

# Getting Familiar with the Linux Command Line (CLI)

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# 1. Introduction

This hands-on guide will help you become familiar with the Linux Command Line Interface (CLI). You will practice:

- Navigating the filesystem
- Listing files and directories
- Creating and removing directories
- Copying and moving files
- Viewing file contents
- Checking your IP address

Each exercise includes **step-by-step instructions** and **small challenges** for you to try.

# 2. Prerequisites

Before you start, make sure that:

- You have access to a Linux system (physical machine, VM, WSL, or remote server).
- You can open a terminal:
  - On desktop: Look for **Terminal** in your applications menu.
  - Via shortcut (on many Linux desktops): **Ctrl + Alt + T**.
  - Remote server: use SSH, for example:

```
ssh username@server-ip
```

Throughout this guide, the prompt is shown as:

```
$
```

You should **not** type the **\$** character itself, only what comes after it.

## 3. Exercise 1 – Listing Files and Directories (**ls**)

### Objective

Learn how to see what files and directories exist in your current location.

### Steps

1. Confirm you are in your home directory:

```
$ pwd
```

You should see something like `/home/yourusername`.

2. List the contents of your home directory:

```
$ ls
```

3. List **all** files, including hidden files (those starting with `.`):

```
$ ls -a
```

4. List files in **long format** (permissions, owner, size, time, etc.):

```
$ ls -l
```

5. Combine both options (all + long format):

```
$ ls -la
```

### Try It Yourself

- What is the difference between `ls`, `ls -a`, and `ls -l`?
- Run `ls -lh` and observe the `h` option (human-readable sizes).

## 4. Exercise 2 – Making Directories (**mkdir**)

# Objective

Create new directories (folders) to organize your files.

## Steps

1. From your home directory, create a new directory called **somnog8**:

```
$ mkdir somnog8
```

2. Create multiple directories in a single command:

```
$ mkdir somnog7 somnog4 somnog1
```

3. Confirm that these directories exist:

```
$ ls
```

You should see **somnog8**, **somnog7**, **somnog4**, **somnog1** in the output.

## Try It Yourself

- Create a directory named **projects** and inside it create two more directories: **lab1** and **lab2**.

# 5. Exercise 3 – Changing Directories (**cd**) and Printing Path (**pwd**)

## Objective

Move between directories and understand where you are in the filesystem.

## Steps

1. Change into one of the directories you created, for example **somnog7**:

```
$ cd somnog7
```

2. Check your current directory:

```
$ pwd
```

3. Move back to your home directory using:

```
$ cd
```

or

```
$ cd ~
```

4. Verify again with:

```
$ pwd
```

5. Move one level up using:

```
$ cd ..
```

## Try It Yourself

- From your home directory, create `practice/cli` (two-level path) in one command:

```
$ mkdir -p practice/cli
```

- Then navigate into `practice/cli` and verify your path with `pwd`.

## 6. Exercise 4 – Copying Files and Directories (cp)

### Objective

Practice copying files and directories.

### Steps

1. In your home directory, create a simple text file:

```
$ cd ~  
$ echo "Hello Somnog8!" > file1.txt
```

2. Copy `file1.txt` to `file2.txt`:

```
$ cp file1.txt file2.txt
```

3. Verify both files exist:

```
$ ls
```

4. Create a directory and copy files into it:

```
$ mkdir backup  
$ cp file1.txt file2.txt backup/  
$ ls backup
```

5. Copy a directory **recursively**:

```
$ cp -r backup backup_copy  
$ ls backup_copy
```

## Try It Yourself

- Create a directory called **docs** and copy **file1.txt** into it using a single **cp** command.
- Try **cp -r docs docs\_old**. What happens?

## 7. Exercise 5 – Moving and Renaming (**mv**)

### Objective

Move files between directories and rename them.

### Steps

1. Create two directories in your home directory:

```
$ cd ~  
$ mkdir dir1 dir2
```

2. Create a file using **nano**:

```
$ nano myfile.txt
```

Type the content (for example): **Hello Somnog8!**

Save and exit (**Ctrl + O**, **Enter**, then **Ctrl + X**).

3. Confirm the file exists:

```
$ ls
```

4. Move **myfile.txt** into **dir1**:

```
$ mv myfile.txt dir1
```

5. Check your home directory again:

```
$ ls
```

You should **not** see **myfile.txt** here.

6. List contents of **dir1**:

```
$ ls dir1
```

You should see **myfile.txt** inside **dir1**.

7. Rename **myfile.txt** to **message.txt** inside **dir1**:

```
$ mv dir1/myfile.txt dir1/message.txt  
$ ls dir1
```

## Try It Yourself

- Move **message.txt** from **dir1** to **dir2**.
- Rename **dir2** to **archive**.

## 8. Exercise 6 – Removing Files and Directories (**rm**, **rmdir**, **rm -r**)

### Objective

Safely remove files and directories.

# Steps

1. In your home directory, create two empty files:

```
$ cd ~  
$ touch file5 file6  
$ ls
```

2. Remove **file5**:

```
$ rm file5  
$ ls
```

3. Remove **file6**:

```
$ rm file6
```

4. Remove an **empty** directory using **rmdir**:

```
$ mkdir emptydir  
$ rmdir emptydir
```

5. Try to remove **dir1** (which **contains** files) using **rmdir**:

```
$ rmdir dir1
```

You should get an error because **dir1** is not empty.

6. Remove a non-empty directory using **rm -r**:

```
$ rm -r dir1
```

**Warning:** **rm -r** will delete directories and their contents permanently. Use with care.

## Try It Yourself

- Create a directory **testdir** with a few files inside and then remove it using **rm -r testdir**.



## 9. Exercise 7 – Viewing File Contents (**cat**, **less**, **head**, **tail**)

### Objective

Learn different ways to view file contents, especially long files.

### Steps

#### 9.1 Using **cat**

1. Create a small text file:

```
$ cd ~  
$ echo -e "Line 1\nLine 2\nLine 3" > sample.txt
```

2. View it with **cat**:

```
$ cat sample.txt
```

#### 9.2 Using **less** (for long files)

1. Copy **/var/log/syslog** (or another log file if **syslog** does not exist) to **logfile.txt**:

```
$ sudo cp /var/log/syslog logfile.txt
```

On some systems the log file could be **/var/log/messages** or **/var/log/journal**. Adjust as needed.

2. View it with **less**:

```
$ less logfile.txt
```

Use: \* **Space** to go to the next page \* **b** to go back \* **q** to quit

#### 9.3 Using **head**

1. Show the first 10 lines (default) of **logfile.txt**:

```
$ head logfile.txt
```

2. Show the first 5 lines:

```
$ head -5 logfile.txt
```

3. Show the first 2 lines:

```
$ head -2 logfile.txt
```

## 9.4 Using **tail**

1. Show the last 10 lines of **logfile.txt**:

```
$ tail logfile.txt
```

2. Show the last 15 lines:

```
$ tail -15 logfile.txt
```

## Try It Yourself

- Use **head -20 logfile.txt** and **tail -20 logfile.txt**. What do you see?
- Combine **tail** with **-f** (follow) to watch a log file change in real time:

```
$ tail -f logfile.txt
```

Press **Ctrl + C** to stop.

# 10. Exercise 8 – Checking Your IP Address (**ip a**)

## Objective

Learn how to view network interfaces and IP addresses.

## Steps

1. Run the **ip address** command:

```
$ ip address
```

2. The shorter version:

```
$ ip a
```

3. Look for lines containing **inet** to see IPv4 addresses (e.g. **192.168.x.x** or **10.x.x.x**).

## Try It Yourself

- Identify which interface (e.g. **eth0**, **ens33**, **wlp3s0**) has your main IP address.
- Note your IP address and subnet (e.g. **192.168.1.20/24**).

# 11. Summary and Next Steps

In this guide you have practiced:

- Navigating directories: **pwd**, **cd**
- Listing files: **ls**, **ls -a**, **ls -l**
- Creating directories: **mkdir**
- Copying files and directories: **cp**, **cp -r**
- Moving and renaming: **mv**
- Removing files and directories: **rm**, **rmdir**, **rm -r**
- Viewing files: **cat**, **less**, **head**, **tail**
- Checking IP address: **ip a**

## Next Steps

- Explore manual pages: **man ls**, **man cp**, **man rm**
- Practice combining commands using pipes (**|**) and redirection (**>**, **>>**).
- Create your own mini-project directory and manage it only using the CLI.

Keep practicing until these commands feel natural. The more you use the CLI, the more powerful and efficient you will become as a Linux user.