

# **Terminal Documentation**

## **Assumptions :**

1. Maximum length of command can be 256 characters
2. Only one tag can be given in each command(you can enter multiple tags but they won't work)
3. Directory length should be less than 1000 characters
4. Full form of tags are not applicable
5. Including &t at the end of command will run through p\_thread

## **Commands :**

**Internal commands-:** pwd,cd,echo

**External commands-:** mkdir,ls,date,rm,cat

## **Syntax -:**

- command [tag]
- command [tag] &t
- command [tag] <file\_name1> <file\_name2>.....
- command [tag] <file\_name1> <file\_name2>..... &t

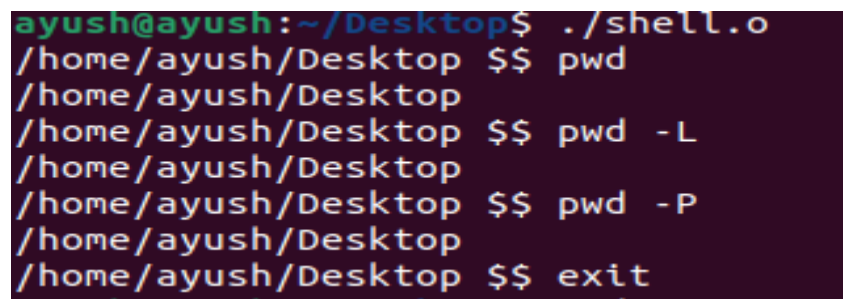
## Internal commands-:

### 1. pwd -> Implemented using getcwd()

Tags-> -L, -P

- a. pwd -> show current directory
- b. pwd -L -> shows current directory (include symlinks)
- c. pwd -P -> shows current directory (avoid symlinks)

### Errors -> Invalid tag

A terminal window with a dark purple background. The prompt is 'ayush@ayush:~/Desktop\$'. The user enters './shell.o' and presses enter. The prompt changes to '/home/ayush/Desktop \$\$'. The user enters 'pwd' and presses enter. The prompt changes back to '/home/ayush/Desktop \$\$'. The user enters 'pwd -L' and presses enter. The prompt changes back to '/home/ayush/Desktop \$\$'. The user enters 'pwd -P' and presses enter. The prompt changes back to '/home/ayush/Desktop \$\$'. The user enters 'exit' and presses enter.

```
ayush@ayush:~/Desktop$ ./shell.o
/home/ayush/Desktop $$ pwd
/home/ayush/Desktop
/home/ayush/Desktop $$ pwd -L
/home/ayush/Desktop
/home/ayush/Desktop $$ pwd -P
/home/ayush/Desktop
/home/ayush/Desktop $$ exit
```

### 2. cd -> Implemented using chdir()

- a. cd <dir\_name1> -> changes current directory to dir\_name
- b. cd .. -> jumps to previous directory
- c. cd -> jumps to user directory

### Errors->

- If directory not present then Error shown is : unable to change directory

```
/home/ayush/Desktop/file $$ ls
f1
f2
/home/ayush/Desktop/file $$ cd f1
/home/ayush/Desktop/file/f1 $$ ls
/home/ayush/Desktop/file/f1 $$ cd ..
/home/ayush/Desktop/file $$ cd
/home/ayush/Desktop $$
```

### 3. **echo**-> Implemented using printf()

- echo <text> -> display line of text
- echo -n <text> -> do not output the trailing newline in text
- echo -e <text> -> enable interpretation of backslash escapes in text

### **Errors ->**

- If invalid tag is given it will act as a normal text
- If nothing given after echo Invalid command error shown

```
/home/ayush/Desktop $$ echo my name is ayush
my name is ayush
/home/ayush/Desktop $$ echo -n my name is ayush
my name is ayush /home/ayush/Desktop $$ echo -e my name is \ayush
my name is ayush
/home/ayush/Desktop $$
```

## External commands-:

### 1. ls -> Implemented using opendir() and readdir()

Tags -> -a , -i

- ls -> list directory contents
- ls -a -> do not ignore entries starting with .
- ls -i -> print the index number of each file.

## Errors ->

- Invalid tag

```
/home/ayush/Desktop/file $$ ls
f1
f2
/home/ayush/Desktop/file $$ ls -a
..
.
f1
f2
/home/ayush/Desktop/file $$ ls -i
2279 f1
2384 f2
/home/ayush/Desktop/file $$
```

### 2. mkdir -> Implemented using mkdir()

Tags-> -v , -p

- mkdir <dir\_name1> <dir\_name2>..... -> creates multiple directories without giving any msg
- mkdir -v <dir\_name1> <dir\_name2>.... -> print a message for each created directory

- c. `mkdir -p <dir1/dir2/dir3>` -> no error if existing, make parent directories as needed

### **Errors ->**

- In verbose if directory already exists it shows msg(Cannot create directory : File exists)
- Invalid Tag
- If nothing is given after `mkdir` error Invalid command error will be shown
- If nothing is given after `mkdir [tag]` syntax error/invalid command will be shown

```
/home/ayush/Desktop/file/f1 $$ ls
/home/ayush/Desktop/file/f1 $$ mkdir p1 p2
/home/ayush/Desktop/file/f1 $$ ls
p2
p1
/home/ayush/Desktop/file/f1 $$ mkdir -v p3 p4
mkdir: created directory :p3
mkdir: created directory :p4
/home/ayush/Desktop/file/f1 $$ mkdir -p p3/p5
/home/ayush/Desktop/file/f1 $$ cd p3
/home/ayush/Desktop/file/f1/p3 $$ ls
p5
/home/ayush/Desktop/file/f1/p3 $$
```

### **3. date -> Implemented using time.h library**

**Tags-> -u , -R**

- a. `date` -> prints system date and time

- b. `date -u` -> print or set Coordinated Universal Time (UTC)
- c. `date -R` -> output date and time in RFC 5322 format.

### **Errors->**

- Invalid tags
- If something is given after `date [tag]` then syntax error/invalid command will be shown

```
/home/ayush/Desktop/file/f1/p3 $$ date
Sunday 30 October 2022 10:12:20 PM IST
/home/ayush/Desktop/file/f1/p3 $$ date -u
Sunday 30 October 2022 04:42:22 PM UTC
/home/ayush/Desktop/file/f1/p3 $$ date -R
Sun, 30 Oct 2022 10:12:25 PM +0530
/home/ayush/Desktop/file/f1/p3 $$
```

## **4. cat -> Implemented using FILE**

Tags -> `-E` , `-T`

- a. `cat <file_name1> <file_name2>.....` -> concatenate files and print on the standard output
- b. `cat -E <file_name1> <file_name2>.....` -> display \$ at end of each line
- c. `cat -T <file_name1> <file_name2>.....` -> display TAB characters as ^I

### **Errors ->**

- Invalid tag
- File not exists
- If nothing is given after `cat` then Invalid command error will be shown

- If nothing is given after cat [tag] then invalid command/syntax error will be shown

```
/home/ayush/Desktop $$ cat text.txt garbage.txt
Hello friends
my      name      is ayush
this    is garbage
yoyo    garbage
/home/ayush/Desktop $$ cat -E text.txt garbage.txt
Hello friends$
my      name      is ayush$
this    is garbage$
yoyo    garbage$
/home/ayush/Desktop $$ cat -T text.txt garbage.txt
Hello friends
my^Iname^Iis ayush
this^I is garbage
yoyo ^Igarbage
/home/ayush/Desktop $$
```

## 5. rm -> Implemented using remove

Tags -> -v, -i, -d

- a. rm <file\_name1> <file\_name2>....->remove files
- b. rm -v <file\_name1> <file\_name2>..... -> explain what is being done
- c. rm -i <file\_name1> <file\_name2>.....-> prompt before every removal
- d. rm -d <dir\_name1> <dir\_name2>....-> to delete directory whether it is empty or not (I have made this tag for my own convenience to delete directories)

## Errors ->

- Invalid tag

- If file not exists and we try to remove that file then Error shown (Cannot remove : File does not exists)
- If we try to remove remove directory instead of file then Error shown (Cannot remove : file is a directory)
- If nothing is given after rm then Invalid command error will be shown

```

/home/ayush/Desktop/file/f1/p3 $$ ls
a4.txt
a3.txt
a.txt
a5.txt
a8.txt
a6.txt
a7.txt
a2.txt
p5
/home/ayush/Desktop/file/f1/p3 $$ rm a1.txt a2.txt
/home/ayush/Desktop/file/f1/p3 $$ ls
a4.txt
a3.txt
a.txt
a5.txt
a8.txt
a6.txt
a7.txt
p5
/home/ayush/Desktop/file/f1/p3 $$ rm -v a3.txt a4.txt
removed a3.txtremoved a4.txt/home/ayush/Desktop/file/f1/p3 $$ rm -i a5.txt a6.txt
Are you sure you want to delete a5.txt(y/n)y
Are you sure you want to delete a6.txt(y/n)y
/home/ayush/Desktop/file/f1/p3 $$ ls
a.txt
a8.txt
a7.txt
p5
/home/ayush/Desktop/file/f1/p3 $$

```