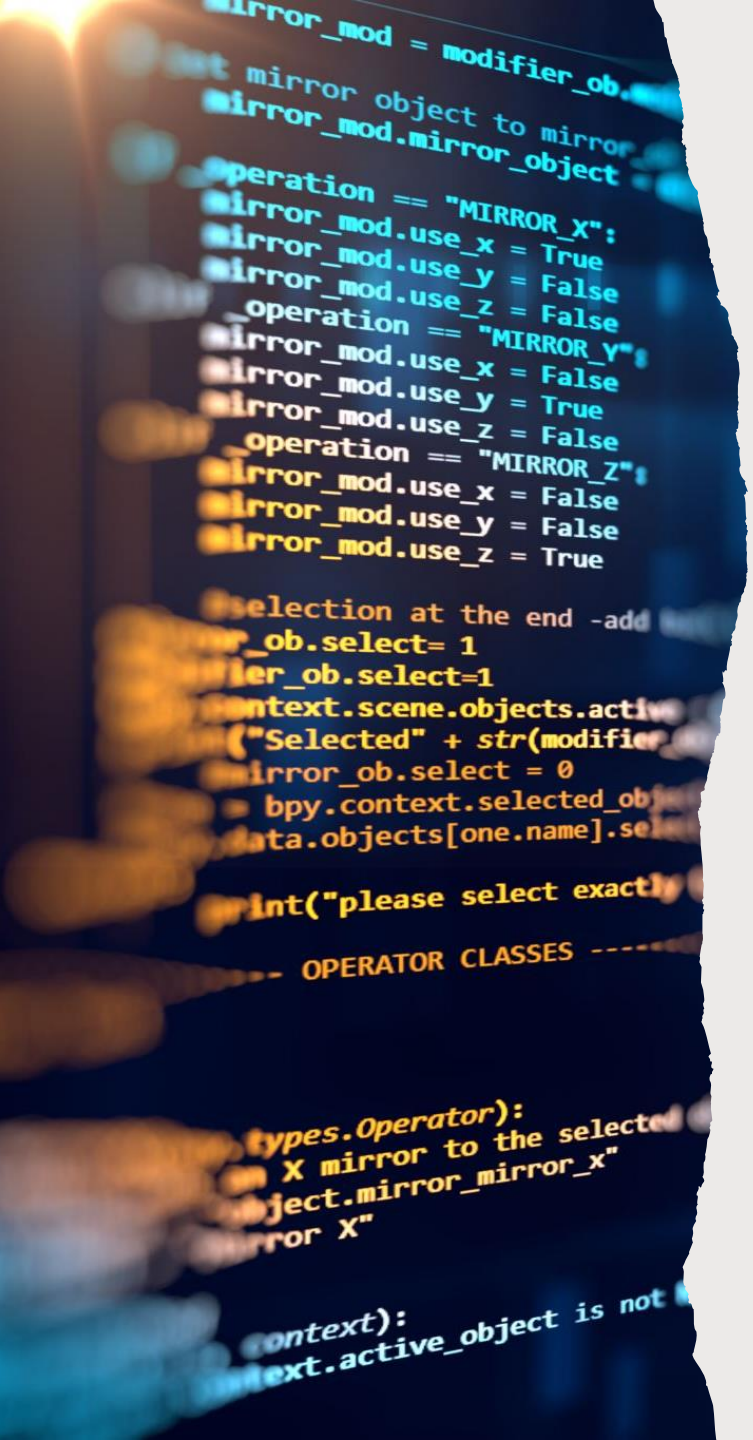

Introduction to Computing and LaTeX:

Linux commands, Bash scripting, Version control (Git)

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What is Linux?

- Open-source operating system
- Provides command-line interface (CLI)
- Uses shells (bash, zsh, etc.)

Basic Linux commands

- `$ pwd    # print working directory`
- `$ ls     # list files`
- `$ cd     # change directory`
- `$ mkdir dir_name    # make directory`
- `$ rmdir dir_name    # remove directory`
- `$ cp src dest    # copy`
- `$ mv src dest    # move`
- `$ rm file.txt    # remove file`

Viewing files

- `$ cat file.txt      # show file contents`
- `$ less file.txt     # view with scroll`
- `$ head file.txt     # first 10 lines`
- `$ tail file.txt     # last 10 lines`

File permissions

- `$ ls -l          # check permissions`
- `$ chmod 755 f  # change permissions`
- `$ chown user f # change owner`

Process Management

- `$ ps` `# list processes`
- `$ top` `# monitor processes`
- `$ kill PID` `# terminate process`

Search & Find

- `$ find . -name '*.txt'` `# find text files`
- `$ grep 'word' file.txt` `# search word`
- `$ which python` `# locate command`

Bash Scripting Basics

- **#!/bin/bash** (**#!** is the so-called shebang and /bin/bash is the path to the bash interpreter)
- **echo "Hello, World!"**

Variables & Input

- `name="Lema"`
- `echo "Hello $name"`
- `declare num=42 # or "42" to define a integer.`

```
# Interactive input
```

- `read -p "Enter your name: " user`
- `echo "Hello $user"`

Conditionals

```
if [ -d "ICL" ]; then
    echo "ICL exists"
else
    mkdir ICL
    echo "ICL created"
fi
```

`-d "ICL"`: does the directory ICL exist

Loops

```
for i in {1..5}; do
    echo "Number $i"
done

while [ $count -lt 5 ]; do
    echo $count
    ((count++))
done
```

Functions

```
greet() {
    echo "Hello, $1!"
}

greet Lema
output: Hello, Lema!
```

Practical Example

- `# Backup script`
- `tar -czf backup.tar.gz ~/Documents`

- `# Cleanup logs`
- `rm -f /var/log/*.log`

Wrap-Up & Resources

- Practice on Linux terminal
- Use 'man' pages for help
- Learn more: linuxhandbook.com, bash scripting tutorials

Version Control with Git

```
$ git init                    # initialize repository
$ git status                  # check status
$ git add file.txt            # stage file
$ git commit -m "msg"         # commit changes
$ git log                     # view history
$ git clone URL               # clone repo
$ git push origin main        # push changes
$ git pull origin main        # pull changes
```