Agenda

1. CLI Introduction
2. GUI vs CLI
3. Basic File Management Commands in Linux
4. Essential list of Commands

CLI Introduction

CLI stands for the command-line interface. It is a program that allows users to type text commands instructing the computer to do specific tasks.

The Roots of CLI

- In the 1960s, CLI was used intensively.
- Back then, people had only a keyboard as an input device and the computer screen could only display text information. Operating systems like **MS-DOS** used the CLI as the standard user interface.

Note that interface has a much broader definition these days. For this session, however, we're only interested in the display and input of text ar commands via the command line.

CLI Display

The command line can be the default interface for a computer, but most personal computers use a program (like Terminal) within the desktop graphic interface to provide the command line interface. Let's dissect the CLI's language for a moment.

Below is an example of the prompt on an Ubuntu Linux server:

```
ubuntu@chopin:~$
```

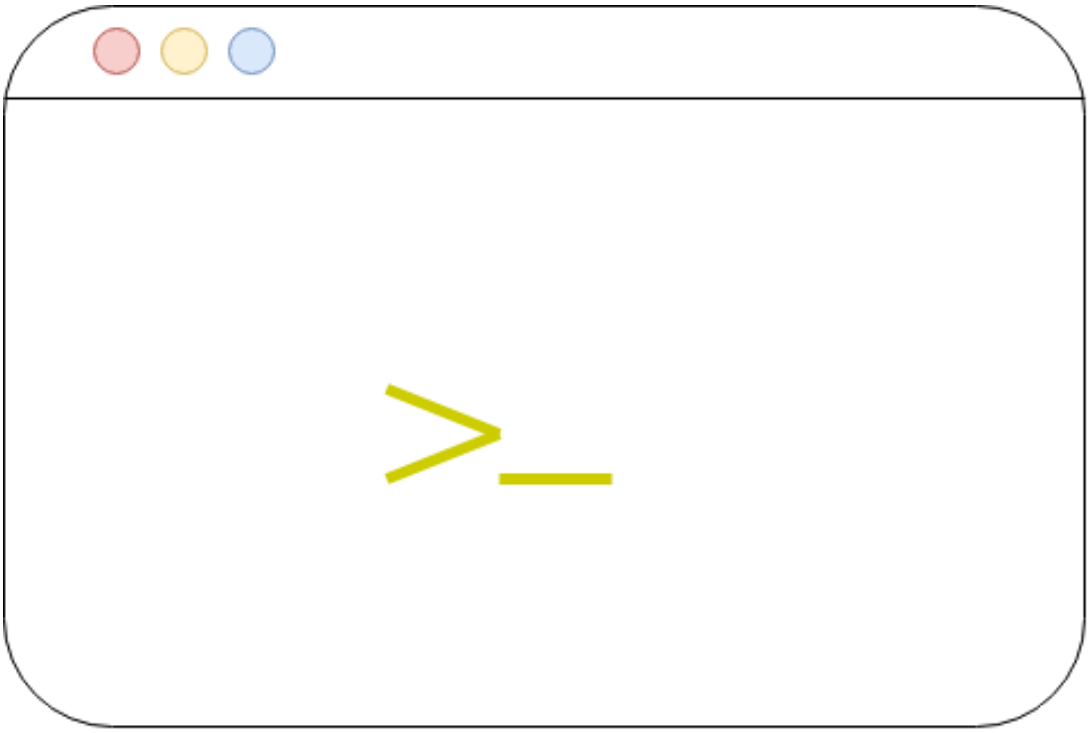
The above prompt follows this format:

```
[user]@[hostname]:[current_directory]$
```

CLI & GUI

CLI

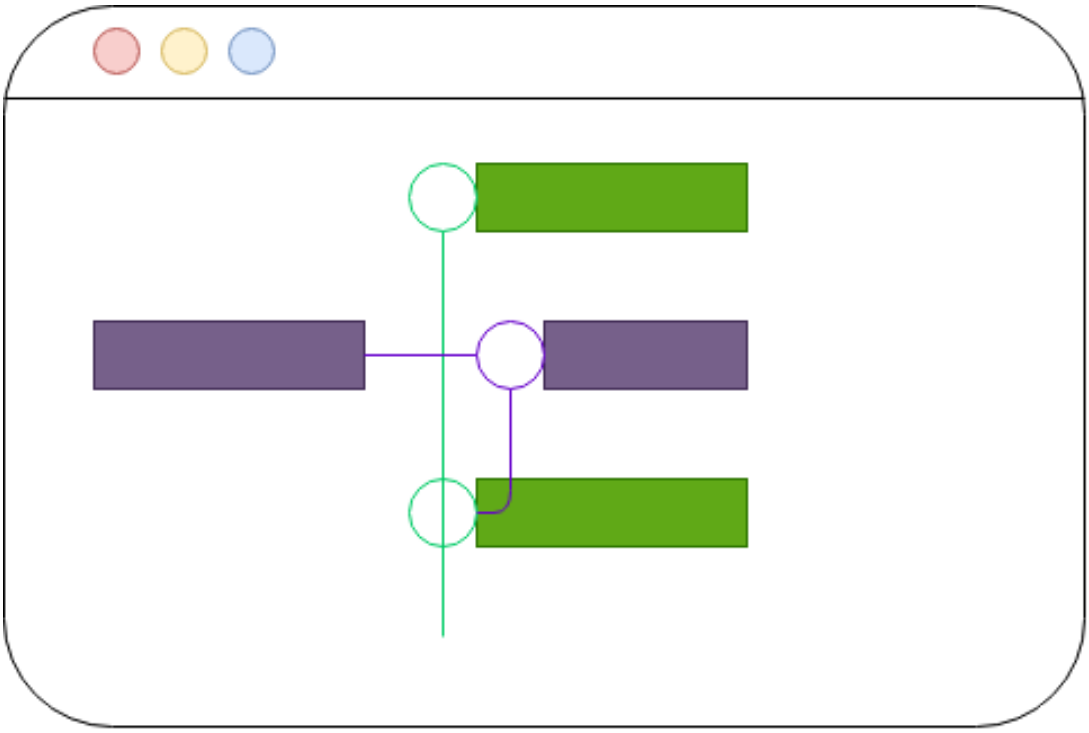
CLI is the word form used for Command Line Interface. CLI permits users to put in writing commands associate degree exceedingly in terminal console window to interact with an operating system. CLI is a platform or medium wherever users answer a visible prompt by writing a command and g the response from the system, for this users have to be compelled to kind command or train of command for performing the task.



CLI

Examples - Windows: Command Prompt, Ubuntu & MacOS: Terminal

GUI stands for **Graphical User Interface.** GUI permits users to use the graphics to interact with an operating system. In the graphical user interfac menus are provided such as windows, scrollbars, buttons, wizards, painting pictures, alternative icons etc. It's intuitive, simple to find out and reduce psychological feature load. In GUI, the information is shown or presented to the user in any form such as plain text, videos, images, etc.



GUI

Examples - Microsoft Windows, macOS, Chrome OS, Linux variants like Ubuntu

CLI vs GUI

CLI	GUI
CLI is difficult to use	Whereas it is easy to use.
It consumes low memory.	consumes more memory.
CLI is faster than GUI	The speed of GUI is slower than CLI.
CLI operating system needs only a keyboard.	While GUI operating system needs both mouse and keyboard.
In CLI, input is entered only at the command prompt.	While in GUI, the input can be entered anywhere on the screen.
In CLI, the information is shown or presented to the user in plain text and files.	While in GUI, the information is shown or presented to the user in any form such as plain text, videos, images, etc.
CLI does not use any pointing devices	While it uses pointing devices for selecting and choosing items

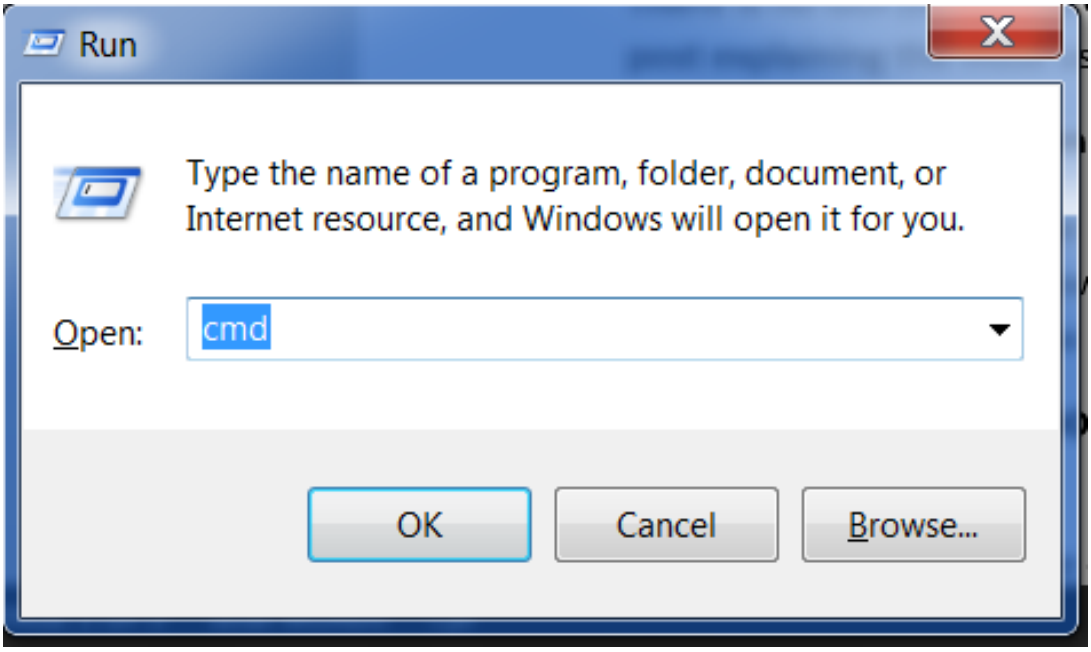
Open the command-line interface

To start some experiments we need to open our command-line interface first.

Opening: Windows

Depending on your version of Windows and your keyboard, one of the following should open a command window (you may have to experiment a bit, b you don't have to try all of these suggestions):

- Go to the Start menu or screen, and enter "Command Prompt" in the search field.
- Go to Start menu → Windows System → Command Prompt.
- Go to Start menu → All Programs → Accessories → Command Prompt.
- Go to the Start screen, hover your mouse in the lower-left corner of the screen, and click the down arrow that appears (on a touch screen, instead flick up from the bottom of the screen). The Apps page should open. Click on Command Prompt in the Windows System section.
- Hold the special Windows key on your keyboard and press the "X" key. Choose "Command Prompt" from the pop-up menu.
- Hold the Windows key and press the "R" key to get a "Run" window. Type "cmd" in the box, and click the OK key.



Opening: OS X

Go to Applications → Utilities → Terminal.

Opening: Linux

It's under Applications → Accessories → Terminal or Applications → System → Terminal.

Prompt

You now should see a white or black window that is waiting for your commands.

Prompt: OS X and Linux

If you're on Mac or Linux, you probably see a `$`, like this:

command-line

```
$
```

Prompt: Windows

On Windows, you probably see a `>`, like this:

command-line

```
>
```

Each command will be prepended by a `$` or `>` and one space, but you should not type it. Your computer will do it for you.

Just a small note: in your case, there may be something like C:\Users\alma> or alma-MacBook-Air:~ alma$ before the prompt sign, and this is 100% OK

The part up to and including the `$` or the `>` is called the *command line prompt*, or *prompt* for short. It prompts you to input something there.

Your first command

Let's start by typing this command:

Your first command: OS X and Linux

command-line

```
$ whoami
```

Your first command: Windows

command-line

```
> whoami
```

And then hit `enter`. This is our result:

command-line

```
$ whoami
almabetter-student
```

Basics

Each operating system has a slightly different set of commands for the command line, so make sure to follow instructions for your operating system. Let try this, shall we?

Current directory

It'd be nice to know where are we now, right? Let's see. Type this command and hit `enter`:

Current directory: OS X and Linux

command-line

```
$ pwd
/Users/almabetter-student
```

> Note: 'pwd' stands for 'print working directory'.

Current directory: Windows

command-line

```
> cd
C:\Users\alambetter-student
```

> Note: 'cd' stands for 'change directory'. With PowerShell, you can use pwd just like on Linux or Mac OS X.

You'll probably see something similar on your machine. Once you open the command line you usually start at your user's home directory.

Learn more about a command

Many commands you can type at the command prompt have built-in help that you can display and read! For example, to learn more about the curre directory command:

Command help: OS X and Linux

OS X and Linux have a `man` command, which gives you help on commands. Try `man pwd` and see what it says, or put `man` before other commanc to see their help. The output of `man` is normally paged. Use the space bar to move to the next page, and `q` to quit looking at the help.

Command Help: Windows

Adding a `/?` suffix to most commands will print the help page. You may need to scroll your command window up to see it all. Try `cd /?` .

List files and directories

So what's in it? It'd be cool to find out. Let's see:

List files and directories: OS X and Linux

command-line

```
$ ls
Applications
Desktop
Downloads
Music
...
```

List files and directories: Windows

command-line

```
> dir
 Directory of C:\Users\almabetter-student
05/08/2020 07:28 PM <DIR>      Applications
05/08/2020 07:28 PM <DIR>      Desktop
05/08/2020 07:28 PM <DIR>      Downloads
05/08/2020 07:28 PM <DIR>      Music
...
```

> Note: In PowerShell, you can also use 'ls' like on Linux and Mac OS X.

Change current directory

Now, let's go to our Desktop directory:

Change current directory: OS X

command-line

```
$ cd Desktop
```

Change current directory: Linux

command-line

```
$ cd Desktop
```

Change current directory: Windows

command-line

```
> cd Desktop
```

Check if it's really changed:

Check if changed: OS X and Linux

command-line

```
$ pwd
/Users/almabetter-student/Desktop
```

Check if changed: Windows

command-line

```
> cd
C:\Users\almabetter-student\Desktop
```

Here it is!

> PRO tip: if you type cd D and then hit tab on your keyboard, the command line will automatically fill in the rest of the name so you can navigate faster. If there is more than one folder starting with "D", hit the tab key twice to get a list of options.

Create directory

How about creating a practice directory on your desktop? You can do it this way:

Create directory: OS X and Linux

command-line

```
$ mkdir practice
```

Create directory: Windows

command-line

```
> mkdir practice
```

This little command will create a folder with the name `practice` on your desktop. You can check if it's there by looking on your Desktop or by runnir a `ls` or `dir` command! Try it. :)

> PRO tip: If you don't want to type the same commands over and over, try pressing the up arrow and down arrow on your keyboard to cycle through recently used commands.

Clean up

We don't want to leave a mess, so let's remove everything we did until that point.

First, we need to get back to Desktop:

Clean up: OS X and Linux

command-line

```
$ cd ..
```

Clean up: Windows

command-line

```
> cd ..
```

Using `..` with the `cd` command will change your current directory to the parent directory (that is, the directory that contains your current directory).

Check where you are:

Check location: OS X and Linux

command-line

```
$ pwd
/Users/almabetter-student/Desktop
```

Check location: Windows

command-line

```
> cd
C:\Users\almabetter-student\Desktop
```

Now time to delete the `practice` directory:

> Attention: Deleting files using del, rmdir or rm is irrecoverable, meaning the deleted files will be gone forever! So be very careful with this command.

Delete directory: Windows Powershell, OS X and Linux

command-line

```
$ rm -r practice
```

Delete directory: Windows Command Prompt

command-line

```
> rmdir /S practice
practice, Are you sure <Y/N>? Y
```

Done! To be sure it's actually deleted, let's check it:

Check deletion: OS X and Linux

command-line

```
$ ls
```

Check deletion: Windows

command-line

```
> dir
```

Exit

That's it for now! You can safely close the command line now.

Exit: OS X and Linux

command-line

```
$ exit
```

Exit: Windows

command-line

```
> exit
```

Essential Commands

Here is a summary of some useful commands:

Command (Windows)	Command (Mac OS / Linux)	Description	Example
exit	exit	close the window	**exit**
cd	cd	change directory	**cd test**
cd	pwd	show the current directory	**cd** (Windows) or **pwd** (Mac OS / Linux)
dir	ls	list directories/files	**dir**
copy	cp	copy file	**copy c:\test\test.txt c:\windows\test.txt**
move	mv	move file	**move c:\test\test.txt c:\windows\test.txt**
mkdir	mkdir	create a new directory	**mkdir testdirectory**
rmdir (or del)	rm	delete a file	**del c:\test\test.txt**
rmdir /S	rm -r	delete a directory	**rm -r testdirectory**
[CMD] /?	man [CMD]	get help for a command	**cd /?** (Windows) or **man cd** (Mac OS / Linux)

Exhaustive list of commands

ss64.com contains a complete reference of commands for all operating systems.

Interview Questions

> What is a CLI ?

CLI is a command line program that accepts text input to execute operating system functions.

A Command Line Interface connects a user to a computer program or operating system. Through the CLI, users interact with a system or application b typing in text (commands). The command is typed on a specific line following a visual prompt from the computer.

> What is the main difference between GUI and CLI ?

GUI lets a user interact with the device/system with the help of graphical elements, like windows, menus, icons, etc. The CLI, on the other hand, lets user interact with their device/system with the help of various commands.

Thank you