1) Open "Try.c" with vi editor
$vi Try.c

2) Move cursor to the beginning of "Error!" use UP DOWN LEFT RIGHT arrow to
control cursor

3) Insert "xxx".
i
type "xxx" (hit x three times)

4) Append a blank line after the current line.
Hit Esc to command mode o (lowercase
o)
5) Delete "xxx".

6) Copy the first 2 lines, move cursor to the beginning of file, and then paste it after current line

    :1,2y

:0 p

7) Delete the first 2 lines

    :1,2d

8) Save it

    :w

9) Replace all "fptr" with "FPTR"

    :1,$s/fptr/FPTR/g

10) Save and exit.

    :wq

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Part 2: VI Editing - Large file

1) Go into your Lab3 directory.

    $cd ~/Lab3

2) Copy "RealEstate.csv" from instructor's public directory to your Lab3 directory again.

    $cp /home/bbello1/Public/RealEstate.csv .

Please write the commands you will issue to complete the following tasks and answering corresponding questions step by step in your report.

    3) Use vi to open "RealEstate.csv".

    vi RealEstate.csv

4) Move the cursor to the last line (without knowing the number of last line).

5) Display line number.

6) Search for the transaction for the estate located at "111 EAST"

Which line is this string located? (Please just write down the line

number) 58,125

7) Move the cursor to the line 50.

8) Substitute all comma "," with colon ":" from line 50 to line54. Press r when over the comma then press the colon

:50,54s/ ,/:/gc

9) Copy line 50 to line 54 to the end of file.

10)Remove line 50 to line 54.

11) Describe how to enter the text mode and insert a new line "Recorded in year 2008" between line 1 and line 2.

12) Switch back to command mode.

esc

13) Save the file and quit vi.
Esc then :wq then hit enter

Part 3: Permissions for files
Follow the instructions step by step and finish the questions as required. 1) Go into your Lab3 directory.
$cd ~/Lab3

2) Check the file permissions for file "Try.c" in your own Lab3 directory. $ls -l Try.c

3) You may see similar output as below, in which rw-rw-r-- of the first fieldis the file permission string for "Try.c".

[bbello1@gsuad.gsu.edu@snowball Lab3]$ ls -l Try.c
 -rw-rw-r--. 1 bbello1@gsuad.gsu.edu bbello1@gsuad.gsu.edu 379 Sep 8 10:44 Try.c
⸏ The leftmost 3 characters rw- tells us that the user (owner of the file) can only read and write the file. ⸏
⸏ The middle 3 characters rw- tells us the other users in the same group as the owner can only read and write the file. ⸏
⸏ The last 3 characters r-- tells us the other users in the other groups different from owner can only read the file. ⸏

Note: once you copy a file from other directory or download a file from other resources, you are the owner of the new copied or downloaded file.

4) Remove the read permission for the owner (yourself). $chmod u-r Try.c

5) Check the file permissions for file "Try.c" again.

$ ls -l Try.c

6) You may see similar output as below, in which -w-rw-r-- of the firstfield
is the file permission string for "Try.c".

[bbello1@gsuad.gsu.edu@snowball Lab3]$ ls -l Try.c
--w-rw-r--. 1 bbello1@gsuad.gsu.edu bbello1@gsuad.gsu.edu 379 Sep 8 10:49 Try.c

So -w- in the leftmost 3 characters tells us that the user (owner of
the file) only has the permission to write something into the file.

7) Try the vi editor again to modify the file.
$vi Try.c

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8) However, you may find following message displayed at the bottom of the
screen which means you do not have the right to read "Try.c".

9) Quit vi editor. :q

10) Try read "Try.c" again using cat.
$cat Try.c

11) Use chmod with an octal number to let all the users only have readpermission for "Try.c".

$chmod 444 Try.c

Note: The permission string to be set should be r--r--r--. Convert each group of three characters into decimal to form an octal number, which should be 444.

12) Check the file permissions for file "Try.c" again. And explain themeaning of each character in the file permission string.

ls -l Try.c

output: -r- - r - - r - -, 1
The leftmost r—tells that the owner of the file has read permission only, The middle characters r – tells all that the group users of the file have read permission only, The right most r—tells all other users have read permission only

13) Try the vi editor again to modify the file. Then remove one line bypressing dd $vi Try.c

Move your cursor to some line and press dd

14) Try to save the file in the vi editor.

:w

15)Can you find some error message at the bottom of the screen? If yes, what is it and how to quit the vi editor without saving the modification. "e45: 'readonly' option is set (add ! to override) and to quit use :qa!

16)Use chmod to add write the permission to all the users for"Try.c".

Chmod +w Try.c

Ls-la

17)Check the file permissions for file "Try.c" again. And explain themeaning of each character in the file permission string. The leftmost rw- tells that the owner of the file has read and write permissions only, the middle characters rw- tells that all group users of the file have read and write permissions only, the rightmost rw- tells that all other users have read and write permissions only.

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Part 4: Permissions for directories

The permissions also work for the directories. However, the permissions for the directories may have different behaviors.
Let us learn the permissions for directories by only changing different permissions to the owner of the file.

1) Go to your home directory and then check the permissions fordirectory Lab3. $cd ~

$ls -ld ~/Lab3

Note: -d option will let you check the detailed information for the directory instead of its contents.

2) You may see similar output as below, in which rwxrwxr-x of the firstfield is the permission string for directory Lab3.

```
ls -ld
~/Lab3
 drwxrwxr-x. 4 bbello1@gsuad.gsu.edu bbello1@gsuad.gsu.edu 4096 Sep 8 11:11 /home/bbello1/Lab3
```

3) Use chmod with octal number to forbid all permissions to allusers.

$chmod 000 ~/Lab3

4) Check the permissions for directory Lab3. You may see similaroutput as below. The permission string is changed to ---------.

```
ls -ld
~/Lab3
         d---------. 4 bbello1@gsuad.gsu.edu bbello1@gsuad.gsu.edu 4096 Sep 11:12 /home/bbello1/Lab3
```

5) Finishing the following tasks and fill out the blanks in the row forowner's permission "---" in the table below. If the task or command can be executed successfully, mark Y in the table, otherwise, mark N in the table. Please mark N/A if the task or command is not executed. A. Check the contents in directory Lab3.

$ls ~/Lab3

B. Create a directory named as "test" in Lab3.

$mkdir ~/Lab3/test

C. Create a file named as "test.txt" in Lab3.

$cat>~/Lab3/test.txt
A test
^D

D. If (B) succeeds, remove the created directory "test" of
Lab3. $rm -r ~/Lab3/test

E. If (C) succeeds, copy "test.txt" from your Lab3 into your
home directory. $cp ~/Lab3/test.txt .

F. Go into directory Lab3.
$cd ~/Lab3

The blanks in row "---" have been filled out in the table. Please compare
it to your answers.

6) Fill out the blanks in other rows by repeating 3) to 5) when the owner is
assigned different permissions as in the first column of the table. However,
when setting the permissions, we still need to forbid all the permissions to
all other users. So the last two bits in the octal number should always be
kept as 00.

For example, since owner's permissions is --x at next row, we should first set the file
permission by issuing the command chmod 100 ~/Lab3. And then fill out the blanks in
the row for
permissions --x by repeating 5).

Owners permission	ls	A Read content	mkdir	B Create sub directory	Cat >	C create file	rm	D Remove contents	cp	E copy documents	cd	Enter into directo
---		N		N		N		N/A		N/A		N

Owners permission	ls	A Read content	mkdir	B Create sub directory	Cat >	C create file	rm	D Remove contents	cp	E copy documents	cd	Enter into directo
--x		N		N		N		N/A		N/A		Y
-w-		N		N		N		N/A		N/A		N
-wx		Y		Y		Y		Y		N		Y
r--		Y		N		N		N/A		N/A		N

r-x	Y	N	N	N/A	N/A	Y
rw-	Y	N	N	N/A	N/A	N
rwx	Y	Y	Y	Y	N	Y