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I confirm that I understand my proposal needs to be submitted online via College's MST PORTAL under the relevant module page before the deadline for my assignment to be accepted and marked. I am fully aware that late submissions will be treated as non-submission and a mark of zero will be awarded.

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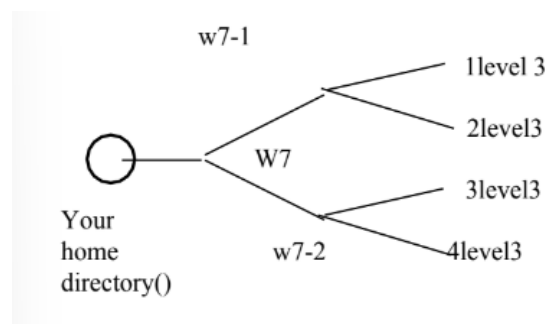
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1.Introduction

This log focuses on practical exercises related to Unix/Linux file system operations and commands, in Linux based Network Operating System (NOS) environment. Through hands-on exercises, participants will develop essential skills in creation of directory file and navigation, file manipulation and management, text output and special character handling, directory listing, and copying of files. These exercises are targeted to make deeper understanding of the Linux Command line interfaces with commands like “mkdir”, “cd”, “cat”, “chmod”, and “ls” commands. These exercises give us the hand-on experience in working with the file system and file permissions, which are some of the important tasks of systems administration.

2.Creating directory structure using mkdir command for given figure

Create the directory structure presented in the figure below. Use **mkdir** command and relative pathnames from your home directory. Try both:



No option and -p option, for the command.

```
vboxuser@Ubuntu:~$ tree W7
W7
├── w7-1
│   ├── 1level3
│   └── 2level3
└── w7-2
    ├── 3level3
    └── 4level3
7 directories, 0 files
```

Figure 1: Creating directory and related pathname

3.Changing 1level3 directory using relative pathname.

Change to the 1level3 directory by one step using a relative pathname.

```
vboxuser@Ubuntu:~$ cd W7/W7-1/1level3/  
vboxuser@Ubuntu:~/W7/W7-1/1level3$ cd ../../W7-2/4level3/  
vboxuser@Ubuntu:~/W7/W7-2/4level3$ W7/W7-2/4level3
```

Figure 2: changing 1level3 using relative pathname

4.changing directories in my directory by one command using relative pathname

Practice in changing directories in your directory structure by one command using relative pathnames, e.g., from **1level3** to **2level3**, from **2level3** to **4level3**, from **4level3** to **w7**, etc. Use names of parent and child directories (' and '..') as well.

```
vboxuser@Ubuntu:~/W7/W7-1/1level3$ cd ../../W7-2/4level3/  
vboxuser@Ubuntu:~/W7/W7-2/4level3$
```

Figure 3:Changing directory from 1level3 to 2level3

5. Changing to 1 level3 and creating a text file.

Changing directory to 1level3 and creating a text using “cat”.

```
vboxuser@Ubuntu:~/W7/W7-2/4level3$ cd ../../W7-1/1level3/  
vboxuser@Ubuntu:~/W7/W7-1/1level3$ cat>file  
This is my file  
cat>file  
^Z  
[1]+  Stopped                  cat > file  
vboxuser@Ubuntu:~/W7/W7-1/1level3$
```

Figure 4: changing 1level3 and creating text file

6. Copying the text file from 1level3 to 1level3 (with the name file1)

Also copying the file to 2 level3 as well.

```
vboxuser@Ubuntu:~/W7/W7-1/1level3$ cd ../../W7-1/1level3/
vboxuser@Ubuntu:~/W7/W7-1/1level3$ cp file file1
vboxuser@Ubuntu:~/W7/W7-1/1level3$ ls
file  file1
vboxuser@Ubuntu:~/W7/W7-1/1level3$ cp file ../2level3/
vboxuser@Ubuntu:~/W7/W7-1/1level3$ ls ../2level3/
file
vboxuser@Ubuntu:~/W7/W7-1/1level3$
```

Figure 5: copying text file from 1level3 to 1level3

7. Moving the file to 4level3.

After moving the text file to 4level3 then, viewing there is that file 4level3 and there is that file in 4level3 and there is not in 1level3.

```
vboxuser@Ubuntu:~/W7/W7-1/1level3$ mv file ../../W7-2/4level3
vboxuser@Ubuntu:~/W7/W7-1/1level3$ ls ../../W7-2/4level3
file
vboxuser@Ubuntu:~/W7/W7-1/1level3$ ls
file1
vboxuser@Ubuntu:~/W7/W7-1/1level3$
```

Figure 6: moving file to 4level3

8. Printing the texts each in one echo or “printf” command:

Hello! I can do it

5>(20:8) < (30*2)

Line 1

Line 2

a-b, A+B, -, +, <, >, #, \$, &, %

```
vboxuser@Ubuntu:~/W7/W7-1/1level3$ echo -e "Hello! I can do it\n5>(20:8)<(30*2)\nLine 1\nLine 2\na-b,A-B,-,+,<,>,#,$,%,&"
Hello! I can do it
5>(20:8)<(30*2)
Line 1
Line 2
a-b,A-B,-,+,<,>,#,$,%,&
vboxuser@Ubuntu:~/W7/W7-1/1level3$
```

Figure 7: printing text using "echo"

9. Giving the “ls” command (with a,d,g) in W7/W7-1/1level3 directory.

Give the “ls” command (without option and with a,d,g,l options) in home directory ,W7,W7-1, and 1level3 directories.

```
vboxuser@Ubuntu:~/W7/W7-1/1level3$ ls -a
*  *  *  file1
vboxuser@Ubuntu:~/W7/W7-1/1level3$ ls -d
*
vboxuser@Ubuntu:~/W7/W7-1/1level3$ ls -g
total 4
-rw-rw-r-- 1 vboxuser 26 Dec 19 12:47 file1
vboxuser@Ubuntu:~/W7/W7-1/1level3$
```

Figure 8:giving ls command with option or without option

10. Changing directory to W7-1

10.1.1 Displaying access permissions for the file “file1” in 1level3.

Changing the directory to W7-1 and displaying the permission for the file “file1” in 1level3.

```
vboxuser@Ubuntu:~/W7/W7-1/1level3$ cd ..
vboxuser@Ubuntu:~/W7/W7-1$ ls -l 1level3/
total 4
-rw-rw-r-- 1 vboxuser vboxuser 26 Dec 19 12:47 file1
vboxuser@Ubuntu:~/W7/W7-1$
```

Figure 9:displaying access permission for file 1 in 1 level3

10.2. Removing all access permissions for file

Removing all the access permissions for the file “file1” using the command “chmod”

```
vboxuser@Ubuntu:~/W7/W7-1$ chmod -rw 1level3/file1
vboxuser@Ubuntu:~/W7/W7-1$
```

Figure 10:removing access permission for file

10.3. Displaying access permissions for this file.

```
vboxuser@Ubuntu:~/W7/W7-1$ ls -l 1level3/
total 4
----- 1 vboxuser vboxuser 26 Dec 19 12:47 file1
vboxuser@Ubuntu:~/W7/W7-1$
```

Figure 11: displaying access permission for file

10.4. Trying to read this file using “cat” utility.

Trying to read the “file1” using the command “cat”. The read permission is denied because we have remove all the access permissions for this file.

```
vboxuser@Ubuntu:~/W7/W7-1$ cat 1level3/file1
cat: 1level3/file1: Permission denied
vboxuser@Ubuntu:~/W7/W7-1$
```

Figure 12: trying to read files using "cat" utility

10.5. Trying to write into the file using any “cat>>” utility.

Trying to write the “file1” using the command “cat>>” The write permission is denied because we had remove all the access permissions for this file.

```
cat: 1level3/file1: Permission denied
vboxuser@Ubuntu:~/W7/W7-1$ cat>>1level3/file1
bash: 1level3/file1: Permission denied
vboxuser@Ubuntu:~/W7/W7-1$
```

Figure 13: trying to write into file using “cat>>” utility

10.6. Adding read and write access permissions using “chmod u+rw”

Adding read and write access permissions for user for the file file1 using the command “chmod u+rw”.

```
vboxuser@Ubuntu:~/W7/W7-1$ chmod u+rw 1level3/file1
vboxuser@Ubuntu:~/W7/W7-1$
```

Figure 14: reading and writing permissions using "chmod u+rw"

10.7. Displaying access permissions for this file.

```
vboxuser@Ubuntu:~/W7/W7-1$ ls -l 1level3/  
total 4  
-rw----- 1 vboxuser vboxuser 26 Dec 19 12:47 file1  
vboxuser@Ubuntu:~/W7/W7-1$
```

Figure 15:displaying access permission for this file

10.8. Trying to read this file using “cat” utility.

Trying to read this file using utility “cat”.

```
vboxuser@Ubuntu:~/W7/W7-1$ cat 1level3/file1  
This is my file  
cat>file  
vboxuser@Ubuntu:~/W7/W7-1$
```

Figure 16:trying to read file using “cat” utility

10.9. Trying to write into this file using “cat >>” utility.

Trying to write into the file1 using utility “cat>>”

```
vboxuser@Ubuntu:~/W7/W7-1$ cat>>1level3/file1  
This is my second line.  
^Z  
[1]+  Stopped                  cat >> 1level3/file1  
vboxuser@Ubuntu:~/W7/W7-1$
```

Figure 17:trying writing into this file using "cat>>" utility

11.Changing directory to 1level3

11.1.1. Displaying access permissions for 1level3.

```
vboxuser@Ubuntu:~/W7/W7-1$ ls -l  
total 8  
drwxrwxr-x 2 vboxuser vboxuser 4096 Dec 19 12:55 1level3  
drwxrwxr-x 2 vboxuser vboxuser 4096 Dec 19 12:48 2level3  
vboxuser@Ubuntu:~/W7/W7-1$
```

Figure 18:displaying access permission for 1level3

11.2. Removing access permission for 1level3 directory and displaying access info

Remove all access permissions for the 1 level3 directory and display across permission.

```
vboxuser@Ubuntu:~/W7/W7-1$ chmod -rwx 1level3/
vboxuser@Ubuntu:~/W7/W7-1$ ls -l
total 8
d----- 2 vboxuser vboxuser 4096 Dec 19 12:55 1level3
drwxrwxr-x 2 vboxuser vboxuser 4096 Dec 19 12:48 2level3
vboxuser@Ubuntu:~/W7/W7-1$
```

Figure 19: removing all permissions for 1level3 and displaying across permission

11.3. Trying to read a file from 1level3 using any utility.

```
vboxuser@Ubuntu:~/W7/W7-1$ cat 1level3/file1
cat: 1level3/file1: Permission denied
vboxuser@Ubuntu:~/W7/W7-1$
```

Figure 20: trying to read file from 1level3 using any utility

11.4 Trying to put a file into 1level3 using any utility.

```
vboxuser@Ubuntu:~/W7/W7-1$ cat>>1level3/file1
bash: 1level3/file1: Permission denied
vboxuser@Ubuntu:~/W7/W7-1$
```

Figure 21: trying to put file into 1leve3 using any utility

11.5. Trying to search in 1level3 using any command

(e.g. this ls command)

```
vboxuser@Ubuntu:~/W7/W7-1$ ls 1level3/
ls: cannot open directory '1level3/': Permission denied
vboxuser@Ubuntu:~/W7/W7-1$
```

Figure 22: trying to search 1level3 using any command

11.6. Adding read, write and execute permission for 1level3 directory

Adding read, write, and execute access permissions for user for the 1level3 directory.

```
vboxuser@Ubuntu:~/W7/W7-1$ chmod u+rwX 1level3/
vboxuser@Ubuntu:~/W7/W7-1$
```

Figure 23: adding read, write and execute permission for 1level3

11.7. Displaying access permissions for 1level3.

```
vboxuser@Ubuntu:~/W7/W7-1$ ls -l
total 8
drwx----- 2 vboxuser vboxuser 4096 Dec 19 12:55 1level3
drwxrwxr-x 2 vboxuser vboxuser 4096 Dec 19 12:48 2level3
vboxuser@Ubuntu:~/W7/W7-1$
```

Figure 24:displaying access permission for 1level3

11.8 Trying to read a file from 1level3 using any utility.

```
vboxuser@Ubuntu:~/W7/W7-1$ cat 1level3/file1
This is my file
cat>file
This is my second line.
vboxuser@Ubuntu:~/W7/W7-1$
```

Figure 25:trying to read file from 1level3 using any utility

11.9. Trying to put a file into 1level3 using any utility.

```
vboxuser@Ubuntu:~/W7/W7-1$ cat>1level3/file1
This is my third line.
^Z
[2]+  Stopped                  cat > 1level3/file1
vboxuser@Ubuntu:~/W7/W7-1$
```

Figure 26:trying to put a file into 1level3 using any command

11.10. Trying to search in 1level3 using any command

(e.g. the ls command)

```
vboxuser@Ubuntu:~/W7/W7-1$ ls 1level3/
file1
vboxuser@Ubuntu:~/W7/W7-1$
```

Figure 27:trying searching in 1level3 using any command

12.Conclusion:

In this logbook, I investigated different techniques for manipulating directories and files in Linux. I effectively built a complicated directory structure and accessed it through relative paths. Furthermore, I acquired practical experience through the processes of creating, duplicating, and moving files. By utilizing the `chmod` command, I adjusted access permissions and noted their effect on the accessibility of files and directories. These activities offered essential hands-on experience in handling files and directories on a Linux system, highlighting the significance of access controls as a vital component of system security. This practical experience has greatly improved my ability to work with network operating systems and expanded my knowledge of essential Linux commands, thus enhancing my technical abilities.

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