

## CT5052 Networks Operating Systems

### Week 7 Workshop

**Step 1:** Navigate to your home directory, Create the parent directories and create the subdirectories.

A terminal window with a dark background and light blue text. The window has a menu bar with 'File', 'Actions', 'Edit', 'View', and 'Help'. The terminal shows the following commands and output:

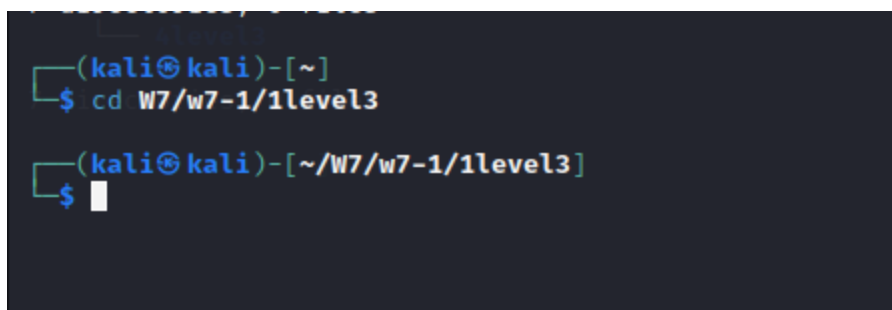
```
(kali㉿kali)-[~]  
$ cd  
/home/kali  
(kali㉿kali)-[~]  
$ mkdir -p W7/w7-1/{1level3,2level3,3level3}  
$ cd /home/evani/w7/w7-2/14  
(kali㉿kali)-[~] directory: cd/home/evani/w7/w7-2/14  
$ mkdir -p W7/w7-2/4level3
```

**Step 2:** Using the tree command to display the structure like this.

A terminal window with a dark background and light blue text. The terminal shows the following commands and output:

```
(kali㉿kali)-[~]  
$ tree W7  
W7  
├── w7-1  
│   ├── 1level3  
│   ├── 2level3  
│   └── 3level3  
└── w7-2  
    └── 4level3  
  
7 directories, 0 files  
  
(kali㉿kali)-[~]  
$
```

**Step 3:** Change to the 1level3 directory using a relative pathname.

A terminal window with a dark background and light blue text. The terminal shows the following commands and output:

```
(kali㉿kali)-[~]  
$ cd W7/w7-1/1level3  
  
(kali㉿kali)-[~/W7/w7-1/1level3]  
$
```

**Step 4:** Changing directories in directory structure from 1level3 to 2level3, from 2level3 to 4level3, from 4level3 to W7, etc. Use names of parent and child directories.

```
(kali㉿kali)-[~]
$ cd W7/w7-1/1level3

(kali㉿kali)-[~/W7/w7-1/1level3]
$ cd ../2level3

(kali㉿kali)-[~/W7/w7-1/2level3]
$ cd ../../W7-2/4level3
cd: no such file or directory: ../../W7-2/4level3

(kali㉿kali)-[~/W7/w7-1/2level3]
$ cd ../../w7-2/4level3

(kali㉿kali)-[~/W7/w7-2/4level3]
$ cd ..

(kali㉿kali)-[~/W7/w7-2]
$ cd w7-1/3level3
cd: no such file or directory: w7-1/3level3

(kali㉿kali)-[~/W7/w7-2]
$ cd ~/W7

(kali㉿kali)-[~/W7]
$ cd w7-1/3level3

(kali㉿kali)-[~/W7/w7-1/3level3]
$ cd ~

(kali㉿kali)-[~]
$
```

**Step 5:** Change to 1level3, create a file named example.txt, enter text and save the file by pressing Ctrl+D.

```
(kali㉿kali)-[~]
$ cd ~/W7/w7-1/1level3

(kali㉿kali)-[~/W7/w7-1/1level3]
$ cat > example.txt
Hello, this is a test file.

(kali㉿kali)-[~/W7/w7-1/1level3]
$ ls
example.txt

(kali㉿kali)-[~/W7/w7-1/1level3]
$
```

**Step 6:** Copy example.txt to 1level3 with the name file1, Copy example.txt to 2level3, Copy example.txt to 3level3 with a different name.

```
(kali㉿kali)-[~/W7/w7-1/1level3]
$ cp example.txt file1

(kali㉿kali)-[~/W7/w7-1/1level3]
$ cp example.txt ../2level3/

(kali㉿kali)-[~/W7/w7-1/1level3]
$ cp example.txt ../3level3/file3.txt
```

**Step 7:** Verify the Files in Corresponding Directories.

```
(kali㉿kali)-[~/W7/w7-1/1level3]
$ ls
example.txt  file1

(kali㉿kali)-[~/W7/w7-1/1level3]
$ ls ../2level3
example.txt

(kali㉿kali)-[~/W7/w7-1/1level3]
$ ls ../3level3
file3.txt

(kali㉿kali)-[~/W7/w7-1/1level3]
$
```

**Step 8:** Move the File to 4level3, Verify the File in 4level3 and Verify the File is No Longer in 1level3.

```
(kali㉿kali)-[~/W7/w7-1/1level3]
$ mv file1 ../.. /w7-2/4level3/

(kali㉿kali)-[~/W7/w7-1/1level3]
$ ls ../.. /w7-2/4level3
file1

(kali㉿kali)-[~/W7/w7-1/1level3]
$ ls
example.txt  0 files

(kali㉿kali)-[~/W7/w7-1/1level3]
$
```

**Step 9:** Use echo command to print the texts.

```
(kali㉿kali)-[~/W7/w7-1/1level3]
$ echo "Hello! I can do it"
Hello! I can do it

(kali㉿kali)-[~/W7/w7-1/1level3]
$ echo "5 > (20: 8) < (30 * 2)"
5 > (20: 8) < (30 * 2)

(kali㉿kali)-[~/W7/w7-1/1level3]
$ _e "Line 1\nline 2"
-e: command not found

(kali㉿kali)-[~/W7/w7-1/1level3]
$ _e "Line 1\nLine 2"
-e: command not found

(kali㉿kali)-[~/W7/w7-1/1level3]
$ echo -e "Line 1\nLine 2"
Line 1\nLine 2

(kali㉿kali)-[~/W7/w7-1/1level3]
$ echo "a-b, A-B, -, +, <, >, #, $, %, &."
a-b, A-B, -, +, <, >, #, $, %, &.

(kali㉿kali)-[~/W7/w7-1/1level3]
$
```

**Step 10:** Use printf command to print the texts.

```
(kali㉿kali)-[~/W7/w7-1/1level3]
$ printf "Hello! I can do it\n"
Hello! I can do it

(kali㉿kali)-[~/W7/w7-1/1level3]
$ printf "5 > (20: 8) < (30 * 2)\n"
5 > (20: 8) < (30 * 2)
7 directories, 0 files

(kali㉿kali)-[~/W7/w7-1/1level3]
$ printf "Line 1\nLine 2\n"
Line 1
Line 2

(kali㉿kali)-[~/W7/w7-1/1level3]
$ printf "a-b, A-B, -, +, <, >, #, $, %, &.\n"
a-b, A-B, -, +, <, >, #, $, %, &.
```

**Step 11:** Use ls command Without options and With -a option.

```
File Actions Edit View Help

(kali@kali)-[~/W7/w7-1/1level3]
$ ls ~
alscript  Documents  foldername  Nepal  Templates  test2  W7
class     Downloads  Laptop      Pictures  test      test3  zphisher
Desktop   evani      Music       Public   test1     Videos

(kali@kali)-[~/W7/w7-1/1level3]
$ ls -a ~
.          .profile
..         Public
alscript   .sudo_as_admin_successful
.bash_logout  Templates
.bashrc      test
.bashrc.original test1
.cache       test2
.class       test3
.config      .vboxclient-clipboard-tty7-control.pid
Desktop      .vboxclient-clipboard-tty7-service.pid
.dmrcc       .vboxclient-display-svg-x11-tty7-control.pid
Documents    .vboxclient-display-svg-x11-tty7-service.pid
Downloads    .vboxclient-draganddrop-tty7-control.pid
evani        .vboxclient-draganddrop-tty7-service.pid
.face        .vboxclient-hostversion-tty7-control.pid
.face.icon   .vboxclient-seamless-tty7-control.pid
foldername   .vboxclient-seamless-tty7-service.pid
.gnupg       .vboxclient-vmsvga-session-tty7-control.pid
.ICEauthority Videos
.java        W7
Laptop       .Xauthority
.local       .xsession-errors
.mozilla     .xsession-errors.old
Music        zphisher
Nepal        .zsh_history
Pictures     .zshrc
```

**Step 12:** With -d option, With -g option and With -l option.

```
File Actions Edit View Help

(kali@kali)-[~/W7/w7-1/1level3]
$ ls -d ~
/home/kali

(kali@kali)-[~/W7/w7-1/1level3]
$ ls -g ~
total 112
-rw-r--r-- 1 kali 32768 Dec 8 23:40 alscript
drwxr-xr-x 2 kali 4096 Dec 5 22:40 class
drwxr-xr-x 2 kali 4096 Nov 29 2023 Desktop
drwxr-xr-x 2 kali 4096 Nov 29 2023 Documents
drwxr-xr-x 2 kali 4096 Nov 29 2023 Downloads
drwxr-xr-x 2 kali 4096 Dec 5 22:46 evani
drwxr-xr-x 2 kali 4096 Dec 5 22:43 foldername
drwxr-xr-x 4 kali 4096 Dec 12 22:43 Laptop
drwxr-xr-x 2 kali 4096 Nov 29 2023 Music
drwxr-xr-x 4 kali 4096 Dec 11 23:23 Nepal
drwxr-xr-x 2 kali 4096 Nov 29 2023 Pictures
drwxr-xr-x 2 kali 4096 Nov 29 2023 Public
drwxr-xr-x 2 kali 4096 Nov 29 2023 Templates
drwxr-xr-x 3 kali 4096 Dec 8 23:25 test
-rw-r--r-- 1 kali 24 Dec 8 23:08 test1
-rw-r--r-- 1 kali 63 Dec 8 23:09 test2
-rw-r--r-- 1 kali 87 Dec 8 23:11 test3
drwxr-xr-x 2 kali 4096 Nov 29 2023 Videos
drwxr-xr-x 4 kali 4096 Dec 15 22:30 W7
drwxr-xr-x 8 kali 4096 Feb 20 2024 zphisher

(kali@kali)-[~/W7/w7-1/1level3]
$ ls -l ~
total 112
-rw-r--r-- 1 kali kali 32768 Dec 8 23:40 alscript
drwxr-xr-x 2 kali kali 4096 Dec 5 22:40 class
drwxr-xr-x 2 kali kali 4096 Nov 29 2023 Desktop
drwxr-xr-x 2 kali kali 4096 Nov 29 2023 Documents
drwxr-xr-x 2 kali kali 4096 Nov 29 2023 Downloads
drwxr-xr-x 2 kali kali 4096 Dec 5 22:46 evani
drwxr-xr-x 2 kali kali 4096 Dec 5 22:43 foldername
drwxr-xr-x 4 kali kali 4096 Dec 12 22:43 Laptop
drwxr-xr-x 2 kali kali 4096 Nov 29 2023 Music
drwxr-xr-x 4 kali kali 4096 Dec 11 23:23 Nepal
drwxr-xr-x 2 kali kali 4096 Nov 29 2023 Pictures
drwxr-xr-x 2 kali kali 4096 Nov 29 2023 Public
drwxr-xr-x 2 kali kali 4096 Nov 29 2023 Templates
drwxr-xr-x 3 kali kali 4096 Dec 8 23:25 test
-rw-r--r-- 1 kali kali 24 Dec 8 23:08 test1
-rw-r--r-- 1 kali kali 63 Dec 8 23:09 test2
-rw-r--r-- 1 kali kali 87 Dec 8 23:11 test3
drwxr-xr-x 2 kali kali 4096 Nov 29 2023 Videos
drwxr-xr-x 4 kali kali 4096 Dec 15 22:30 W7
drwxr-xr-x 8 kali kali 4096 Feb 20 2024 zphisher
```

## Step 13: With -R option.

```
kali@kali: ~/W7/w7-1/1level3

(kali@kali)~[~/W7/w7-1/1level3]
$ ls -R ~
/home/kali:
alscript  Documents  foldername  Nepal  Templates  test2  W7
class    Downloads  Laptop      Pictures  test      test3  zphisher
Desktop  evani      Music       Public   test1     Videos

/home/kali/class:

/home/kali/Desktop:

/home/kali/Documents:

/home/kali/Downloads:

/home/kali/evani:

/home/kali/foldername:

/home/kali/Laptop:
Dell  File2  HP

/home/kali/Laptop/Dell:

/home/kali/Laptop/HP:

/home/kali/Music:

/home/kali/Nepal:
Bagmati  Gandaki

/home/kali/Nepal/Bagmati:
ktm  Rasuwa

/home/kali/Nepal/Bagmati/ktm:

/home/kali/Nepal/Bagmati/Rasuwa:

/home/kali/Nepal/Gandaki:
gorkha  kaski

/home/kali/Nepal/Gandaki/gorkha:

/home/kali/Nepal/Gandaki/kaski:

/home/kali/Pictures:

/home/kali/Public:

/home/kali/Templates:
```

```
kali-linux-2023.3-virtualbox-amd64 [Running] - Oracle VM VirtualBox

kali@kali: ~/W7/w7-1/1level3

/home/kali/test:
A

/home/kali/test/A:
B

/home/kali/test/A/B:
C

/home/kali/test/A/B/C:
D

/home/kali/test/A/B/C/D:

/home/kali/Videos:

/home/kali/W7:
w7-1  w7-2

/home/kali/W7/w7-1:
1level3  2level3  3level3

/home/kali/W7/w7-1/1level3:
example.txt

/home/kali/W7/w7-1/2level3:
example.txt

/home/kali/W7/w7-1/3level3:
files.txt

/home/kali/W7/w7-2:
4level3

/home/kali/W7/w7-2/4level3:
file1

/home/kali/zphisher:
auth  LICENSE  README.md  scripts
dockerfile  make-deb.sh  run-docker.sh  zphisher.sh

/home/kali/zphisher/auth:
ip.txt  usernames.dat

/home/kali/zphisher/scripts:
launch.sh

kali@kali:~/W7/w7-1/1level3
```

Evani Raut

**Step 14:** W7 Directory (~W7) Without options, With -a option, With -d option, With -g option, With -l option and With -R option.

```
File Edit View Help
/home/kali/zphisher/scripts:
launch.sh

(kali@kali)-[~/W7/w7-1/1level3]
$ ls ~/W7
w7-1 w7-2

(kali@kali)-[~/W7/w7-1/1level3]
$ ls -a ~/W7
. .. w7-1 w7-2

(kali@kali)-[~/W7/w7-1/1level3]
$ ls -d ~/W7
/home/kali/W7

(kali@kali)-[~/W7/w7-1/1level3]
$ ls -g ~/W7
total 8
drwxr-xr-x 5 kali 4096 Dec 15 22:29 w7-1
drwxr-xr-x 3 kali 4096 Dec 15 22:30 w7-2

(kali@kali)-[~/W7/w7-1/1level3]
$ ls -l ~/W7
total 8
drwxr-xr-x 5 kali kali 4096 Dec 15 22:29 w7-1
drwxr-xr-x 3 kali kali 4096 Dec 15 22:30 w7-2

(kali@kali)-[~/W7/w7-1/1level3]
$ ls -R ~/W7
/home/kali/W7:
w7-1 w7-2

/home/kali/W7/w7-1:
1level3 2level3 3level3

/home/kali/W7/w7-1/1level3:
example.txt

/home/kali/W7/w7-1/2level3:
example.txt

/home/kali/W7/w7-1/3level3:
file3.txt

/home/kali/W7/w7-2:
4level3

/home/kali/W7/w7-2/4level3:
file1

(kali@kali)-[~/W7/w7-1/1level3]
$
```

**Step 15:** Use W7-1 Directory (~W7/w7-1) Without options, With -a option, With -d option, With -g option, With -l option and With -R option.

```
(kali@kali)-[~/W7/w7-1/1level3]
$ ls ~/W7/w7-1
1level3 2level3 3level3

(kali@kali)-[~/W7/w7-1/1level3]
$ ls -a ~/W7/w7-1
. .. 1level3 2level3 3level3

(kali@kali)-[~/W7/w7-1/1level3]
$ ls -d ~/W7/w7-1
/home/kali/W7/w7-1

(kali@kali)-[~/W7/w7-1/1level3]
$ ls -g ~/W7/w7-1
total 12
drwxr-xr-x 2 kali 4096 Dec 15 22:57 1level3
drwxr-xr-x 2 kali 4096 Dec 15 22:51 2level3
drwxr-xr-x 2 kali 4096 Dec 15 22:51 3level3

(kali@kali)-[~/W7/w7-1/1level3]
$ ls -l ~/W7/w7-1
total 12
drwxr-xr-x 2 kali kali 4096 Dec 15 22:57 1level3
drwxr-xr-x 2 kali kali 4096 Dec 15 22:51 2level3
drwxr-xr-x 2 kali kali 4096 Dec 15 22:51 3level3

(kali@kali)-[~/W7/w7-1/1level3]
$ ls -R ~/W7/w7-1
/home/kali/W7/w7-1:
1level3 2level3 3level3

/home/kali/W7/w7-1/1level3:
example.txt

/home/kali/W7/w7-1/2level3:
example.txt

/home/kali/W7/w7-1/3level3:
file3.txt

(kali@kali)-[~/W7/w7-1/1level3]
$
```

**Step 16:** Use 1level3 Directory (~W7/w7-1/1level3) Without options, With -a option, With -d option, With -g option, With -l option and With -R option.

```
(kali㉿kali)-[~/W7/w7-1/1level3]
$ ls ~/W7/w7-1/1level3
example.txt

(kali㉿kali)-[~/W7/w7-1/1level3]
$ la -a ~/W7/w7-1/1level3
.  ..  example.txt

(kali㉿kali)-[~/W7/w7-1/1level3]
$ ls -d ~/W7/w7-1/1level3
/home/kali/W7/w7-1/1level3

(kali㉿kali)-[~/W7/w7-1/1level3]
$ ls -g ~/W7/w7-1/1level3
total 4
-rw-r--r-- 1 kali 28 Dec 15 22:45 example.txt

(kali㉿kali)-[~/W7/w7-1/1level3]
$ ls -l ~/W7/w7-1/1level3
total 4
-rw-r--r-- 1 kali kali 28 Dec 15 22:45 example.txt

(kali㉿kali)-[~/W7/w7-1/1level3]
$ la -R ~/W7/w7-1/1level3
/home/kali/W7/w7-1/1level3:
example.txt

(kali㉿kali)-[~/W7/w7-1/1level3]
$
```

**Step 17:** Change to the W7 Directory and Remove w7-2, 3level3, and 4level3 Directories.

```
(kali㉿kali)-[~/W7/w7-1/1level3]
$ cd ~/W7

(kali㉿kali)-[~/W7]
$ rm -i ~/W7/w7-2/*
zsh: sure you want to delete all the files in /home/kali/W7/w7-2 [yn]? y
rm: cannot remove '/home/kali/W7/w7-2/4level3': Is a directory

(kali㉿kali)-[~/W7]
$ rm -ri w7-2
rm: descend into directory 'w7-2'? y
rm: descend into directory 'w7-2/4level3'? y
rm: remove regular file 'w7-2/4level3/file1'? y
rm: remove directory 'w7-2/4level3'? y
rm: remove directory 'w7-2'? y

(kali㉿kali)-[~/W7]
$
```



### Step 18: Change to w7-1 Directory

```
kali@kali: ~/W7/w7-1
File Actions Edit View Help
(kali@kali)-[~]
$ cd ~/W7/w7-1
```

### Step 19: Display Access Permissions for file1 in 1level3.

```
(kali@kali)-[~/W7/w7-1]
$ ls -l ~/W7/w7-1/1level3/file1
-rw-r--r-- 1 kali kali 0 Dec 19 08:30 /home/kali/W7/w7-1/1level3/file1
```

### Step 20: Remove All Access Permissions for file1

```
(kali@kali)-[~/W7/w7-1]
$ chmod 000 ~/W7/w7-1/1level3/file1
```

### Step 21: Display Access Permissions for file1 Again

```
(kali@kali)-[~/W7/w7-1]
$ ls -l ~/W7/w7-1/1level3/file1
----- 1 kali kali 0 Dec 19 08:30 /home/kali/W7/w7-1/1level3/file1
```

### Step 22: Try to Read file1 Using a Utility (e.g., cat)

```
(kali@kali)-[~/W7/w7-1]
$ cat ~/W7/w7-1/1level3/file1
cat: /home/kali/W7/w7-1/1level3/file1: Permission denied
```

### Step 23: Try to Write to file1 Using a Utility (e.g., cat with >>)

```
(kali@kali)-[~/W7/w7-1]
$ echo "test" >> ~/W7/w7-1/1level3/file1
zsh: permission denied: /home/kali/W7/w7-1/1level3/file1
```

### Step 24: Add Read and Write Access Permissions for Yourself

```
(kali@kali)-[~/W7/w7-1]
$ chmod u+rw ~/W7/w7-1/1level3/file1
```

### Step 25: Display Access Permissions for file1 Again

```
(kali@kali)-[~/W7/w7-1]
$ ls -l ~/W7/w7-1/1level3/file1
-rw----- 1 kali kali 0 Dec 19 08:30 /home/kali/W7/w7-1/1level3/file1
```

**Step 26:** Try to Read file1 Using a Utility

```
(kali㉿kali)-[~/W7/w7-1]
$ cat ~/W7/w7-1/1level3/file1
```

**Step 27:** Try to Write to file1 Using a Utility

```
(kali㉿kali)-[~/W7/w7-1]
$ echo "test" >> ~/W7/w7-1/1level3/file1
```

**Step 28:** Display Access Permissions for 1level3

```
(kali㉿kali)-[~/W7/w7-1]
$ ls -ld ~/W7/w7-1/1level3

drwxr-xr-x 2 kali kali 4096 Dec 19 08:30 /home/kali/W7/w7-1/1level3
```

**Step 29:** Remove All Access Permissions for 1level3

```
(kali㉿kali)-[~/W7/w7-1]
$ chmod 000 ~/W7/w7-1/1level3
```

**Step 30:** Display Access Permissions for 1level3 Again

```
(kali㉿kali)-[~/W7/w7-1]
$ ls -ld ~/W7/w7-1/1level3

d----- 2 kali kali 4096 Dec 19 08:30 /home/kali/W7/w7-1/1level3
```

**Step 31:** Display Access Permissions for 1level3 Again

```
(kali㉿kali)-[~/W7/w7-1]
$ cat ~/W7/w7-1/1level3/file1

cat: /home/kali/W7/w7-1/1level3/file1: Permission denied
```

**Step 32:** Try to Put a File into 1level3

```
(kali㉿kali)-[~/W7/w7-1]
$ touch ~/W7/w7-1/1level3/newfile

touch: cannot touch '/home/kali/W7/w7-1/1level3/newfile': Permission denied
```

**Step 33:** Try to Search in 1level3

```
(kali㉿kali)-[~/W7/w7-1]
$ ls ~/W7/w7-1/1level3

ls: cannot open directory '/home/kali/W7/w7-1/1level3': Permission denied
```

**Step 34:** Add Read, Write, and Execute Permissions for Yourself

```
(kali㉿kali)-[~/W7/w7-1]
$ chmod u+rwX ~/W7/w7-1/1level3
```

**Step 35:** Display Access Permissions for 1level3 Again

```
(kali㉿kali)-[~/W7/w7-1]
$ ls -ld ~/W7/w7-1/1level3

drwx----- 2 kali kali 4096 Dec 19 08:30 /home/kali/W7/w7-1/1level3
(kali㉿kali)-[~/W7/w7-1]
```

**Step 36:** Try to Read a File from 1level3

```
(kali㉿kali)-[~/W7/w7-1]
$ cat ~/W7/w7-1/1level3/file1

test
```

**Step 37:** Try to Put a File into 1level3

```
(kali㉿kali)-[~/W7/w7-1]
$ touch ~/W7/w7-1/1level3/newfile
```

**Step 38:** Try to Search in 1level3

```
(kali㉿kali)-[~/W7/w7-1]
$ ls ~/W7/w7-1/1level3

example.txt  file1  newfile
(kali㉿kali)-[~/W7/w7-1]
```