

Name: Maimoona Khilji

Program: BS-Data Science

## Operating System – Lab 03

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1. Try the following command sequence:

- `cd`
- `pwd`
- `ls -al`

```
maimoona@DESKTOP-3E3NBI6  ×  +  ∨  
maimoon@DESKTOP-3E3NBI6:/mnt/c/Users/Maimoona Khilji$ cd  
maimoon@DESKTOP-3E3NBI6:~$  
maimoon@DESKTOP-3E3NBI6:~$ pwd  
/home/maimoon  
maimoon@DESKTOP-3E3NBI6:~$ ls -al  
total 12  
drwxr-xr-x 1 maimoon maimoon  512 Mar 25 12:23 .  
drwxr-xr-x 1 root    root    512 Mar 13 15:32 ..  
-rw----- 1 maimoon maimoon 4063 Mar 27 18:13 .bash_history  
-rw-r--r-- 1 maimoon maimoon  220 Mar 13 15:32 .bash_logout  
-rw-r--r-- 1 maimoon maimoon 3771 Mar 13 15:32 .bashrc  
drwx----- 1 maimoon maimoon  512 Mar 14 23:36 .config  
drwxr-xr-x 1 maimoon maimoon  512 Mar 13 15:33 .landscape  
-rw-r--r-- 1 maimoon maimoon   0 Mar 27 08:38 .motd_shown  
-rw-r--r-- 1 maimoon maimoon  807 Mar 13 15:32 .profile  
-rw-r--r-- 1 maimoon maimoon   0 Mar 25 12:23 .sudo_as_admin_successful
```

- `cd .`
- `pwd` (where did that get you?)
- `cd ..`
- `pwd`
- `ls -al`

Name: Maimoona Khilji

Program: BS-Data Science

```
maimoona@DESKTOP-3E3NBI6 x + v
maimoona@DESKTOP-3E3NBI6:/mnt/c/Users/Maimoona Khilji$ cd .
maimoona@DESKTOP-3E3NBI6:/mnt/c/Users/Maimoona Khilji$ pwd
/mnt/c/Users/Maimoona Khilji
maimoona@DESKTOP-3E3NBI6:/mnt/c/Users/Maimoona Khilji$ cd ..
maimoona@DESKTOP-3E3NBI6:/mnt/c/Users$ pwd
/mnt/c/Users
maimoona@DESKTOP-3E3NBI6:/mnt/c/Users$ ls -al
total 0
dr-xr-xr-x 1 maimoona maimoona 512 Mar  1 16:36 .
drwxrwxrwx 1 maimoona maimoona 512 Mar 26 12:53 ..
lrwxrwxrwx 1 maimoona maimoona  18 Mar 19  2019 'All Users' -> /mnt/c/ProgramData
dr-xr-xr-x 1 maimoona maimoona 512 Nov 16  2019 Default
lrwxrwxrwx 1 maimoona maimoona  20 Mar 19  2019 'Default User' -> /mnt/c/Users/Default
drwxrwxrwx 1 maimoona maimoona 512 Mar 27 18:37 'Maimoona Khilji'
drwxrwxrwx 1 maimoona maimoona 512 Nov 16  2019 Public
-r-xr-xr-x 1 maimoona maimoona 174 Mar 19  2019 desktop.ini
```

- o cd ..
- o pwd
- o ls -al
- o cd ..
- o pwd (what happens now)

```
maimoona@DESKTOP-3E3NBI6 x + v
maimoona@DESKTOP-3E3NBI6:/mnt/c/Users$ cd ..
maimoona@DESKTOP-3E3NBI6:/mnt/c$ pwd
/mnt/c
maimoona@DESKTOP-3E3NBI6:/mnt/c$ ls -al
ls: cannot access 'hiberfil.sys': Permission denied
ls: MSOCache: Permission denied
ls: cannot access 'pagefile.sys': Permission denied
ls: cannot access 'swapfile.sys': Permission denied
ls: 'System Volume Information': Permission denied
total 0
drwxrwxrwx 1 maimoona maimoona 512 Mar  2 05:30 '$Recycle.Bin'
drwxrwxrwx 1 maimoona maimoona 512 Mar 26 12:53 .
drwxr-xr-x 1 root     root      512 Mar 13 15:29 ..
lrwxrwxrwx 1 maimoona maimoona  12 Nov 16  2019 'Documents and Settings' -> /mnt/c/Users
drwxrwxrwx 1 maimoona maimoona 512 Mar  1 16:59 Intel
d--x--x--x 1 maimoona maimoona 512 Mar  3 09:00 MSOCache
drwxrwxrwx 1 maimoona maimoona 512 Mar  1 16:37 OneDriveTemp
drwxrwxrwx 1 maimoona maimoona 512 Mar  3 03:58 PerfLogs
dr-xr-xr-x 1 maimoona maimoona 512 Mar 22 00:00 'Program Files'
dr-xr-xr-x 1 maimoona maimoona 512 Mar 12 01:08 'Program Files (x86)'
drwxrwxrwx 1 maimoona maimoona 512 Mar 10 10:58 ProgramData
dr-xr-xr-x 1 maimoona maimoona 512 Mar  2 05:26 Recovery
d--x--x--x 1 maimoona maimoona 512 Mar  1 23:49 'System Volume Information'
dr-xr-xr-x 1 maimoona maimoona 512 Mar  1 16:36 Users
```

Name: Maimoona Khilji

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- cd /etc
- ls -al | more

```
maimoona@DESKTOP-3E3NBI6 x + v
maimoona@DESKTOP-3E3NBI6:/mnt/c$ cd /
maimoona@DESKTOP-3E3NBI6:/$ ls -al | more
total 620
drwxr-xr-x  1 root root    512 Mar 13 15:29 .
drwxr-xr-x  1 root root    512 Mar 13 15:29 ..
lrwxrwxrwx  1 root root     7 Feb 20 04:48 bin -> usr/bin
drwxr-xr-x  1 root root    512 Feb 20 04:56 boot
drwxr-xr-x  1 root root    512 Mar 27 23:41 dev
drwxr-xr-x  1 root root    512 Mar 27 23:07 etc
drwxr-xr-x  1 root root    512 Mar 13 15:32 home
-rwxr-xr-x  1 root root 632048 Mar 13 15:03 init
lrwxrwxrwx  1 root root     7 Feb 20 04:48 lib -> usr/lib
lrwxrwxrwx  1 root root     9 Feb 20 04:48 lib32 -> usr/lib32
lrwxrwxrwx  1 root root     9 Feb 20 04:48 lib64 -> usr/lib64
lrwxrwxrwx  1 root root    10 Feb 20 04:48 libx32 -> usr/libx32
drwxr-xr-x  1 root root    512 Feb 20 04:48 media
drwxr-xr-x  1 root root    512 Mar 13 15:29 mnt
drwxr-xr-x  1 root root    512 Feb 20 04:48 opt
dr-xr-xr-x 10 root root     0 Mar 27 23:07 proc
drwx----- 1 root root    512 Feb 20 04:51 root
drwxr-xr-x  1 root root    512 Mar 27 23:07 run
lrwxrwxrwx  1 root root     8 Feb 20 04:48 sbin -> usr/sbin
drwxr-xr-x  1 root root    512 Feb 20 04:52 snap
drwxr-xr-x  1 root root    512 Feb 20 04:48 srv
dr-xr-xr-x 12 root root     0 Mar 27 23:07 sys
drwxrwxrwt  1 root root    512 Mar 27 17:52 tmp
drwxr-xr-x  1 root root    512 Feb 20 04:50 usr
drwxr-xr-x  1 root root    512 Feb 20 04:51 var
```

- cat passwd
- cd -
- pwd

```
maimoona@DESKTOP-3E3NBI6 x + v
maimoona@DESKTOP-3E3NBI6:/$ cat passwd
cat: passwd: No such file or directory
maimoona@DESKTOP-3E3NBI6:/$ cd -
/mnt/c
maimoona@DESKTOP-3E3NBI6:/mnt/c$ pwd
/mnt/c
maimoona@DESKTOP-3E3NBI6:/mnt/c$ |
```

Name: Maimoona Khilji

## Program: BS-Data Science

2. Continue to explore the filesystem tree using `cd`, `ls`, `pwd` and `cat`. Look in `/bin`, `/usr/bin`, `/sbin`, `/tmp` and `/boot`. What do you see?

**ls** : It is used to list files and directories present in the current directory.

**cd** : We can move around the file hierarchy by using the `cd` command.

**pwd** : It shows the present directory

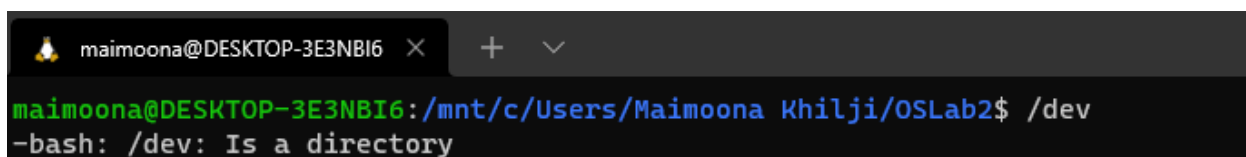
**cat** : It is used to create single or multiple files, view content of file, concatenate files and redirect output in terminal or files.

3. Explore `/dev`. Can you identify what devices are available? Which are character-oriented and which are block-oriented? Can you identify your tty (terminal) device ; who is the owner of your tty (use `ls -l`)?

Can you identify what devices are available? `$ mount`

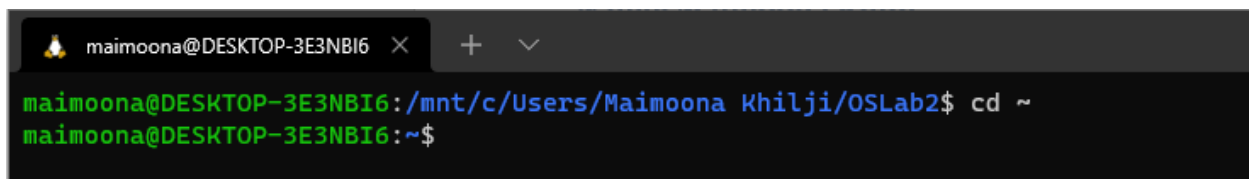
Which are character-oriented and which are block-oriented? Their type are also indicated as "c" or "b" in the permission column of the `ls -l` output.

For tty information: `$ w`



```
maimoona@DESKTOP-3E3NBI6 x + v
maimoona@DESKTOP-3E3NBI6:/mnt/c/Users/Maimoona Khilji/OSLab2$ /dev
-bash: /dev: Is a directory
```

4. Change back into your home directory.



```
maimoona@DESKTOP-3E3NBI6 x + v
maimoona@DESKTOP-3E3NBI6:/mnt/c/Users/Maimoona Khilji/OSLab2$ cd ~
maimoona@DESKTOP-3E3NBI6:~$
```

Name: Maimoona Khilji

## Program: BS-Data Science

5. Create a directory called OSLab2.
6. Make subdirectories called `work` and `play` .

```
maimoona@DESKTOP-3E3NB16 x + v
maimoona@DESKTOP-3E3NB16:/mnt/c/Users/Maimoona Khilji$ mkdir OSLab2
maimoona@DESKTOP-3E3NB16:/mnt/c/Users/Maimoona Khilji$ cd OSLab2
maimoona@DESKTOP-3E3NB16:/mnt/c/Users/Maimoona Khilji/OSLab2$ mkdir work play
```

7. Delete the subdirectory called `work`.

```
maimoona@DESKTOP-3E3NB16 x + v
maimoona@DESKTOP-3E3NB16:/mnt/c/Users/Maimoona Khilji/OSLab2$ rmdir work/
maimoona@DESKTOP-3E3NB16:/mnt/c/Users/Maimoona Khilji/OSLab2$ |
```

8. Copy the file `/etc/passwd` into `play` directory in single command.
9. Move it into the subdirectory `play`.

```
maimoona@DESKTOP-3E3NB16 x + v
maimoona@DESKTOP-3E3NB16:/mnt/c/Users/Maimoona Khilji/OSLab2$ cp /etc/passwd play
```

10. What is the difference between listing the contents of directory `play` with `ls -l`, `ls` and `ls -L`?

`ls`: list contents of directory

`ls -L`: list contents of directory

`ls -l` : list files in long format including

- content permission
- number of links to content
- group owner of the content

Name: Maimoona Khilji

Program: BS-Data Science

- size of the content in bytes
- last modified date / time of the content
- file or directory name

11. Create a file called `hello.txt` that contains the words "hello world".

```
maimoona@DESKTOP-3E3NBI6 x + v
maimoona@DESKTOP-3E3NBI6:/mnt/c/Users/Maimoona Khilji/OSLab2$ cat > hello.txt
"Hello World!"
maimoona@DESKTOP-3E3NBI6:/mnt/c/Users/Maimoona Khilji/OSLab2$
```

12. Imagine you were working on a system and someone accidentally deleted the `ls` command (`/bin/ls`). How could you get a list of the files in the current directory? Try it.

```
maimoona@DESKTOP-3E3NBI6 x + v
maimoona@DESKTOP-3E3NBI6:/mnt/c/Users/Maimoona Khilji/OSLab2$ echo *
etc hello.txt play
maimoona@DESKTOP-3E3NBI6:/mnt/c/Users/Maimoona Khilji/OSLab2$
```

13. How would you create and then delete a file called `"$SHELL"`? Try it.

```
maimoona@DESKTOP-3E3NBI6 x + v
maimoona@DESKTOP-3E3NBI6:/mnt/c/Users/Maimoona Khilji/OSLab2$ touch '$SHELL'
maimoona@DESKTOP-3E3NBI6:/mnt/c/Users/Maimoona Khilji/OSLab2$ rm '$SHELL'
```

14. How would you create and then delete a file that begins with the symbol `#`? Try it.

```
maimoona@DESKTOP-3E3NBI6 x + v
maimoona@DESKTOP-3E3NBI6:/mnt/c/Users/Maimoona Khilji/OSLab2$ touch '#File'
maimoona@DESKTOP-3E3NBI6:/mnt/c/Users/Maimoona Khilji/OSLab2$ rm '#File'
```

Name: Maimoona Khilji

## Program: BS-Data Science

15. How would you create and then delete a file that begins with the symbol `-`? Try it.

```
maimoona@DESKTOP-3E3NBI6 x + v
maimoona@DESKTOP-3E3NBI6:/mnt/c/Users/Maimoona Khilji/OSLab2$ touch -- -hello
maimoona@DESKTOP-3E3NBI6:/mnt/c/Users/Maimoona Khilji/OSLab2$ rm -- -hello
```

16. What is the output of the command: `echo {con,pre}{sent,fer}{s,ed}`? Now, from your home directory, copy `/etc/passwd` and `/etc/group` into your home directory in one command given that you can only type `/etc` once.

```
maimoona@DESKTOP-3E3NBI6 x + v - □ x
maimoona@DESKTOP-3E3NBI6:/mnt/c/Users/Maimoona Khilji/OSLab2$ echo {con,pre}{sent,fer}{s,ed}
consents consented confers conferred presents presented prefers preferred
maimoona@DESKTOP-3E3NBI6:/mnt/c/Users/Maimoona Khilji/OSLab2$ |
```

17. Still in your home directory, copy the entire directory `play` to a directory called `work`.

```
maimoona@DESKTOP-3E3NBI6 x + v
maimoona@DESKTOP-3E3NBI6:/mnt/c/Users/Maimoona Khilji/OSLab2$ mkdir work
maimoona@DESKTOP-3E3NBI6:/mnt/c/Users/Maimoona Khilji/OSLab2$ cp -rd play work
maimoona@DESKTOP-3E3NBI6:/mnt/c/Users/Maimoona Khilji/OSLab2$ cd work
maimoona@DESKTOP-3E3NBI6:/mnt/c/Users/Maimoona Khilji/OSLab2/work$ echo *
play
maimoona@DESKTOP-3E3NBI6:/mnt/c/Users/Maimoona Khilji/OSLab2/work$
```

18. Delete the `work` directory and its contents with one command. Accept no complaints or queries.

```
maimoona@DESKTOP-3E3NBI6 x + v
maimoona@DESKTOP-3E3NBI6:/mnt/c/Users/Maimoona Khilji/OSLab2$ rm -r work
maimoona@DESKTOP-3E3NBI6:/mnt/c/Users/Maimoona Khilji/OSLab2$
```

Name: Maimoona Khilji

Program: BS-Data Science

19. Experiment with the options on the `ls` command. What do the `d`, `l`, `R` and `F` options do?

`ls`: list contents of directory

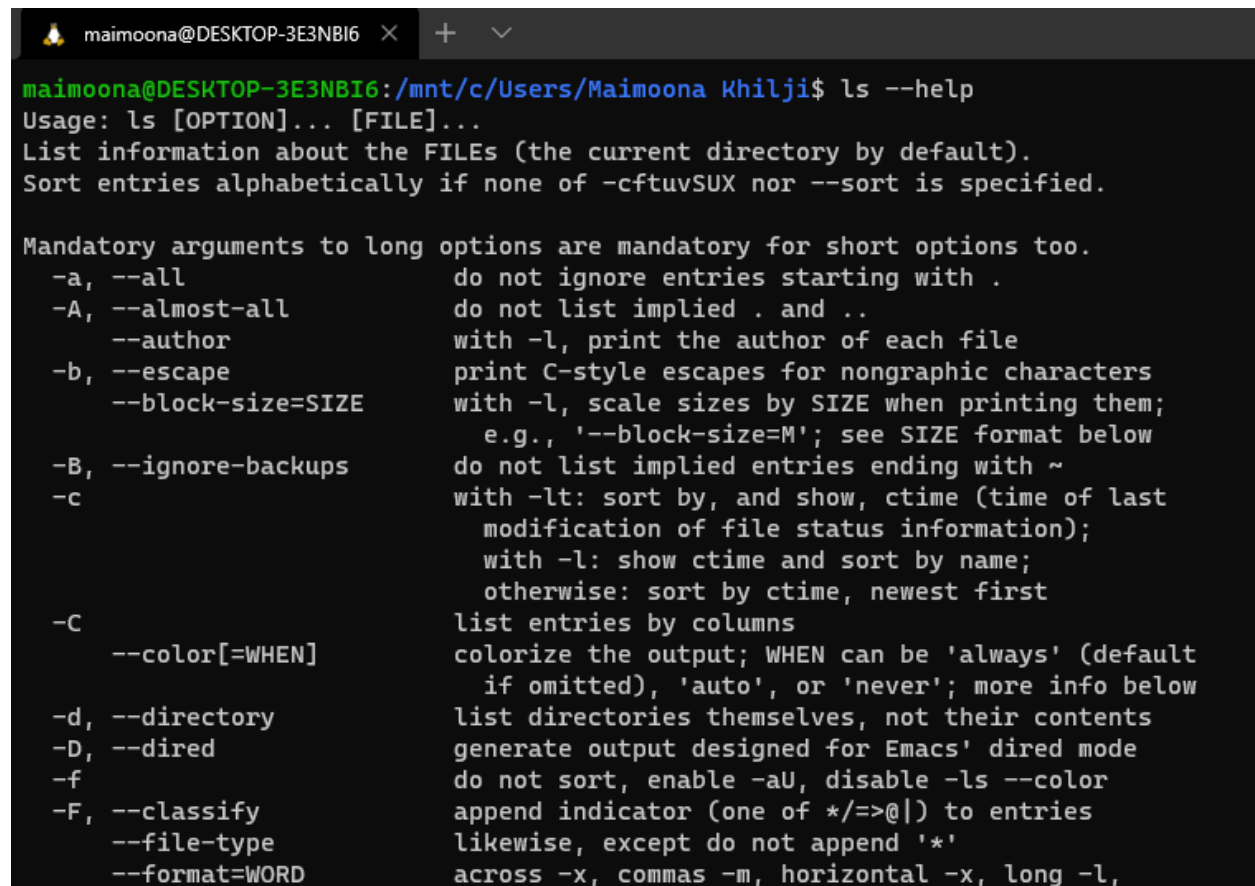
`ls -d */` : displays only directories

`ls -l` : list files along inode number

`ls -R` : displays subdirectories as well

`ls -F` : Flags filenames

20. Try `ls --help`



```
maimoona@DESKTOP-3E3NBI6: /mnt/c/Users/Maimoona_Khilji$ ls --help
Usage: ls [OPTION]... [FILE]...
List information about the FILES (the current directory by default).
Sort entries alphabetically if none of -cftuvSUX nor --sort is specified.

Mandatory arguments to long options are mandatory for short options too.
  -a, --all                do not ignore entries starting with .
  -A, --almost-all        do not list implied . and ..
      --author              with -l, print the author of each file
  -b, --escape             print C-style escapes for nongraphic characters
      --block-size=SIZE    with -l, scale sizes by SIZE when printing them;
                           e.g., '--block-size=M'; see SIZE format below
  -B, --ignore-backups     do not list implied entries ending with ~
  -c                       with -lt: sort by, and show, ctime (time of last
                           modification of file status information);
                           with -l: show ctime and sort by name;
                           otherwise: sort by ctime, newest first
  -C                       list entries by columns
      --color[=WHEN]       colorize the output; WHEN can be 'always' (default
                           if omitted), 'auto', or 'never'; more info below
  -d, --directory          list directories themselves, not their contents
  -D, --dired              generate output designed for Emacs' dired mode
  -f                       do not sort, enable -aU, disable -ls --color
  -F, --classify           append indicator (one of */=>@|) to entries
      --file-type           likewise, except do not append '*'
      --format=WORD        across -x, commas -m, horizontal -x, long -l,
```