

OS Assignment 2

Deadline: 4th September 9pm

Write a program to simulate GNU “ls” command. Options to be implemented:

R: Recursive listing of files and directories

l : Long listing format

a : All

t : Sort by modification time

S: Sort by size

i: Print the index number of each file

Some of the usages:

```
$ ./mys -l
```

```
$ ./mys -l -a -t
```

```
$ ./mys -lat
```

```
$ ./mys -lt
```

```
$ ./mys l dir1/dir2 (can be relative or absolute)
```

```
$ ./mys -l -a -t -l -l -l -Si -R /user/Desktop
```

```
$ ./mys -latSi path1 path2 path3
```

```
$ ./mys path1 path2 path3 -l -a -tS -i
```

```
$ ./mys abc.txt -l -a -i efg.pdf dir1
```

Output format:

Output should be similar to the output provided by “ls” command.

It must resolve symbolic links and provide details of where the link points with long listing option (-l). Check the output of ls -l when symbolic link is present for more clarifications.

Don't use 'system' library function of linux. Your assignment will not be evaluated if found so.

Useful man pages:

- stat
- lstat
- getpwuid
- passwd
- getgrgid
- localtime
- scandir
- readlink

Useful structures:

- passwd
- group
- stat
- dirent

Note:

- Error handling: All errors that might occur, needs to be handled and the output should be same as that of the ls command.
- Bonus marks for displaying output with color scheme similar to ls and also for resizing of the output according to terminal window size.(check ls command)
- No STL
- There can any number of command line input(both flags and file/dir names) so dont assume it to be constant.
- Only PG1 VLSI students have to implement only four flags -l, -a, -t, -R

GENERAL GUIDELINES:

- Indent the code properly. Comment the code properly.
- Your name and roll number should be included as comments at the beginning of code.
- Due credit will be given to modularity of code
- Do not copy from friends, seniors or internet if found so your assignment will not be evaluated

Upload format:

Create a directory named your roll number(20XXXXXXX).

In that directory, place your '.c' or '.cpp' files.

Create a tar.gz of the above folder(20XXXXXXX) named "Assignment2.tar.gz" and upload it.