CST365-3

SYSTEM LEVEL PROGRAMMING

UWU/CST/17/054

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PRACTICAL ASSIGNMENT-02

Use UNIX file permission concepts to answer following questions

1. What is the permission of a new directory which is created by copying an existing directory having its permissions as 'r w x r w x r w x'?

I got a different permission when I copy from existing directory which having 'rwxrwxrwx' into newdirectory. I got 'rwxr-xr-x' permission for new directory(r for read the file,w for modify the file and x for use the file as command. First three bits represent owner's permission, next three bits represent grop permissions and last three bits represents others permissions). So we can't copy the permissions one directory to another using 'cp -r dir1 dir2' command.

```
Pavilion-Laptop-14-bk0xx:~$
total 56
drwxr-xr-x 4 user user 4096 ජූති
                                             6 15:10 Desktop
drwxr-xr-x 2 user user 4096
                                            6 15:14 dir1
drwxr-xr-x 2 user user 4096 dt 13 16:04 Documents
drwxr-xr-x 2 user user 4096 ජනි
-rw-r--r-- 1 user user 28 මැයි
drwxr-xr-x 2 user user 4096 අජි
                                            5 21:24 Downloads
                                           17 10:34 file1
                                           13 16:04 Music
drwxrwxrwx 2 user user 4096 ජූති
-rw-r--r-- 1 user user 0 ජූති
drwxr-xr-x 2 user user 4096 ජූති
                                            6 15:02
                                           23 20:24 pdf
                                           13 16:04 Pictures
drwxr-xr-x 2 user user 4096 ්ඨ්රි
                                          13 16:04 Public
                                0 ජනි
 --wxr-x--x 1 user user
                                            5 21:37 shindu
drwxr-xr-x 2 root user 4096 අති
-rwxrwx-wx 1 user user 0 අති
-rw-r--r-- 1 user user 11 අති
-rwxrwxrwx 1 user user 7 අති
-rw-r--r-- 1 user user 7 අති
                                          13 16:04 Templates
                                          23 20:24 tes
                                          23 19:25 test
                                          23 19:25 test1
                                           6 15:08 test2
drwxr-xr-x 2 user user 4096 අප්රි 23 10:25 Videos
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ cp -r olddir newdir
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l
total 60
drwxr-xr-x 4 user user 4096 ජා
                                            6 15:10 Desktop
drwxr-xr-x 2 user user 4096 drwxr-xr-x 2 user user 4096
                                           6 15:14 dir1
                                          13 16:04 Documents
drwxr-xr-x 2 user user 4096 ජූති
-rw-r--r-- 1 user user 28 මැධි
drwxr-xr-x 2 user user 4096 අජි
                                            5 21:24 Downloads
                                                                                          Different permissions
                                           17 10:34 file1
                                           13 16:04 Music
drwxr-xr-x 2 user user 4096 ජූති
drwxrwxrwx 2 user user 4096 ජූති
                                            6 15:17 newdir
                                            6 15:02
drwxr-xr-x 2 user user 4096 අති
drwxr-xr-x 2 user user 4096 අති
                                           23 20:24 pdf
                                           13 16:04 Pictures
                                           13 16:04 Public
 --wxr-x--x 1 user user
                                  0
                                             5 21:37 shindu
drwxr-xr-x 2 root user 4096 අප්රි
                                           13 16:04 Templates
                               0 පේරි
11 පේරි
7 පේරි
                                           23 20:24 tes
 -rwxrwx-wx 1 user user
 rw-r--r-- 1 user user
                                           23 19:25 test
 rwxrwxrwx 1 user user
                                            23 19:25 test1
```

Chmod command is used to set permission bit on file or directory. It also allows to copy permission one file/directory to another file/directory. Using - -reference option the chmod command is capable to copy permissions from one file/directory to file/directory.

\$chmod - -reference=existingdir newdir

```
ser@user-HP-Pavilion-Laptop-14-bk0xx:~$ chmod --reference=olddir newdir
 ser@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l
total 60
drwxr-xr-x 4 user user 4096 ජූති
drwxr-xr-x 2 user user 4096 ජූති
                                     6 15:18 Desktop
                                     6 15:14 dir1
drwxr-xr-x 2 user user 4096 (25) 13 16:04 Documents
drwxr-xr-x 2 user user 4096 ජූති
                                                                                         Same permissions
                                      5 21:24 Downloads
-rw-r--r-- 1 user user 28 ວັດລີ 17 10:34 file1
drwxr-xr-x 2 user user 4096 ເຜີ 13 16:04 Music
drwxrwxrwx 2 user user 4096 ເສີ 6 15:17
0 අජරි
                                    23 20:24 pdf
 rw-r--r-- 1 user user
lrwxr-xr-x 2 user user 4096 අති
                                    13 16:04 Pictures
drwxr-xr-x 2 user user 4096 අජාරි
--wxr-x--x 1 user user 0 ජනි
                                    13 16:04 Public
                                      5 21:37 shindu
drwxr-xr-x 2 root user 4096 අජ්රි
                                     13 16:04 Templates
                             0 අජරි
 rwxrwx-wx 1 user user
                                     23 20:24 tes
                            11 අත්
 rw-r--r-- 1 user user
                                     23 19:25 test
                             7 ජෙරි
                                    23 19:25 test1
 rwxrwxrwx 1 user user
 rwxrwxrwx 1 user user
                                      6 15:08 test2
                               අත්රි
drwxr-xr-x 2 user user 4096
                                     23 10:25 Videos
```

- 2. How to change following permission of a newly created file (when creating the file, name it with your name i.e. praboda.txt) using both symbolic mode and absolute mode.
 - a. remove readability for others

Symbolic mode

chmod o-r shindu.txt

```
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rw-rw-r-- 1 user user 0 $\frac{\pi}{20}$ 7 09:39 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ chmod o-r shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rw-rw---- 1 user user 0 $\frac{\pi}{20}$ 7 09:39 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$
```

Absolute mode

chmod 660 shindu.txt or chmod - 004 shindu.txt

```
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rw-r--r-- 1 user user 0 ☎ 7 09:51 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ chmod 660 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rw-rw---- 1 user user 0 ☎ 7 09:51 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$
```

or

```
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rw-rw-r-- 1 user user 0 ☎ 7 10:00 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ chmod -004 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rw-rw---- 1 user user 0 ☎ 7 10:00 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$
```

b. remove writability for group

Symbolic mode

chmod g-w shindu.txt

```
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rw-rw---- 1 user user 0 ( 7 09:39 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ chmod g-w shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rw-r---- 1 user user 0 ( 7 09:39 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$
```

Absolute mode

chmod 640 shindu.txt or chmod -020 shindu.txt

```
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rw-rw---- 1 user user 0 巻 7 09:51 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ chmod 640 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rw-r---- 1 user user 0 巻 7 09:51 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$
```

```
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rw-rw---- 1 user user 0 $\text{colored}$ 7 10:00 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ chmod -020 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rw-r---- 1 user user 0 $\text{colored}$ 7 10:00 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$
```

c. Add executability for user and group

Symbolic mode

chmod ug+x shindu.txt

```
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rw-r---- 1 user user 0 ජූති 7 09:39 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ chmod ug+x shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rwxr-x--- 1 user user 0 ජූති 7 09:39 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$
```

Absolute mode

chmod 750 shindu.txt or chmod +110 shindu.txt

```
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rw-r---- 1 user user 0 $\frac{\pi}{20}$ 7 09:51 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ chmod 750 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rwxr-x--- 1 user user 0 $\frac{\pi}{20}$ 7 09:51 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$
```

or

```
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rw-r---- 1 user user 0 క్రానీ 7 10:00 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ chmod +110 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rwxr-x--- 1 user user 0 క్రానీ 7 10:00 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$
```

d. remove readability, writability, executability for group and other

Symbolic mode

chmod go-rwx shindu.txt

```
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rwxr-x--- 1 user user 0  7 09:39 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ chmod go-rwx shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rwx----- 1 user user 0  7 09:39 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$
```

Absolute mode

chmod 700 shindu.txt or chmod -077 shindu.txt

```
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rwxr-x--- 1 user user 0 ☎ 7 09:51 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ chmod 700 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rwx----- 1 user user 0 ☎ 7 09:51 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$
```

or

```
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rwxr-x--- 1 user user 0 ( 7 10:00 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ chmod -077 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rwx----- 1 user user 0 ( 7 10:00 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$
```

e. set readability and executability but no rw-r-xr-x writability for group and other

Symbolic mode

chmod go=rx shindu.txt

```
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rwx----- 1 user user 0 $\frac{\pi}{20}$ 7 09:39 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ chmod go=rx shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rwxr-xr-x 1 user user 0 $\frac{\pi}{20}$ 7 09:39 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$
```

Absolute mode

chmod 755 shindu.txt **or** chmod +055 shindu.txt

```
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rwx----- 1 user user 0 $\frac{1}{20}$ 7 09:51 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ chmod 755 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rwxr-xr-x 1 user user 0 $\frac{1}{20}$ 7 09:51 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$
```

or

```
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rwx----- 1 user user 0 $\frac{\pi}{20}$ 7 10:00 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ chmod +055 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rwxr-xr-x 1 user user 0 $\frac{\pi}{20}$ 7 10:00 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$
```

f. remove readability for user and other

Symbolic mode

chmod uo-r shindu.txt

```
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rwxr-xr-x 1 user user 0 $\frac{\pi}{20}$ 7 09:39 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ chmod uo-r shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
--wxr-x--x 1 user user 0 $\frac{\pi}{20}$ 7 09:39 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$
```

Absolute mode

chmod 351 shindu.txt or chmod -404 shindu

```
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rwxr-xr-x 1 user user 0 (26) 7 09:51 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ chmod 351 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
--wxr-x--x 1 user user 0 (26) 7 09:51 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$
```

```
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
-rwxr-xr-x 1 user user 0 ( 7 10:00 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ chmod -404 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l shindu
--wxr-x--x 1 user user 0 ( 7 10:00 shindu
user@user-HP-Pavilion-Laptop-14-bk0xx:~$
```

- 3. Assume that you have created a new file called studentlist.txt. Now, you need to set the permission of your group members to read and modify the file, but others only can read it. What steps you need to follow?
 - **Step 01-** First we should type '**ls –l'** command in a terminal.It gives a "long listing" of the files in our directory. In addition to the file name, the long listing shows protection information, file owner, number of characters in file, and the date and time of the last change to the file.
 - Step 02 Then we want to select a directory where we create a new file using 'cd diectory' command.
 - Step 03- Create a new file called studentlist.txt using 'cat>studentlist' command
 - **Step 04-**Set the permission of group members to read and modify the file, but others only can read it using symbolic mode 'chmod g=rw,o=r studentlist.txt'

Or

Using numericmode – 'chmod 664 studentlist'

```
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -l
total 56
drwxr-xr-x 6 user user 4096 ජූති 7 10:50 Desktop
drwxr-xr-x 2 user user 4096 € 6 15:14 dir1
drwxr-xr-x 2 user user 4096 حص 13 16:04 Documents
drwxr-xr-x 2 user user 4096 ජූති 5 21:24 Downloads
-rw-r--r-- 1 user user 28 මැයි 17 10:34 file1
drwxr-xr-x 2 user user 4096 ජූනි 13 16:04 Music drwxrwxrwx 2 user user 4096 ජූනි 7 11:20 olddir
-rw-r--r-- 1 user user 0 ජූනි 23 20:24 pdf
drwxr-xr-x 2 user user 4096 අත් 13 16:04 Pictures
drwxr-xr-x 2 user user 4096 අත් 13 16:04 Public
--wxr-x--x 1 user user 0 జ్ఞు 7 10:00 shindu
----rw-r-- 1 user user 0 జ్ఞు 6 20:43 studentlist
----rw-r-- 1 user user
drwxr-xr-x 2 root user 4096 අත් 13 16:04 Templates
-rwxr-x-wx 1 user user 0 ರ್ಯ್ 23 20:24 tes
                           11 ජේරී 23 19:25 test
7 ජූරී 23 19:25 test1
-rw-r--r-- 1 user user
-rwxr-xrw- 1 user user 7 ఆవో
-rwxrwxrwx 1 user user 7 క్షన్
                                      6 15:08 test2
drwxr-xr-x 2 user user 4096 අත් 23 10:25 Videos
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ cd dir1
user@user-HP-Pavilion-Laptop-14-bk0xx:~/dir1$ cat>studentlist
user@user-HP-Pavilion-Laptop-14-bk0xx:~/dir1$ ls
studentlist
user@user-HP-Pavilion-Laptop-14-bk0xx:~/dir1$ ls -l
total 0
-rw-r--r-- 1 user user 0 ಆರ್ 7 11:24 studentlist
user@user-HP-Pavilion-Laptop-14-bk0xx:~/dir1$ chmod q=rw.o=r studentlist
user@user-HP-Pavilion-Laptop-14-bk0xx:~/dir1$ ls-l
ls-l: command not found
user@user-HP-Pavilion-Laptop-14-bk0xx:~/dir1$ ls -l
total 0
-rw-rw-r-- 1 user user 0 ජාති 7 11:24 studentlist
user@user-HP-Pavilion-Laptop-14-bk0xx:~/dir1$
```

```
user@user-HP-Pavilion-Laptop-14-bk0xx:~/dir1$ ls -l
total 0
-rw-r----- 1 user user 0 歩う 7 11:24 studentlist
user@user-HP-Pavilion-Laptop-14-bk0xx:~/dir1$ chmod 664 studentlist
user@user-HP-Pavilion-Laptop-14-bk0xx:~/dir1$ ls -l
total 0
-rw-rw-r-- 1 user user 0 歩う 7 11:24 studentlist
```