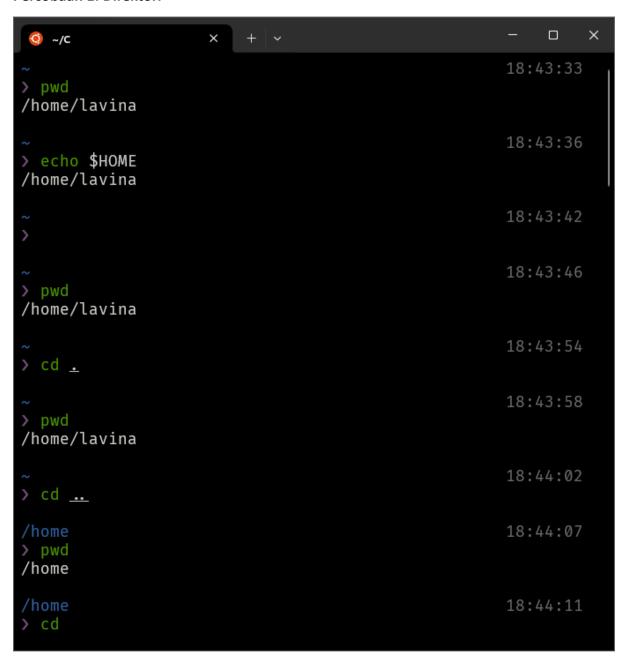# SISTEM OPERASI

Praktikum Operasi File dan Struktur Direktori

Lavina 2341760062

Percobaan 1: Direktori

```
~                                                      18:44:16
> pwd
/home/lavina


~                                                      18:44:20
> mkdir A B C A/D A/E B/F A/D/A


~                                                      18:45:00
> ls -l
total 68
drwxr-xr-x 4 lavina lavina 4096 Mar 14 18:45 A
drwxr-xr-x 3 lavina lavina 4096 Mar 14 18:45 B
drwxr-xr-x 2 lavina lavina 4096 Mar 14 18:45 C
drwxr-xr-x 3 lavina lavina 4096 Mar  3 09:38 backup
-rw-r--r-- 1 lavina lavina   24 Mar  8 13:46 baru
-rw-r--r-- 1 lavina lavina 1598 Mar  8 13:35 baru.urut
-rw------- 1 lavina lavina  137 Mar  7 09:41 dead.letter
-rw-r--r-- 1 lavina lavina   64 Mar  8 13:49 hello.txt
-rw-r--r-- 1 lavina lavina   23 Mar  8 12:21 kelas.txt
-rw-r--r-- 1 lavina lavina   23 Mar  8 12:21 kelas1.txt
drwxr-xr-x 2 lavina lavina 4096 Mar  8 13:37 latihan2
drwxr-xr-x 2 lavina lavina 4096 Mar  3 09:39 mydir
-rw-r--r-- 1 lavina lavina   56 Mar  8 11:45 myerror.txt
-rw-r--r-- 1 lavina lavina   52 Mar  8 11:43 myfile.txt
-rw-r--r-- 1 lavina lavina   20 Mar  8 12:08 out
-rw-r--r-- 1 lavina lavina    0 Mar  8 12:09 output
-rw-r--r-- 1 lavina lavina   59 Mar  8 13:38 rmdirerror.txt
-rw-r--r-- 1 lavina lavina   13 Mar  8 11:52 surat

~                                                      18:45:06
```

```
~                                                      18:45:06
> ls -l A
total 8
drwxr-xr-x 3 lavina lavina 4096 Mar 14 18:45 D
drwxr-xr-x 2 lavina lavina 4096 Mar 14 18:45 E


~                                                      18:45:24
> ls -l A/D
total 4
drwxr-xr-x 2 lavina lavina 4096 Mar 14 18:45 A


~                                                      18:46:00
> rmdir B
rmdir: failed to remove 'B': Directory not empty
```

Terjadi error karena kita tidak bisa menghapus sebuah direktori yang masih ada isinya.

```
~                                                    18:46:20
> ls -l B
total 4
drwxr-xr-x 2 lavina lavina 4096 Mar 14 18:45 F

~                                                    18:46:45
> rmdir B/F B

~                                                    18:46:56
> ls -l B
ls: cannot access 'B': No such file or directory
```

Terjadi error karena kita mencoba mengakses direktori B sedangkan direktori B sudah dihapus (diremove).

```
~                                                    18:47:04
> pwd
/home/lavina
```

```
~                                                    18:47:21
> ls -l
total 64
drwxr-xr-x 4 lavina lavina 4096 Mar 14 18:45 A
drwxr-xr-x 2 lavina lavina 4096 Mar 14 18:45 C
drwxr-xr-x 3 lavina lavina 4096 Mar  3 09:38 backup
-rw-r--r-- 1 lavina lavina   24 Mar  8 13:46 baru
-rw-r--r-- 1 lavina lavina 1598 Mar  8 13:35 baru.urut
-rw-------- 1 lavina lavina  137 Mar  7 09:41 dead.letter
-rw-r--r-- 1 lavina lavina   64 Mar  8 13:49 hello.txt
-rw-r--r-- 1 lavina lavina   23 Mar  8 12:21 kelas.txt
-rw-r--r-- 1 lavina lavina   23 Mar  8 12:21 kelas1.txt
drwxr-xr-x 2 lavina lavina 4096 Mar  8 13:37 latihan2
drwxr-xr-x 2 lavina lavina 4096 Mar  3 09:39 mydir
-rw-r--r-- 1 lavina lavina   56 Mar  8 11:45 myerror.txt
-rw-r--r-- 1 lavina lavina   52 Mar  8 11:43 myfile.txt
-rw-r--r-- 1 lavina lavina   20 Mar  8 12:08 out
-rw-r--r-- 1 lavina lavina    0 Mar  8 12:09 output
-rw-r--r-- 1 lavina lavina   59 Mar  8 13:38 rmdirerror.txt
-rw-r--r-- 1 lavina lavina   13 Mar  8 11:52 surat

~                                                    18:47:28
> cd A

~/A                                                  18:47:30
> pwd
/home/lavina/A

~/A                                                  18:47:34
> cd ..
```

```
~                                              18:47:50
> pwd
/home/lavina


~                                              18:47:56
> cd /home/lavina/C

~/C                                            18:48:05
> pwd
/home/lavina/C

~/C                                            18:48:09
> cd /lavina/C
cd: no such file or directory: /lavina/C

~/C                                            18:48:23
> pwd
/home/lavina/C

~/C                                            18:48:34
>
```

Percobaan 2: Manipulasi File

```
~                                              19:28:53
> cat > contoh
Membuat sebuah file


~                                         7s 19:29:11
> cp contoh contoh1


~                                              19:29:19
> ls -l
total 72
drwxr-xr-x 4 lavina lavina 4096 Mar 14 19:28 A
drwxr-xr-x 2 lavina lavina 4096 Mar 14 19:15 C
drwxr-xr-x 3 lavina lavina 4096 Mar  3 09:38 backup
-rw-r--r-- 1 lavina lavina   24 Mar  8 13:46 baru
-rw-r--r-- 1 lavina lavina 1598 Mar  8 13:35 baru.urut
-rw-r--r-- 1 lavina lavina   20 Mar 14 19:29 contoh
-rw-r--r-- 1 lavina lavina   20 Mar 14 19:29 contoh1
-rw------- 1 lavina lavina  137 Mar  7 09:41 dead.letter
-rw-r--r-- 1 lavina lavina   64 Mar  8 13:49 hello.txt
-rw-r--r-- 1 lavina lavina   23 Mar  8 12:21 kelas.txt
-rw-r--r-- 1 lavina lavina   23 Mar  8 12:21 kelas1.txt
drwxr-xr-x 2 lavina lavina 4096 Mar  8 13:37 latihan2
drwxr-xr-x 2 lavina lavina 4096 Mar  3 09:39 mydir
```

```
~                                                         19:31:24
> cp contoh A


~                                                         19:31:34
> ls -l A
total 12
drwxr-xr-x 3 lavina lavina 4096 Mar 14 19:28 D
drwxr-xr-x 2 lavina lavina 4096 Mar 14 18:45 E
-rw-r--r-- 1 lavina lavina   20 Mar 14 19:31 contoh


~                                                         19:31:37
> cp contoh contoh1 A/D


~                                                         19:31:46
> ls -l A/D
total 12
drwxr-xr-x 2 lavina lavina 4096 Mar 14 18:45 A
-rw-r--r-- 1 lavina lavina   20 Mar 14 19:31 contoh
-rw-r--r-- 1 lavina lavina   20 Mar 14 19:31 contoh1


~                                                         19:31:59
> mv contoh contoh2


~                                                         19:32:15
> ls -l
total 72
drwxr-xr-x 4 lavina lavina 4096 Mar 14 19:31 A
drwxr-xr-x 2 lavina lavina 4096 Mar 14 19:15 C
drwxr-xr-x 3 lavina lavina 4096 Mar  3 09:38 backup
-rw-r--r-- 1 lavina lavina   24 Mar  8 13:46 baru
-rw-r--r-- 1 lavina lavina 1598 Mar  8 13:35 baru.urut
```

```
-rw-r--r-- 1 lavina lavina   20 Mar 14 19:29 contoh1
-rw-r--r-- 1 lavina lavina   20 Mar 14 19:29 contoh2
-rw--------- 1 lavina lavina  137 Mar  7 09:41 dead.letter
-rw-r--r-- 1 lavina lavina   64 Mar  8 13:49 hello.txt
-rw-r--r-- 1 lavina lavina   23 Mar  8 12:21 kelas.txt
-rw-r--r-- 1 lavina lavina   23 Mar  8 12:21 kelas1.txt
drwxr-xr-x 2 lavina lavina 4096 Mar  8 13:37 latihan2
drwxr-xr-x 2 lavina lavina 4096 Mar  3 09:39 mydir
-rw-r--r-- 1 lavina lavina   56 Mar  8 11:45 myerror.txt
-rw-r--r-- 1 lavina lavina   52 Mar  8 11:43 myfile.txt
-rw-r--r-- 1 lavina lavina   20 Mar  8 12:08 out
-rw-r--r-- 1 lavina lavina    0 Mar  8 12:09 output
-rw-r--r-- 1 lavina lavina   59 Mar  8 13:38 rmdirerror.txt
-rw-r--r-- 1 lavina lavina   13 Mar  8 11:52 surat
```

```
~                                                          19:32:21
> mv contoh1 contoh2 A/D

~                                                          19:33:02
> ls -l A/D
total 16
drwxr-xr-x 2 lavina lavina 4096 Mar 14 18:45 A
-rw-r--r-- 1 lavina lavina   20 Mar 14 19:31 contoh
-rw-r--r-- 1 lavina lavina   20 Mar 14 19:29 contoh1
-rw-r--r-- 1 lavina lavina   20 Mar 14 19:29 contoh2
```

```
~                                                          19:35:03
> cd A/D

~/A/D                                                      19:35:12
> mv contoh contoh1 ../../C

~/A/D                                                      19:36:32
> cd ../../

~                                                          19:36:43
> ls -l C
total 8
-rw-r--r-- 1 lavina lavina 20 Mar 14 19:31 contoh
-rw-r--r-- 1 lavina lavina 20 Mar 14 19:29 contoh1
```

```
~/A/D                                                      19:37:17
> rm contoh2

~/A/D                                                      19:37:21
> ls -l
total 4
drwxr-xr-x 2 lavina lavina 4096 Mar 14 18:45 A
```

```
~                                                          19:39:54
> rm -i contoh
rm: cannot remove 'contoh': No such file or directory

~                                                          19:39:58
> rm -rf A C

~                                                          19:40:04
> ls -l
total 56
drwxr-xr-x 3 lavina lavina 4096 Mar   3 09:38 backup
-rw-r--r-- 1 lavina lavina   24 Mar   8 13:46 baru
-rw-r--r-- 1 lavina lavina 1598 Mar   8 13:35 baru.urut
-rw-------- 1 lavina lavina  137 Mar   7 09:41 dead.letter
-rw-r--r-- 1 lavina lavina   64 Mar   8 13:49 hello.txt
-rw-r--r-- 1 lavina lavina   23 Mar   8 12:21 kelas.txt
-rw-r--r-- 1 lavina lavina   23 Mar   8 12:21 kelas1.txt
drwxr-xr-x 2 lavina lavina 4096 Mar   8 13:37 latihan2
drwxr-xr-x 2 lavina lavina 4096 Mar   3 09:39 mydir
-rw-r--r-- 1 lavina lavina   56 Mar   8 11:45 myerror.txt
-rw-r--r-- 1 lavina lavina   52 Mar   8 11:43 myfile.txt
-rw-r--r-- 1 lavina lavina   20 Mar   8 12:08 out
-rw-r--r-- 1 lavina lavina    0 Mar   8 12:09 output
-rw-r--r-- 1 lavina lavina   59 Mar   8 13:38 rmdirerror.txt
-rw-r--r-- 1 lavina lavina   13 Mar   8 11:52 surat
```

Percobaan 3: Symbolic Link

```
~                                                          19:56:58
> echo "Hallo apa khabar" > halo.txt

~                                                          19:57:16
> ls -l
total 60
drwxr-xr-x 3 lavina lavina 4096 Mar   3 09:38 backup
-rw-r--r-- 1 lavina lavina   24 Mar   8 13:46 baru
-rw-r--r-- 1 lavina lavina 1598 Mar   8 13:35 baru.urut
-rw-------- 1 lavina lavina  137 Mar   7 09:41 dead.letter
-rw-r--r-- 1 lavina lavina   17 Mar  14 19:57 halo.txt
-rw-r--r-- 1 lavina lavina   64 Mar   8 13:49 hello.txt
-rw-r--r-- 1 lavina lavina   23 Mar   8 12:21 kelas.txt
-rw-r--r-- 1 lavina lavina   23 Mar   8 12:21 kelas1.txt
drwxr-xr-x 2 lavina lavina 4096 Mar   8 13:37 latihan2
drwxr-xr-x 2 lavina lavina 4096 Mar   3 09:39 mydir
-rw-r--r-- 1 lavina lavina   56 Mar   8 11:45 myerror.txt
-rw-r--r-- 1 lavina lavina   52 Mar   8 11:43 myfile.txt
-rw-r--r-- 1 lavina lavina   20 Mar   8 12:08 out
-rw-r--r-- 1 lavina lavina    0 Mar   8 12:09 output
-rw-r--r-- 1 lavina lavina   59 Mar   8 13:38 rmdirerror.txt
-rw-r--r-- 1 lavina lavina   13 Mar   8 11:52 surat
```

```
~                                                      19:57:22
> ln halo.txt z


~                                                      19:57:41
> ls -l
total 64
drwxr-xr-x 3 lavina lavina 4096 Mar  3 09:38 backup
-rw-r--r-- 1 lavina lavina   24 Mar  8 13:46 baru
-rw-r--r-- 1 lavina lavina 1598 Mar  8 13:35 baru.urut
-rw---------- 1 lavina lavina  137 Mar  7 09:41 dead.letter
-rw-r--r-- 2 lavina lavina   17 Mar 14 19:57 halo.txt
-rw-r--r-- 1 lavina lavina   64 Mar  8 13:49 hello.txt
-rw-r--r-- 1 lavina lavina   23 Mar  8 12:21 kelas.txt
-rw-r--r-- 1 lavina lavina   23 Mar  8 12:21 kelas1.txt
drwxr-xr-x 2 lavina lavina 4096 Mar  8 13:37 latihan2
drwxr-xr-x 2 lavina lavina 4096 Mar  3 09:39 mydir
-rw-r--r-- 1 lavina lavina   56 Mar  8 11:45 myerror.txt
-rw-r--r-- 1 lavina lavina   52 Mar  8 11:43 myfile.txt
-rw-r--r-- 1 lavina lavina   20 Mar  8 12:08 out
-rw-r--r-- 1 lavina lavina    0 Mar  8 12:09 output
-rw-r--r-- 1 lavina lavina   59 Mar  8 13:38 rmdirerror.txt
-rw-r--r-- 1 lavina lavina   13 Mar  8 11:52 surat
-rw-r--r-- 2 lavina lavina   17 Mar 14 19:57 z


~                                                      19:57:47
> cat z
Hallo apa khabar
```

```
~                                                      19:58:14
> ln z mydir/halo.juga


~                                                      19:58:54
> cat mydir/halo.juga
Hallo apa khabar


~                                                      19:59:06
> ln -s z bye.txt


~                                                      19:59:22
> ls -l bye.txt
lrwxrwxrwx 1 lavina lavina 1 Mar 14 19:59 bye.txt → z


~                                                      19:59:33
> cat bye.txt
Hallo apa khabar
```

Percobaan 4: Melihat Isi File

```
~                                                    20:04:38
> ls -l
total 64
drwxr-xr-x 3 lavina lavina 4096 Mar  3 09:38 backup
-rw-r--r-- 1 lavina lavina   24 Mar  8 13:46 baru
-rw-r--r-- 1 lavina lavina 1598 Mar  8 13:35 baru.urut
lrwxrwxrwx 1 lavina lavina    1 Mar 14 19:59 bye.txt → z
-rw——————— 1 lavina lavina  137 Mar  7 09:41 dead.letter
-rw-r--r-- 3 lavina lavina   17 Mar 14 19:57 halo.txt
-rw-r--r-- 1 lavina lavina   64 Mar  8 13:49 hello.txt
-rw-r--r-- 1 lavina lavina   23 Mar  8 12:21 kelas.txt
-rw-r--r-- 1 lavina lavina   23 Mar  8 12:21 kelas1.txt
drwxr-xr-x 2 lavina lavina 4096 Mar  8 13:37 latihan2
drwxr-xr-x 2 lavina lavina 4096 Mar 14 19:58 mydir
-rw-r--r-- 1 lavina lavina   56 Mar  8 11:45 myerror.txt
-rw-r--r-- 1 lavina lavina   52 Mar  8 11:43 myfile.txt
-rw-r--r-- 1 lavina lavina   20 Mar  8 12:08 out
-rw-r--r-- 1 lavina lavina    0 Mar  8 12:09 output
-rw-r--r-- 1 lavina lavina   59 Mar  8 13:38 rmdirerror.txt
-rw-r--r-- 1 lavina lavina   13 Mar  8 11:52 surat
-rw-r--r-- 3 lavina lavina   17 Mar 14 19:57 z

~                                                    20:04:42
> file halo.txt
halo.txt: ASCII text

~                                                    20:04:51
> file bye.txt
bye.txt: symbolic link to z
```

Percobaan 5: Mencari File

```
~                                                    20:05:55
> find /home -name "*.txt" -print > myerror.txt

~                                                    20:06:26
> cat myerror.txt
/home/lavina/kelas1.txt
/home/lavina/backup/prog.txt
/home/lavina/.oh-my-zsh/plugins/emoji/emoji-data.txt
/home/lavina/.oh-my-zsh/plugins/golang/templates/package.tx
t
/home/lavina/.oh-my-zsh/plugins/golang/templates/search.txt
/home/lavina/.oh-my-zsh/.github/workflows/dependencies/requ
irements.txt
/home/lavina/.oh-my-zsh/LICENSE.txt
```

```
/home/lavina/myerror.txt
/home/lavina/myfile.txt
/home/lavina/kelas.txt
/home/lavina/rmdirerror.txt
/home/lavina/bye.txt
/home/lavina/halo.txt
/home/lavina/hello.txt
/home/lavina/.vscode-server/bin/019f4d1419fbc8219a181fab789
2ebccf7ee29a2/node_modules/vscode-oniguruma/NOTICES.txt
/home/lavina/.vscode-server/bin/019f4d1419fbc8219a181fab789
2ebccf7ee29a2/node_modules/vscode-oniguruma/LICENSE.txt
/home/lavina/.vscode-server/bin/019f4d1419fbc8219a181fab789
2ebccf7ee29a2/node_modules/@vscode/vscode-languagedetection
/dist/lib/index.js.LICENSE.txt
/home/lavina/.vscode-server/bin/019f4d1419fbc8219a181fab789
2ebccf7ee29a2/node_modules/@xterm/addon-image/lib/addon-ima
ge.js.LICENSE.txt
```

```
~                                                    20:06:32
> find . -name "*.txt" -exec wc -l '{}' ';'
4 ./kelas1.txt
56 ./backup/prog.txt
4122 ./.oh-my-zsh/plugins/emoji/emoji-data.txt
29 ./.oh-my-zsh/plugins/golang/templates/package.txt
0 ./.oh-my-zsh/plugins/golang/templates/search.txt
2 ./.oh-my-zsh/.github/workflows/dependencies/requirements.
txt
21 ./.oh-my-zsh/LICENSE.txt
34 ./myerror.txt
1 ./myfile.txt
4 ./kelas.txt
1 ./rmdirerror.txt
1 ./bye.txt
1 ./halo.txt
7 ./hello.txt
41 ./.vscode-server/bin/019f4d1419fbc8219a181fab7892ebccf7e
e29a2/node_modules/vscode-oniguruma/NOTICES.txt
23 ./.vscode-server/bin/019f4d1419fbc8219a181fab7892ebccf7e
e29a2/node_modules/vscode-oniguruma/LICENSE.txt
154 ./.vscode-server/bin/019f4d1419fbc8219a181fab7892ebccf7
ee29a2/node_modules/@vscode/vscode-languagedetection/dist/l
ib/index.js.LICENSE.txt
24 ./.vscode-server/bin/019f4d1419fbc8219a181fab7892ebccf7e
e29a2/node_modules/@xterm/addon-image/lib/addon-image.js.LI
CENSE.txt
0 ./.vscode-server/bin/019f4d1419fbc8219a181fab7892ebccf7ee
29a2/extensions/github/testWorkspace/PULL_REQUEST_TEMPLATE/
x.txt
```

```
~                                                    20:07:53
> which ls
ls: aliased to ls --color=tty
```

```
~                                                    20:09:20
> locate "*.txt"
```

Percobaan 6: Mencari Teks pada File

```
~                                                    20:12:19
> grep Hallo *.txt
bye.txt:Hallo apa khabar
halo.txt:Hallo apa khabar

~                                                    20:12:29
> _
```

1. Cobalah urutan perintah berikut :

```
$ cd
$ pwd
$ ls -al
$ cd .
$ pwd
$ cd ..
$ pwd
$ ls -al
$ cd ..
$ pwd
$ ls -al
$ cd /etc
$ ls -al | more
$ cat passwd
$ cd -
$ pwd
```

```
~                                                    20:12:54
> cd

~                                                    20:12:56
> pwd
/home/lavina

~                                                    20:12:58
> ls -al
total 360
drwxr-x—   8 lavina lavina   4096 Mar 14 20:13 .
drwxr-xr-x 3 root   root     4096 Feb 24 16:06 ..
-rw———    1 lavina lavina   1377 Mar  5 19:15 .bash_histo
ry
-rw-r--r-- 1 lavina lavina    220 Feb 24 16:06 .bash_logou
t
```

```
-rw-r--r--   1 lavina lavina    3771 Feb 24 16:06 .bashrc
drwxr-xr-x   4 lavina lavina    4096 Mar 14 19:11 .cache
-rw--------  1 lavina lavina      20 Mar  3 09:21 .lesshst
-rw-r--r--   1 lavina lavina       0 Mar  5 17:19 .motd_shown
drwxr-xr-x  12 lavina lavina    4096 Mar  5 17:27 .oh-my-zsh
-rw-r--r--   1 lavina lavina    9857 Mar  5 19:49 .p10k.zsh
-rw-r--r--   1 lavina lavina     807 Feb 24 16:06 .profile
-rw--------  1 lavina lavina     902 Mar 10 13:23 .python_his
tory
-rw-r--r--   1 lavina lavina      10 Mar  5 17:27 .shell.pre-
oh-my-zsh
-rw-r--r--   1 lavina lavina       0 Feb 28 10:17 .sudo_as_ad
min_successful
drwxr-xr-x   5 lavina lavina    4096 Mar  5 17:37 .vscode-ser
ver
```

/boot   ✕ + ⌄   — □ ✕

```
~                                                           20:13:03
> cd .


~                                                           20:13:05
> pwd
/home/lavina


~                                                           20:13:09
> cd ..


/home                                                       20:13:16
> pwd
/home


/home                                                       20:13:19
> ls -al
total 12
drwxr-xr-x  3 root   root   4096 Feb 24 16:06 .
drwxr-xr-x 19 root   root   4096 Mar 14 18:43 ..
drwxr-x---  8 lavina lavina 4096 Mar 14 20:13 lavina


/home                                                       20:13:23
> cd /etc


/etc                                                        20:13:29
> ls -al | more
total 824
drwxr-xr-x 88 root root    4096 Mar 14 18:43 .
drwxr-xr-x 19 root root    4096 Mar 14 18:43 ..
-rw--------  1 root root       0 Nov 23 04:36 .pwd.lock
drwxr-xr-x  2 root root    4096 Nov 23 04:37 PackageKit
```

```
/etc                                              20:13:49
> cat passwd
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nolog
in
irc:x:39:39:ircd:/run/ircd:/usr/sbin/nologin
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/g
nats:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
systemd-network:x:100:102:systemd Network Management,,,:/ru
n/systemd:/usr/sbin/nologin
systemd-resolve:x:101:103:systemd Resolver,,,:/run/systemd:
/usr/sbin/nologin
messagebus:x:102:105::/nonexistent:/usr/sbin/nologin
systemd-timesync:x:103:106:systemd Time Synchronization,,,:
/run/systemd:/usr/sbin/nologin
syslog:x:104:111::/home/syslog:/usr/sbin/nologin

/etc                                              20:13:57
> cd -
/home

/home                                             20:14:00
> pwd
/home
```

2. Lanjutkan penelusuran pohon pada sistem file menggunakan cd, ls, pwd dan cat. Telusuri direktory /bin, /usr/bin, /sbin, /tmpdan /boot.

```
~                                                     20:17:42
> cd ../../bin

/bin                                                  20:17:57
> ls -l
total 101916
lrwxrwxrwx 1 root root                 4 Feb 17  2020  NF → col1
lrwxrwxrwx 1 root root                 1 Mar 25  2022  X11 → .
-rwxr-xr-x 1 root root             51632 Feb  7  2022 '['
-rwxr-xr-x 1 root root             35344 Jun  6  2023  aa-enabled
-rwxr-xr-x 1 root root             35344 Jun  6  2023  aa-exec
-rwxr-xr-x 1 root root             31248 Jun  6  2023  aa-feature
s-abi
-rwxr-xr-x 1 root root             14478 Oct 24 20:07  add-apt-re
pository
-rwxr-xr-x 1 root root             14712 Feb 21  2022  addpart
lrwxrwxrwx 1 root root                26 Jun  4  2023  addr2line
→ x86_64-linux-gnu-addr2line
-rwxr-xr-x 1 root root              2568 Apr 14  2023  apport-bug
-rwxr-xr-x 1 root root             13360 Apr 14  2023  apport-cli
lrwxrwxrwx 1 root root                10 Apr 14  2023  apport-col
lect → apport-bug
-rwxr-xr-x 1 root root              2070 Apr 14  2023  apport-unp
ack
lrwxrwxrwx 1 root root                 6 Mar 18  2022  apropos →
 whatis
-rwxr-xr-x 1 root root             18824 Oct  6 15:53  apt
lrwxrwxrwx 1 root root                18 Oct 24 20:07  apt-add-re
pository → add-apt-repository
-rwxr-xr-x 1 root root             84448 Oct  6 15:53  apt-cache
-rwxr-xr-x 1 root root             27104 Oct  6 15:53  apt-cdrom
```

```
/bin                                                  20:18:02
> cd ../

/                                                     20:22:43
> cd boot

/boot                                                 20:23:28
> ls -l
total 0
```

3. Telusuri direktory /dev. Identifikasi perangkat yang tersedia. Identifikasi tty (termninal) Anda (ketik who am i); siapa pemilih tty Anda (gunakan ls –l).

```
/                                                20:53:19
> cd dev

/dev                                             20:53:27
> whoami
lavina

/dev                                             20:53:42
> ls -l
total 0
crw-r--r--  1 root root  10, 235 Mar 14 18:43 autofs
drwxr-xr-x  2 root root       40 Mar 14 18:43 block
drwxr-xr-x  2 root root       80 Mar 14 18:43 bsg
crw--------  1 root root  10, 234 Mar 14 18:43 btrfs-control
crw--------  1 root root   5,   1 Mar 14 18:43 console
crw--------  1 root root  10,  61 Mar 14 18:43 cpu_dma_latenc
y
crw--------  1 root root  10, 203 Mar 14 18:43 cuse
crw-rw-rw-  1 root root  10,  63 Mar 14 18:43 dxg
lrwxrwxrwx  1 root root       13 Mar 14 18:43 fd → /proc/se
lf/fd
crw-rw-rw-  1 root root   1,   7 Mar 14 18:43 full
crw-rw-rw-  1 root root  10, 229 Mar 14 18:43 fuse
crw-r--r--  1 root root   1,  11 Mar 14 18:43 kmsg
crw--------  1 root root  10, 232 Mar 14 18:43 kvm
crw--------  1 root root  10, 237 Mar 14 18:43 loop-control
brw--------  1 root root   7,   0 Mar 14 18:43 loop0
brw--------  1 root root   7,   1 Mar 14 18:43 loop1
brw--------  1 root root   7,   2 Mar 14 18:43 loop2
brw--------  1 root root   7,   3 Mar 14 18:43 loop3
brw--------  1 root root   7,   4 Mar 14 18:43 loop4
```

```
brw--------  1 root root   7,   5 Mar 14 18:43 loop5
brw--------  1 root root   7,   6 Mar 14 18:43 loop6
brw--------  1 root root   7,   7 Mar 14 18:43 loop7
drwxr-xr-x  2 root root       60 Mar 14 18:43 mapper
crw--------  1 root root   1,   1 Mar 14 18:43 mem
drwxr-xr-x  2 root root       60 Mar 14 18:43 net
crw-rw-rw-  1 root root   1,   3 Mar 14 18:43 null
crw--------  1 root root  10, 144 Mar 14 18:43 nvram
crw--------  1 root root 108,   0 Mar 14 18:43 ppp
crw-rw-rw-  1 root root   5,   2 Mar 14 20:53 ptmx
drwxr-xr-x  2 root root        0 Mar 14 18:43 pts
brw--------  1 root root   1,   0 Mar 14 18:43 ram0
brw--------  1 root root   1,   1 Mar 14 18:43 ram1
brw--------  1 root root   1,  10 Mar 14 18:43 ram10
brw--------  1 root root   1,  11 Mar 14 18:43 ram11
brw--------  1 root root   1,  12 Mar 14 18:43 ram12
```

4. Telusuri derectory /proc. Tampilkan isi file interrupts, devices, cpuinfo, meminfo dan uptime menggunakan perintah cat. Dapatkah Anda melihat mengapa directory /proc disebut pseudo -filesystem yang memungkinkan akses ke struktur data kernel ?

```
/                                                    20:42:02
> cd /proc

/proc                                                20:42:49
> ls -l
total 0
dr-xr-xr-x  9 root    root              0 Mar 14 18:43 1
dr-xr-xr-x  9 root    root              0 Mar 14 20:43 11
dr-xr-xr-x  9 root    root              0 Mar 14 20:43 12
dr-xr-xr-x  9 lavina lavina             0 Mar 14 18:43 13
dr-xr-xr-x  9 lavina lavina             0 Mar 14 20:43 17
dr-xr-xr-x  9 lavina lavina             0 Mar 14 20:43 27
36
dr-xr-xr-x  9 lavina lavina             0 Mar 14 18:43 50
dr-xr-xr-x  2 root    root              0 Mar 14 20:43 ac
pi
-r--r--r--  1 root    root              0 Mar 14 20:43 bu
ddyinfo
dr-xr-xr-x  4 root    root              0 Mar 14 20:43 bu
s
```

```
/proc                                                20:44:27
> cat interrupts
            CPU0        CPU1        CPU2        CPU3
   8:          0           0           0           0    IO-APIC
   8-edge      rtc0
   9:         97           0           0           0    IO-APIC
   9-fasteoi  acpi
  24:          0           0           0           0    Hyper-V P
CIe MSI -1476395008-edge       virtio0-config
  25:          0           0           0       98649    Hyper-V P
CIe MSI -1476395007-edge       virtio0-requests
  26:          0           0           0           0    Hyper-V P
CIe MSI -1073741824-edge       virtio1-config
  27:          0         504           0           0    Hyper-V P
CIe MSI -1073741823-edge       virtio1-requests
  28:          0           0           0           0    Hyper-V P
CIe MSI 268435456-edge       virtio2-config
  29:          0           0           0           0    Hyper-V P
CIe MSI 268435457-edge       virtio2-requests
NMI:          0           0           0           0    Non-mask
able interrupts
LOC:          0           0           0           0    Local ti
mer interrupts
SPU:          0           0           0           0    Spurious
 interrupts
PMI:          0           0           0           0    Performa
```

```
/proc                                    20:44:37
❯ cat devices
Character devices:
  1 mem
  4 /dev/vc/0
  4 tty
  4 ttyS
  5 /dev/tty
  5 /dev/console
  5 /dev/ptmx
  7 vcs
 10 misc
 13 input
 21 sg
108 ppp
128 ptm
136 pts
245 vhost-vdpa
246 vfio
247 uio
248 macvtap
249 ipvtap
250 bsg
251 rtc
252 dax
253 dimmctl
254 ndctl

Block devices:
  1 ramdisk
```

```
/proc                                    20:44:57
❯ cat cpuinfo
processor       : 0
vendor_id       : GenuineIntel
cpu family      : 6
model           : 140
model name      : 11th Gen Intel(R) Core(TM) i3-1115G4 @ 3.
00GHz
stepping        : 1
microcode       : 0xffffffff
cpu MHz         : 2995.200
cache size      : 6144 KB
physical id     : 0
siblings        : 4
core id         : 0
cpu cores       : 2
apicid          : 0
initial apicid  : 0
fpu             : yes
fpu_exception   : yes
cpuid level     : 27
wp              : yes
```

```
/proc                                    20:45:06
> cat meminfo
MemTotal:        3921212 kB
MemFree:         3446832 kB
MemAvailable:    3633884 kB
Buffers:           20836 kB
Cached:           351876 kB
SwapCached:            0 kB
Active:           107284 kB
Inactive:         273120 kB
Active(anon):         92 kB
Inactive(anon):     7660 kB
Active(file):     107192 kB
Inactive(file):   265460 kB
Unevictable:           0 kB
```

```
/proc                                    20:45:16
> cat uptime
7335.48 29318.47
```

Direktori /proc disebut pseudo-filesystem karena memungkinkan pengguna untuk mengakses dan memanipulasi struktur data kernel secara real-time. Hal ini memungkinkan pengguna untuk memantau dan mengontrol sistem operasi, serta men-debug masalah.

5. Ubahlah direktory home ke user lain secara langsung menggunakan cd ~username.

```
/                                        20:58:29
> cd ~lavina

~                                        20:58:33
> pwd
/home/lavina
```

6. Ubah kembali ke direktory home Anda.

```
~                                        21:00:18
> cd ../

/home                                    21:00:20
> _
```

7. Buatsubdirektory work dan play.

```
~                                        21:02:23
> mkdir work

~                                        21:02:26
> mkdir play
```

```
~                                                    21:02:41
> ls -l
total 72
drwxr-xr-x 3 lavina lavina 4096 Mar  3 09:38 backup
-rw-r--r-- 1 lavina lavina   24 Mar  8 13:46 baru
-rw-r--r-- 1 lavina lavina 1598 Mar  8 13:35 baru.urut
lrwxrwxrwx 1 lavina lavina    1 Mar 14 19:59 bye.txt → z
-rw------- 1 lavina lavina  137 Mar  7 09:41 dead.letter
-rw-r--r-- 3 lavina lavina   17 Mar 14 19:57 halo.txt
-rw-r--r-- 1 lavina lavina   64 Mar  8 13:49 hello.txt
-rw-r--r-- 1 lavina lavina   23 Mar  8 12:21 kelas.txt
-rw-r--r-- 1 lavina lavina   23 Mar  8 12:21 kelas1.txt
drwxr-xr-x 2 lavina lavina 4096 Mar  8 13:37 latihan2
drwxr-xr-x 2 lavina lavina 4096 Mar 14 19:58 mydir
-rw-r--r-- 1 lavina lavina 3113 Mar 14 20:06 myerror.txt
-rw-r--r-- 1 lavina lavina   52 Mar  8 11:43 myfile.txt
-rw-r--r-- 1 lavina lavina   20 Mar  8 12:08 out
-rw-r--r-- 1 lavina lavina    0 Mar  8 12:09 output
drwxr-xr-x 2 lavina lavina 4096 Mar 14 21:02 play
-rw-r--r-- 1 lavina lavina   59 Mar  8 13:38 rmdirerror.txt
-rw-r--r-- 1 lavina lavina   13 Mar  8 11:52 surat
drwxr-xr-x 2 lavina lavina 4096 Mar 14 21:02 work
-rw-r--r-- 3 lavina lavina   17 Mar 14 19:57 z
```

8. Hapus subdirektory work.

```
~                                                    21:04:51
> rmdir work


~                                                    21:05:38
> ls -l
total 68
drwxr-xr-x 3 lavina lavina 4096 Mar  3 09:38 backup
-rw-r--r-- 1 lavina lavina   24 Mar  8 13:46 baru
-rw-r--r-- 1 lavina lavina 1598 Mar  8 13:35 baru.urut
lrwxrwxrwx 1 lavina lavina    1 Mar 14 19:59 bye.txt → z
-rw------- 1 lavina lavina  137 Mar  7 09:41 dead.letter
-rw-r--r-- 3 lavina lavina   17 Mar 14 19:57 halo.txt
-rw-r--r-- 1 lavina lavina   64 Mar  8 13:49 hello.txt
-rw-r--r-- 1 lavina lavina   23 Mar  8 12:21 kelas.txt
-rw-r--r-- 1 lavina lavina   23 Mar  8 12:21 kelas1.txt
drwxr-xr-x 2 lavina lavina 4096 Mar  8 13:37 latihan2
drwxr-xr-x 2 lavina lavina 4096 Mar 14 19:58 mydir
-rw-r--r-- 1 lavina lavina 3113 Mar 14 20:06 myerror.txt
-rw-r--r-- 1 lavina lavina   52 Mar  8 11:43 myfile.txt
-rw-r--r-- 1 lavina lavina   20 Mar  8 12:08 out
-rw-r--r-- 1 lavina lavina    0 Mar  8 12:09 output
drwxr-xr-x 2 lavina lavina 4096 Mar 14 21:02 play
-rw-r--r-- 1 lavina lavina   59 Mar  8 13:38 rmdirerror.txt
-rw-r--r-- 1 lavina lavina   13 Mar  8 11:52 surat
-rw-r--r-- 3 lavina lavina   17 Mar 14 19:57 z
```

9. Copy file /etc/passwd ke direktory home Anda.

10. Pindahkan ke subirectory play.

11. Ubahlah ke subdirektory play dan buat symbolic link dengan nama terminal yang menunjuk ke perangkat tty. Apa yang terjadi jika melakukan hard link ke perangkat tty

Tidak akan terjadi apapun saat melakukan hard link ke perangkat tty karena pada dasarnya hard link hanyalah alias dari sebuah file yang ada di perangkat.

12. Buatlah file bernama hello.txt yang berisi kata "hello word". Dapatkah Anda gunakan
"cp" menggunakan "terminal" sebagai file asal untuk menghasilkan efek yang sama ?

```
~                                                   19:07:13
> echo "Hello World" > hello.txt


~                                                   19:07:41
> ls
backup         halo.txt      latihan2      output
baru           hello.txt     mydir         play
baru.urut      home          myerror.txt   rmdirerror.txt
bye.txt        kelas.txt     myfile.txt    surat
dead.letter    kelas1.txt    out           z


~                                                   19:07:48
> cp /dev/tty hello.txt

^C


~                                             6s 19:08:21
> ls
backup         halo.txt      latihan2      output
baru           hello.txt     mydir         play
baru.urut      home          myerror.txt   rmdirerror.txt
bye.txt        kelas.txt     myfile.txt    surat
dead.letter    kelas1.txt    out           z
```

13. Copy hello.txt ke terminal. Apa yang terjadi ?

```
~                                                   19:10:51
> cp hello.txt home


~                                                   19:11:07
> ls
backup         halo.txt      latihan2      output
baru           hello.txt     mydir         play
baru.urut      home          myerror.txt   rmdirerror.txt
bye.txt        kelas.txt     myfile.txt    surat
dead.letter    kelas1.txt    out           z
```

14. Masih direktory home, copy keseluruhan direktory play ke direktory bernama work
menggunakan symbolic link.

```
~                                                   19:12:51
> ln -s play work


~                                                   19:13:31
> cd work


~/work                                              19:13:45
> ls -l
total 4
-rw-r--r-- 1 lavina lavina 1507 Mar 20 18:54 passwd
lrwxrwxrwx 1 lavina lavina    8 Mar 20 19:01 terminal → /dev/tty
```

15. Hapus direktory work dan isinya dengan satu perintah

```
~                                                    19:16:09
> rm -f work

~                                                    19:16:15
> cd work
cd: no such file or directory: work
```