



Module Code & Module Title Level 5 – Network Operating Systems

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Submitted To: Sarika Dahal Word Count (Where Required):

I confirm that I understand my coursework needs to be submitted online via MST Classroom under the relevant module page before the deadline in order 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.

Steps Required

 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.

```
bibhuti_sigdel@Bibhuti:~\$ mkdir -p w7/{w7-1/{1level3,2level3},w7-2/{3level3,4level3}}
bibhuti_sigdel@Bibhuti:~\$ tree w7

w7

w7-1

1level3
2level3
2level3
4level3
4level3
7 directories, 0 files
bibhuti_sigdel@Bibhuti:~\$
```

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

```
bibhuti_sigdel@Bibhuti:~$ ped
-bash: ped: command not found
bibhuti_sigdel@Bibhuti:~$ pwd
/home/bibhuti_sigdel
bibhuti_sigdel@Bibhuti:~$ cd /home/bibhuti_sigdel/W7/W7-1/1level3
bibhuti_sigdel@Bibhuti:~/W7/W7-1/1level3$ ls
bibhuti_sigdel@Bibhuti:~/W7/W7-1/1level3$ cd ../2level3
bibhuti_sigdel@Bibhuti:~/W7/W7-1/2level3$
```

3. 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.

4. Change to **1level3** and create a text file by any tool.

```
© bibhuti_sigdel@Bibhuti: ~/w7 ×
bibhuti_sigdel@Bibhuti:~$ mkdir -p w7/{w7-1/{1level3,2level3},w7-2/{3level3,
4level3}}
bibhuti_sigdel@Bibhuti:~$ tree w7
   w7-1
       1level3
     — 2level3
   w7 - 2
      - 3level3
     — 4level3
7 directories, 0 files
bibhuti_sigdel@Bibhuti:~$ cd w7/w7-1/1level3/
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ cd ../2level3
bibhuti_sigdel@Bibhuti:~/w7/w7-1/2level3$ cd ../4level3
-bash: cd: ../4level3: No such file or directory
bibhuti_sigdel@Bibhuti:~/w7/w7-1/2level3$ cd ../../w7-2/4level3
bibhuti_sigdel@Bibhuti:~/w7/w7-2/4level3$ cd ../..
bibhuti_sigdel@Bibhuti:~/w7$ cd w7-1/1level3
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ cat > bibhuti
Hello, This is a text file
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$
```

 Copy this text file from 1level3 to 1level3 (with the name file1), 2level3, and to 3level3 changing its name. Show that there are these files in corresponding directories.

```
bibhuti_sigdel@Bibhuti: ~/w7 × + v
bibhuti_sigdel@Bibhuti:~$ mkdir -p w7/{w7-1/{1level3,2level3},w7-2/{3level3,
4level3}}
bibhuti_sigdel@Bibhuti:~$ tree w7
    w7-1
       - 1level3
      _ 2level3
    w7-2
      3level3
      — 4level3
7 directories, 0 files bibhuti_sigdel@Bibhuti:~$ cd w7/w7-1/1level3/bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ cd ../2level3
bibhuti_sigdel@Bibhuti:~/w7/w7-1/2level3$ cd ../4level3
-bash: cd: ../4level3: No such file or directory
bibhuti_siqdel@Bibhuti:~/w7/w7-1/2level3$ cd ../../w7-2/4level3
bibhuti_sigdel@Bibhuti:~/w7/w7-2/4level3$ cd ../..
bibhuti_sigdel@Bibhuti:~/w7$ cd w7-1/1level3
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ cat > bibhuti
Hello, This is a text file
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ cp bibhuti bibhuti1
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ ls
bibhuti bibhuti1
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ cp bibhuti ../2level3/
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ ls ../2level3/
bibhuti
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ cp bibhuti ../../w7-2/3level3/newb
ibhuti
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ cd ../../w7-2/3level3
bibhuti_sigdel@Bibhuti:~/w7/w7-2/3level3$ ls
newbibhuti
bibhuti_sigdel@Bibhuti:~/w7/w7-2/3level3$
```

6. Move this file to **4level3**. Show that there is this file in **4level3** and there is not in **1level3**.

```
© bibhuti_sigdel@Bibhuti: ~/w7 ×
bibhuti_sigdel@Bibhuti:~$ mkdir -p w7/{w7-1/{llevel3,2level3},w7-2/{3level3,
4level3}}
bibhuti_sigdel@Bibhuti:~$ tree w7
    w7-1
       - 1level3
      — 2level3
    w7-2
       - 3level3
     — 4level3
7 directories, 0 files bibhuti_sigdel@Bibhuti:~$ cd w7/w7-1/1level3/
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ cd ../2level3
bibhuti_sigdel@Bibhuti:~/w7/w7-1/2level3$ cd ../4level3
-bash: cd: ../4level3: No such file or directory
bibhuti_sigdel@Bibhuti:~/w7/w7-1/2level3$ cd ../../w7-2/4level3
bibhuti_sigdel@Bibhuti:~/w7/w7-2/4level3$ cd ../..
bibhuti_sigdel@Bibhuti:~/w7$ cd w7-1/1level3
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ cat > bibhuti
Hello, This is a text file
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ cp bibhuti bibhuti1
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ ls
bibhuti bibhuti1
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ cp bibhuti ../2level3/
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ ls ../2level3/
bibhuti
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ cp bibhuti ../../w7-2/3level3/newb
ibhuti
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ cd ../../w7-2/3level3
bibhuti_sigdel@Bibhuti:~/w7/w7-2/3level3$ ls
newbibhuti
bibhuti_sigdel@Bibhuti:~/w7/w7-2/3level3$ cd ../../w7-1/1level3
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ mv bibhuti ../../w7-2/4level3/
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$
```

- 7. Print the following texts each in one **echo** or **printf** command:
 - a. Hello! I can do it
 - b. 5 > (20:8) < (30*2)
 - c. Line 1 Line 2

```
© bibhuti_sigdel@Bibhuti: ~/w7 ×
bibhuti_sigdel@Bibhuti:~$ tree w7
   w7 - 1
      — 1level3
       - 2level3
   w7-2
       - 3level3
    ___ 4level3
7 directories, 0 files
bibhuti_sigdel@Bibhuti:~$ cd w7/w7-1/1level3/
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ cd ../2level3
bibhuti_sigdel@Bibhuti:~/w7/w7-1/2level3$ cd ../4level3
-bash: cd: ../4level3: No such file or directory
bibhuti_sigdel@Bibhuti:~/w7/w7-1/2level3$ cd ../../w7-2/4level3
bibhuti_sigdel@Bibhuti:~/w7/w7-2/4level3$ cd ../..
bibhuti_sigdel@Bibhuti:~/w7$ cd w7-1/1level3
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ cat > bibhuti
Hello, This is a text file
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ cp bibhuti bibhuti1
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ ls
bibhuti bibhuti1
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ cp bibhuti ../2level3/
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ ls ../2level3/
bibhuti
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ cp bibhuti ../../w7-2/3level3/newb
ibhuti
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ cd ../../w7-2/3level3
bibhuti_sigdel@Bibhuti:~/w7/w7-2/3level3$ ls
newbibhuti
bibhuti_sigdel@Bibhuti:~/w7/w7-2/3level3$ cd ../../w7-1/1level3
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ mv bibhuti ../../w7-2/4level3/
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ ls ../../w7-2/4level3/
bibhuti
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ ls
bibhuti1
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ echo -e "Hello! Ican do it\n5>(20:
8)<(30*2)\nLine1\Line2\na-b, A-B, -, +, <, >, #, $, %, &"
Hello! Ican do it
5>(20:8)<(30*2)
Line1\Line2
a-b, A-B, -, +, <, >, #, $, %, & bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$
```

8. Give the **Is** command (without options and with **a**, **d**, **g**, **I**, **R** options) in home directory, **w7**, **w7-1**, and **1level3** directories. Explain for yourself the results received.

```
X
                                                                            © bibhuti_sigdel@Bibhuti: ~/w7 ×
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ echo -e "Hello! Ican do it\n5>(20:
8)<(30*2)\nLine1\Line2\na-b, A-B, -, +, <, >, #, $, %, &"
Hello! Ican do it
5>(20:8)<(30*2)
Line1\Line2
a-b, A-B, -, +, <, >, #, $, %, & bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ cd ../../
bibhuti_sigdel@Bibhuti:~/w7$ ls
w7-1 \quad w7-2
bibhuti_sigdel@Bibhuti:~/w7$ ls -a
bibhuti_sigdel@Bibhuti:~/w7$ ls -d
bibhuti_sigdel@Bibhuti:~/w7$ ls -g
total 8
drwxr-xr-x 4 bibhuti_sigdel 4096 Dec 19 20:08 w7-1
drwxr-xr-x 4 bibhuti_sigdel 4096 Dec 19 20:08 w7-2
bibhuti_sigdel@Bibhuti:~/w7$ ls -l
total 8
drwxr-xr-x 4 bibhuti_sigdel bibhuti_sigdel 4096 Dec 19 20:08 w7-1
drwxr-xr-x 4 bibhuti_sigdel bibhuti_sigdel 4096 Dec 19 20:08 w7-2
bibhuti_sigdel@Bibhuti:~/w7$ ls -R
w7-1 \quad w7-2
./w7-1:
1level3 2level3
./w7-1/1level3:
bibhuti1
./w7-1/2level3:
bibhuti
./w7-2:
3level3 4level3
./w7-2/3level3:
newbibhuti
./w7-2/4level3:
bibhuti
bibhuti_sigdel@Bibhuti:~/w7$
```

```
×
                                                                         bibhuti_sigdel@Bibhuti: ~/w7 × + ~
./w7-1:
1level3 2level3
./w7-1/1level3:
bibhuti1
./w7-1/2level3:
bibhuti
./w7-2:
3level3 4level3
./w7-2/3level3:
newbibhuti
./w7-2/4level3:
bibhuti
bibhuti_sigdel@Bibhuti:~/w7$ cd w7-1
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ ls
1level3 2level3
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ ls -a
  .. 1level3 2level3
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ ls -d
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ ls -g
total 8
drwxr-xr-x 2 bibhuti_sigdel 4096 Dec 19 20:19 1level3
drwxr-xr-x 2 bibhuti_sigdel 4096 Dec 19 20:15 2level3
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ ls -l
total 8
drwxr-xr-x 2 bibhuti_sigdel bibhuti_sigdel 4096 Dec 19 20:19 1level3
drwxr-xr-x 2 bibhuti_sigdel bibhuti_sigdel 4096 Dec 19 20:15 2level3
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ ls -R
1level3 2level3
./1level3:
bibhuti1
./2level3:
bibhuti
bibhuti_sigdel@Bibhuti:~/w7/w7-1$
```

```
    bibhuti_sigdel@Bibhuti: ∼/w7 ×

./w7-2/3level3:
newbibhuti
./w7-2/4level3:
bibhuti
bibhuti_sigdel@Bibhuti:~/w7$ cd w7-1
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ ls
1level3 2level3
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ ls -a
   .. 1level3 2level3
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ ls -d
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ ls -g
total 8
drwxr-xr-x 2 bibhuti_sigdel 4096 Dec 19 20:19 1level3
drwxr-xr-x 2 bibhuti_sigdel 4096 Dec 19 20:15 2level3
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ ls -l
total 8
drwxr-xr-x 2 bibhuti_sigdel bibhuti_sigdel 4096 Dec 19 20:19 1level3
drwxr-xr-x 2 bibhuti_sigdel bibhuti_sigdel 4096 Dec 19 20:15 2level3
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ ls -R
1level3 2level3
./1level3:
bibhuti1
./2level3:
bibhuti
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ cd 1level3
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ ls
bibhuti1
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ ls -a
       bibhuti1
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ ls -d
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ ls -g
total 4
-rw-r--r-- 1 bibhuti_sigdel 27 Dec 19 20:15 bibhuti1
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ ls -R
bibhuti1
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$
```

9. Change to the **W7** directory. Remove the directory files **w7-2**, **3level-3**, **4level3** and all ordinary files in them. Use the option **–i** of the **rm** and **rmdir** commands. Show that there are not these ordinary and directory files in your file structure.

```
© bibhuti_sigdel@Bibhuti: ~
1level3 2level3
./1level3:
bibhuti1
./2level3:
bibhuti
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ cd 1level3
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ ls
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ ls -a
   .. bibhuti1
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ ls -d
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ ls -g
total 4
-rw-r--r-- 1 bibhuti_sigdel 27 Dec 19 20:15 bibhuti1
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ ls -R
bibhuti1
bibhuti_sigdel@Bibhuti:~/w7/w7-1/1level3$ cd ../../w7-2/3level3
bibhuti_sigdel@Bibhuti:~/w7/w7-2/3level3$ cd ../..
bibhuti_sigdel@Bibhuti:~/w7$ rm -i w7-2/3level3/* w7-2/4level3/*
rm: remove regular file 'w7-2/3level3/newbibhuti'? y
rm: remove regular file 'w7-2/4level3/bibhuti'? y
bibhuti_sigdel@Bibhuti:~/w7$ tree w7
w7 [error opening dir]
0 directories, 0 files
bibhuti_sigdel@Bibhuti:~/w7$ cd ...
bibhuti_sigdel@Bibhuti:~$ tree w7
w7
       1level3
        └─ bibhuti1
        2level3
        └─ bibhuti
    w7-2
     3level34level3
7 directories, 2 files
bibhuti_sigdel@Bibhuti:~$
```

- 10. Change to **w7-1**.
- a. Display access permissions for the file file1 in 1level3.

- b. Remove all access permissions for this file.
- c. Display access permissions for this file.
- d. Try to read this file using any utility (e.g., cat).
- e. Try to write into this file using any utility (e.g., **cat** with the sign >> append).
- f. Add read and write access permissions for yourself for this file.
- g. Display access permissions for this file.
- h. Try to read this file using any utility.
- i. Try to write into this file using any utility.

```
X
© bibhuti_sigdel@Bibhuti: ∼/w7 ×
└── w7-2
5 directories, 2 files
bibhuti_sigdel@Bibhuti:~/w7$ cd w7-1
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ ls -l 1level3
-rw-r--r-- 1 bibhuti_sigdel bibhuti_sigdel 27 Dec 19 20:15 bibhuti1
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ ls -l 1level3/
total 4
-rw-r--r- 1 bibhuti_sigdel bibhuti_sigdel 27 Dec 19 20:15 bibhuti1
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ chmod -rw 1level3/bibhuti1
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ ls -l 1level3
total 4
        -- 1 bibhuti_sigdel bibhuti_sigdel 27 Dec 19 20:15 bibhuti1
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ ls -l 1level3/
total 4
        -- 1 bibhuti_sigdel bibhuti_sigdel 27 Dec 19 20:15 bibhuti1
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ cat 1level3/bibhuti1
cat: 1level3/bibhuti1: Permission denied
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ cat>>1level3/bibhuti1
-bash: 1level3/bibhuti1: Permission denied
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ chmod u+rw 1level3/bibhuti1
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ ls -l 1level3/
total 4
-rw----- 1 bibhuti_sigdel bibhuti_sigdel 27 Dec 19 20:15 bibhuti1
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ cat>>1level3/bibhuti1
This is my second file
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ ls -l
total 8
drwxr-xr-x 2 bibhuti_sigdel bibhuti_sigdel 4096 Dec 19 20:19 1level3
drwxr-xr-x 2 bibhuti_sigdel bibhuti_sigdel 4096 Dec 19 20:15 2level3
```

- 11.
- a. Display access permissions for 1level3.
- b. Remove all access permissions for the 1level3 directory.
- c. Display access permissions for 1level3.
- d. Try to read a file from 1level3 using any utility.
- e. Try to put a file into **1level3** using any utility.
- f. Try to search in **1level3** using any command (e.g., the **Is** command).
- g. Add read, write, and execute access permissions for yourself for the 1level3 directory.
- h. Display access permissions for 1level3.
- i. Try to read a file from 1level3 using any utility.
- j. Try to put a file into **1level3** using any utility.
- k. Try to search in 1level3 using any command (e.g., the Is command).

```
X
© bibhuti_sigdel@Bibhuti: ~/w7 ×
total 4
        -- 1 bibhuti_sigdel bibhuti_sigdel 27 Dec 19 20:15 bibhuti1
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ cat 1level3/bibhuti1
cat: 1level3/bibhuti1: Permission denied
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ cat>>1level3/bibhuti1
-bash: 1level3/bibhuti1: Permission denied
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ chmod u+rw 1level3/bibhuti1
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ ls -l 1level3/
total 4
-rw------ 1 bibhuti_sigdel bibhuti_sigdel 27 Dec 19 20:15 bibhuti1
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ cat>>1level3/bibhuti1
This is my second file
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ ls -l
total 8
drwxr-xr-x 2 bibhuti_sigdel bibhuti_sigdel 4096 Dec 19 20:15 2level3
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ chmod -rwx 1level3/
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ ls -l
total 8
d------ 2 bibhuti_sigdel bibhuti_sigdel 4096 Dec 19 20:19 1level3
drwxr-xr-x 2 bibhuti_sigdel bibhuti_sigdel 4096 Dec 19 20:15 2level3
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ cat 1level3/bibhuti1
cat: 1level3/bibhuti1: Permission denied
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ cat>>1level3/bibhuti1
-bash: 1level3/bibhuti1: Permission denied
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ ls 1level3/
ls: cannot open directory 'llevel3/': Permission denied
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ chmod u+rwx 1level3/
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ ls -[
ls: invalid option -- '['
Try 'ls --help' for more information.
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ ls -l
total 8
drwxr-xr-x 2 bibhuti_sigdel bibhuti_sigdel 4096 Dec 19 20:15 2level3
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ cat 1level3/bibhuti1
Hello, This is a text file
This is my second file
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ cat>1level3/bibhuti1
This is my third filebibhuti_sigdel@Bibhuti:~/w7/w7-1$
bibhuti_sigdel@Bibhuti:~/w7/w7-1$ ls 1level3/
bibhuti1
```

bibhuti_siqdel@Bibhuti:~/w7/w7-1\$