Command Line Essentials

1. Introduction to the Command Line

The command line interface (CLI) is a powerful, text-based method for interacting with Linux. It offers:

- Full system control
- · Efficiency and speed
- Remote server administration capabilities

Important:

Commands on Linux are concise but powerful. Small changes can have significantly different outcomes.

Always double-check commands to avoid unintended data loss or system disruptions.

2. Launching the Terminal and Bash

Launching the Terminal (Ubuntu)

- Open the Applications menu.
- Select Terminal.

Confirming Bash as Your Shell

Check your current shell version with:

```
echo "${BASH_VERSION}"
```

• If the version isn't shown, launch Bash manually:

bash

 Set Bash as default (optional): Terminal preferences → command → Run command as login shell (bash).

3. Structure of a Bash Command

Bash commands typically follow the pattern:

```
command [options] [arguments]
```

Example (echo command):

• Simple text output:

```
echo 'Bash is amazing!'
```

• Disable newline (n) and enable escapes (e):

```
echo -ne 'Bash\tis\namazing!'
```

• Multiple options can be combined:

```
echo -en 'text'
```

4. Navigating the File System

Linux file systems differ from Windows:

- No drive letters (C:, D:).
- Root (/) directory as the base of the file system.
- Home directory → /home/username

Key Commands

• Print current working directory:

```
pwd
```

• List files/directories:

```
ls  # list current directory
ls -a  # include hidden files
ls -l  # detailed list with permissions and timestamps
ls /path/to/dir # list contents of specific directory
```

• Change directory:

```
cd folder  # go into folder
cd ..  # move up one directory
cd ~ or cd  # go to home directory
cd /absolute/path # go to absolute path
```

Absolute vs. Relative Paths

- Absolute Paths (/home/user/Desktop): Complete path starting from root (/).
- Relative Paths (../Desktop): Path relative to current directory.

5. Getting Help on Commands

Use built-in help options to find command details:

• Quick help:

```
command --help
command -h
```

Example:

```
ls --help
```

• Detailed manual pages (man pages):

```
man ls
```

• Online resources (e.g., Stack Overflow, Linux forums or ChatGPT) are also valuable for additional help.

6. Creating Files and Directories

Creating files (touch)

• Create empty file(s):

```
touch file.txt
touch file1.txt file2.txt
```

• Create a file in a different directory:

```
touch ~/Desktop/newfile.txt
```

Creating directories (mkdir)

• Simple directory:

```
mkdir my_folder
```

• Nested directories:

```
mkdir -p folder/subfolder/subsubfolder
```

7. Moving and Copying Files

Move files (mv)

• Move and/or rename file:

```
mv file.txt /destination/folder/newfile.txt
```

• Move multiple files using wildcard:

```
mv *.txt /destination/folder/
```

Copy files/directories (cp)

• Copy file:

```
cp file.txt /destination/folder/
```

• Copy entire directory (recursive):

```
cp -R directory_name /destination/
```

8. Removing Files and Directories

Remove files (rm)

• Single or multiple files:

```
rm file.txt
rm file1.txt file2.txt
```

• Recursive directory removal (caution—irreversible!):

```
rm -r folder_name
```

Important:

Files removed with rm are permanently deleted—there is no trash bin!

Safely removing empty directories (rmdir)

• Removes directory only if empty:

```
rmdir folder_name
```

Summary of Key Commands

Task	Command
Check shell version	echo "\${BASH_VERSION}"
Print working directory	pwd
List files	ls, ls -a, ls -l
Change directory	cd
Quick help	command ——help
Detailed help	man command

Create files	touch file.txt
Create directories	mkdir folder Or mkdir -p folder/sub
Move files/directories	mv file.txt new_folder/
Copy files/directories	cp file.txt new_folder/, cp -R folder new_folder/
Remove files	rm file.txt
Remove directories	rm -r folder, rmdir folder

▲ Safety and Best Practices

- Always double-check commands, especially with rm .
- Use backups for critical data.
- Prefer rmdir for directories if unsure about contents.