

Laboratory Assignment
On
Design Principles of Operating System
(CSE 3249)

Submitted by

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Assignment 1: Basic Commands in Unix Operating System.

Objective of this Assignment:

- To study the basic commands such as who, who am i, date, cal, pwd, man, mkdir, cd, rmdir, cat, mv, cp, rm, wc, sort, head, tail, cmp, diff, ls, chmod, grep, echo for accessing files and directories.

- Write the commands to create the following directory hierarchy: DOS_Regdno -> DOSass1 -> dir1

```
dinanath@DINANATH:~$ mkdir DOS_2241004161
dinanath@DINANATH:~$ cd DOS_2241004161
dinanath@DINANATH:~/DOS_2241004161$ mkdir DOSass1
dinanath@DINANATH:~/DOS_2241004161$ cd DOSass1
dinanath@DINANATH:~/DOS_2241004161/DOSass1$ mkdir dir1
dinanath@DINANATH:~/DOS_2241004161/DOSass1$ cd dir1
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```

- Write the commands to create another directory with name dir2 in directory DOSass1 and make dir2 as the current working directory.

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ cd ..
dinanath@DINANATH:~/DOS_2241004161/DOSass1$ mkdir dir2
dinanath@DINANATH:~/DOS_2241004161/DOSass1$ cd dir2
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir2$ |
```

- Write the command to delete the directory dir2, when DOS_Regdno will be the current working directory.

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir2$ cd
dinanath@DINANATH:~$ cd DOS_2241004161
dinanath@DINANATH:~/DOS_2241004161$ rmdir DOSass1/dir2
dinanath@DINANATH:~/DOS_2241004161$ |
```

- Write the command to create a file named as file1 using cat command inside dir1. Write your name, regdno, branch, semester and section in file1. Then display the content of the file.

```
dinanath@DINANATH:~/DOS_2241004161$ cd DOSass1/dir1
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ cat > file1
Dinanath Dash
2241004161
CSE
5th
2241026
^C
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ cat file1
Dinanath Dash
2241004161
CSE
5th
2241026
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```

- Write the command to create a file named as file2 using cat command inside dir1. Write your semester wise SGPA in file2.

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ cat > file2
Sem_1=7.5
Sem_2=7.71
Sem_3=8.3
Sem_4=7.5
^C
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ cat file2
Sem_1=7.5
Sem_2=7.71
Sem_3=8.3
Sem_4=7.5
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```

6. Create a file named as file3 storing content of file1 merged with content of file2.

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ cat file1 file2 > file3
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ cat file3
Dinanath Dash
2241004161
CSE
5th
2241026
Sem_1=7.5
Sem_2=7.71
Sem_3=8.3
Sem_4=7.5
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```

7. Write the command to rename file2 as markinfo.

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ mv file2 markinfo
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ cat markinfo
Sem_1=7.5
Sem_2=7.71
Sem_3=8.3
Sem_4=7.5
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```

8. Write the command to copy the content of file1 to reginfo.

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ cp file1 reginfo
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ cat reginfo
Dinanath Dash
2241004161
CSE
5th
2241026
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```

9. Write the command to display the inode values of file1, markinfo, reginfo.

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ ls -li file1 markinfo reginfo
29552 file1 29553 markinfo 29555 reginfo
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```

10. Write the command to delete file1.

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ rm file1
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```

11. Write the command to count the number of lines, words, characters in markinfo.

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ wc markinfo
 4  4 41 markinfo
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```

12. Write the command to create a file named as Personalinfo inside dir1. Write your name, regdno, address in the file.

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ echo -e "Dinanath Dash\nRegdNo: 2241004161\nAddress:Bhubaneswar" > personalinfo
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ cat personalinfo
Dinanath Dash
RegdNo: 2241004161
Address:Bhubaneswar
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```

13. Write the command to display the content of markinfo in reverse order.

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ tac markinfo
Sem_4=7.5
Sem_3=8.3
Sem_2=7.71
Sem_1=7.5
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```

14. Check the output of the following command:

```
cmp reginfo personalinfo
diff reginfo personalinfo
```

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ cmp reginfo personalinfo
reginfo personalinfo differ: byte 15, line 2
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ diff reginfo personalinfo
2,5c2,3
< 2241004161
< CSE
< 5th
< 2241026
---
> RegdNo: 2241004161
> Address:Bhubaneswar
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```

15. Write a command to count the number of files in the current working directory and display that number.

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ ls -l | wc -l
4
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```

16. Write a command to include all the file names present in a current working directory in a file named as filelist without causing filelist to be included in the names.

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ ls > temp && mv temp filelist
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ ls
file3 filelist markinfo personalinfo reginfo
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```

17. Write a command to give write permission to all the users of file reginfo.

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ chmod a+w reginfo
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```

18. Write a command to discard write permission from group users group users of file reginfo.

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ chmod g-w reginfo
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```

19. Write the command to set rwx permissions for all the users of file reginfo.

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ chmod a+rwx reginfo
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```

20. Differentiate between following commands:

```
date; pwd
date; pwd | wc -l
(date; pwd) | wc -l
```

date; pwd:

- This command executes date (which displays the current date and time) followed by pwd (which prints the current working directory).
- The two commands are executed sequentially but independently. The output will display the date and the current working directory, one after the other.

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ date; pwd
Sat Sep 21 22:43:17 IST 2024
/home/dinanath/DOS_2241004161/DOSass1/dir1
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```

date; pwd | wc -l:

- This runs date first, then it runs pwd and pipes its output to wc -l.
- pwd prints the current directory and wc -l counts the number of lines in the pwd output. Since pwd normally outputs only one line (the directory path), the result will always be 1.
- The date is displayed, followed by the line count of the pwd command.

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ date; pwd | wc -l
Sat Sep 21 22:48:56 IST 2024
1
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```

(date; pwd) | wc -l:

- This runs both date and pwd as a group (within the parentheses), and pipes their combined output to wc -l.
- wc -l will count the total number of lines from both commands, so it will count the line for the date and the line for the current directory (total of 2 lines).

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ (date; pwd) | wc -l
2
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```

21. Interpret the output of the following commands:

echo *

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ echo *
file3 filelist markinfo personalinfo reginfo
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```

echo ***

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ echo ***
file3 filelist markinfo personalinfo reginfo
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$
```

echo '***'

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ echo '***'
***
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```

echo ***

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ echo \***
***
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```

echo ***

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ echo \*\*\*
***
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```

echo */*

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ echo */*
*/*
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```

echo Don't do this

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ echo Don't do this
> Don't do this
Dont do this
Dont do this
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```

echo "Don't do this" (Quotes of one kind protect quotes of other kind)

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ echo "Don't do this"
Don't do this
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```

echo Hello # world

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ echo Hello # world
Hello
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```

echo "Hello # world"

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ echo "Hello # world"
Hello # world
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```


echo 'Hello # world'

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ echo 'Hello # world'
```

```
Hello # world
```

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```

echo date

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ echo date
```

```
date
```

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```

echo 'date'

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ echo 'date'
```

```
date
```

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```

echo "date"

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ echo "date"
```

```
date
```

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```

echo `date`

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ echo `date`
```

```
Sat Sep 21 23:30:48 IST 2024
```

```
dinanath@DINANATH:~/DOS_2241004161/DOSass1/dir1$ |
```