Ubuntu Basics Reference Guide

Objective: Provide a foundational understanding of Ubuntu commands, navigation, and system operations.

Part 1: Basic Navigation

1. **Login and Open Terminal:**
    - Log into the Ubuntu system.
    - Open the terminal using **Ctrl+Alt+T** or from the applications menu.
2. **Navigating Directories:**
    - List files and directories: **ls**
    - Change directory: **cd <directory_name>**
    - Move up one level: **cd ..**
    - Move up multiple levels: **cd ../../example**
    - Print the current working directory: **pwd**
3. **Creating and Removing Files and Directories:**
    - Create a directory: **mkdir test_directory**
    - Create an empty file: **touch test_file.txt**
    - Remove a file: **rm test_file.txt**
    - Remove a directory: **rmdir test_directory**
4. **Viewing File Contents:**
    - Display file contents: **cat <file_name>**
    - View file contents with pagination: **less <file_name>**

Part 2: Basic Administration

1. **Updating the System:**
    - Update package lists: **sudo apt update**
    - Upgrade installed packages: **sudo apt upgrade**
2. **Managing Users:**
    - Add a new user: **sudo adduser <username>**

- Switch to another user: **su - <username>**
- Remove a user: **sudo deluser <username>**

3. **Password Management:**
   - Change the current user's password: **passwd**
   - Change another user's password (as admin): **sudo passwd <username>**
   - Lock a user account: **sudo passwd -l <username>**
   - Unlock a user account: **sudo passwd -u <username>**
4. **Checking System Information:**
   - Check disk usage: **df -h**
   - Check memory usage: **free -h**
   - View system uptime: **uptime**
5. **Permissions:**
   - Change file permissions: **chmod 755 <file_name>**
   - View file permissions: **ls -l**
6. **Disk and Partition Information:**
   - List block devices: **lsblk**
   - Check directory sizes: **du -sh /path/to/directory**

   View partition information: **sudo fdisk -l**

Processes:

1. View Running Processes:

- Open the terminal using **Ctrl+Alt+T** or from the applications menu.
- Display all running processes:

```
ps aux
```

- Display processes in a tree view for better visualization:

```
pstree
```

- Find a specific process by keyword:

```
ps aux | grep <process_name>
```

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2. Find Process ID (PID):

- Display processes with their **Process IDs (PIDs)**:

  ```
  ps -e
  ```

- Search for a specific process and display its PID:

  ```
  pgrep <process_name>
  ```

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3. Kill a Process by PID:

- Terminate a process using its PID:

  ```
  kill <PID>
  ```

- Forcefully terminate a process if it doesn't stop:

  ```
  kill -9 <PID>
  ```

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4. Kill a Process by Name:

- Kill a process using its name:

  ```
  pkill <process_name>
  ```

- Forcefully kill all processes with the same name:

  ```
  pkill -9 <process_name>
  ```

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5. Verify Process Termination:

- Check if a process is still running by PID:

  ```
  ps -p <PID>
  ```

- Verify using `pgrep`:

  ```
  pgrep <process_name>
  ```

- If no output is returned, the process has been successfully terminated.

Objective: Learn and apply foundational Ubuntu commands for navigation, file management, and system administration.

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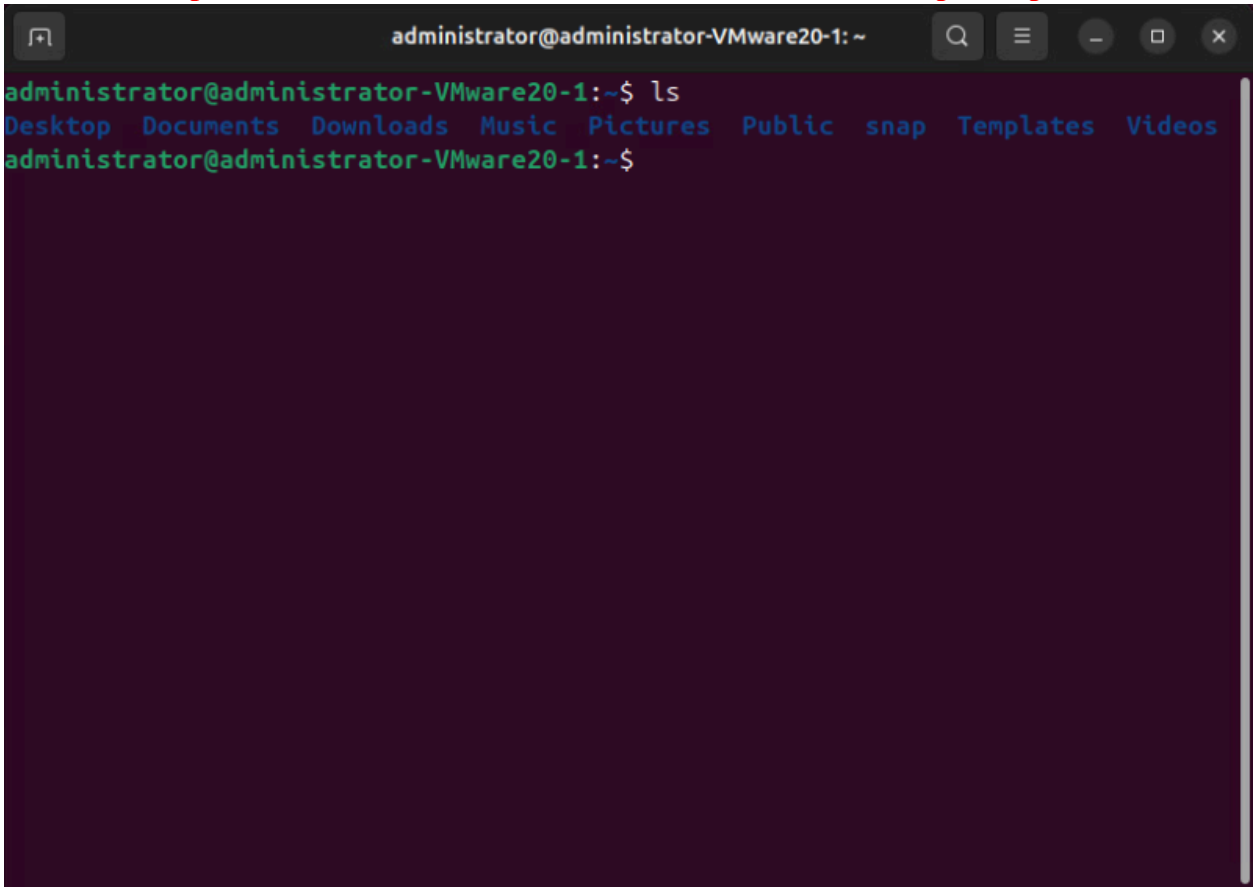
1. Start the Ubuntu terminal.
2. Navigate to the home directory using cd ~. Type " ls"

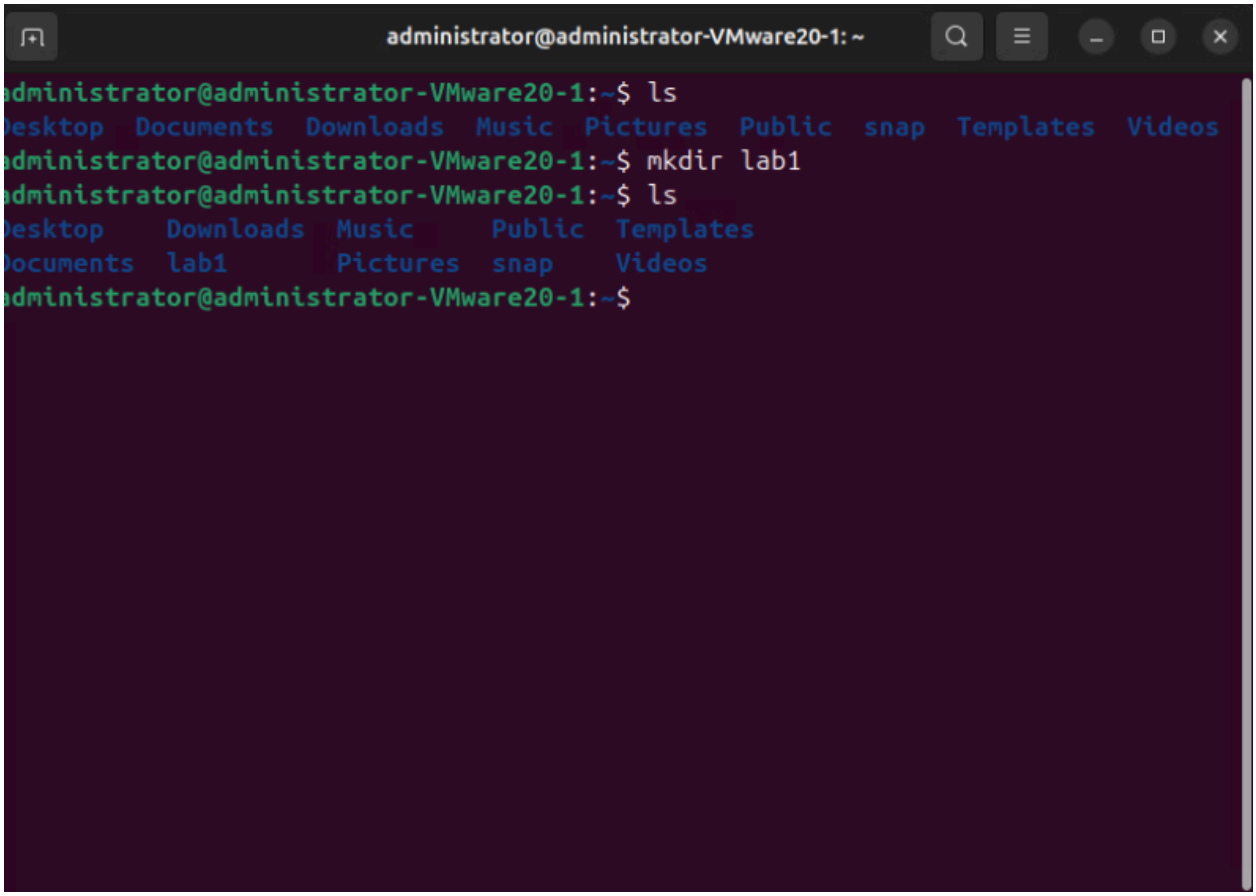
   What's the output?

   Desktop, Documents, Downloads, Music, Pictures, Public, snap, Templates, Videos.



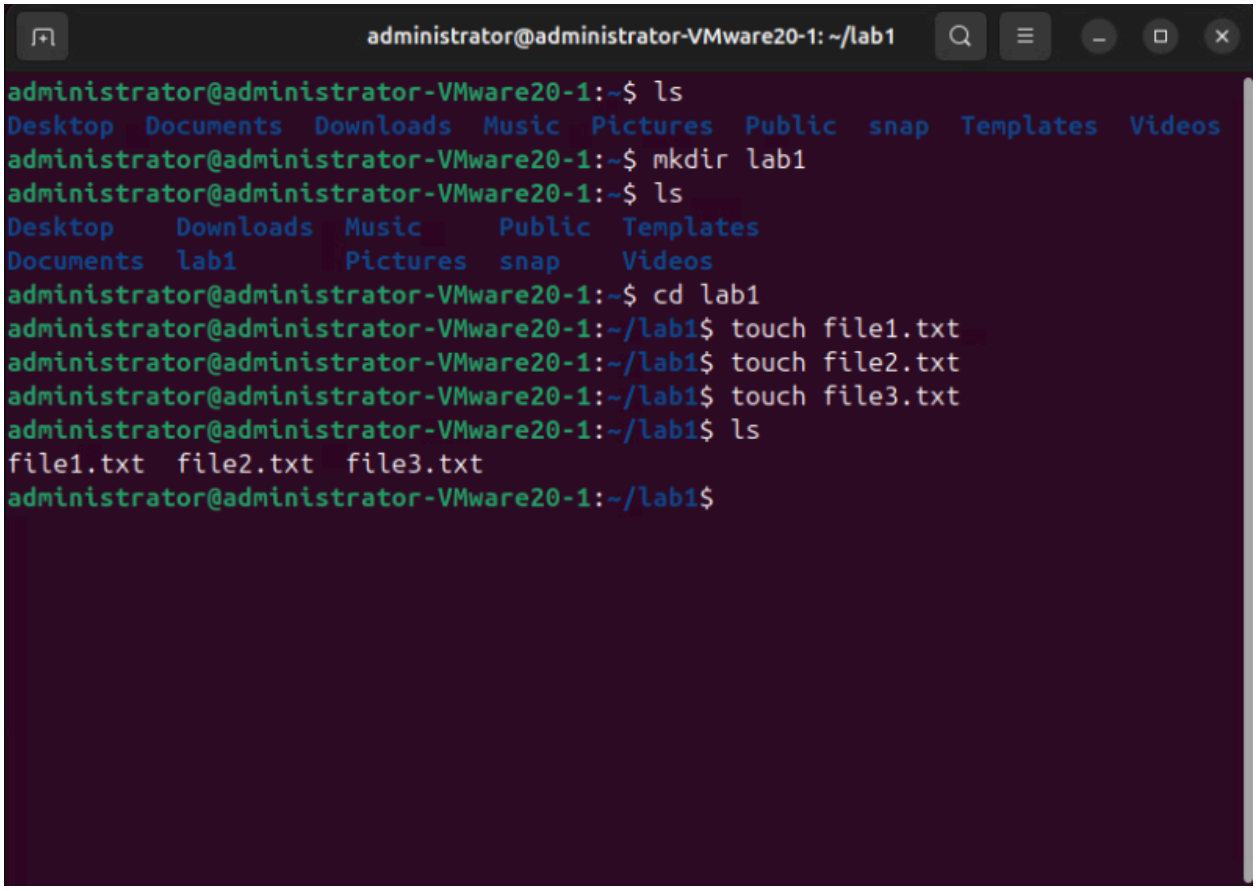
3. Create a directory called lab1 using mkdir. Type " ls"

   What's the output? Desktop, Documents, Downloads, Music, lab1, Pictures, Public, snap, Templates, Videos.



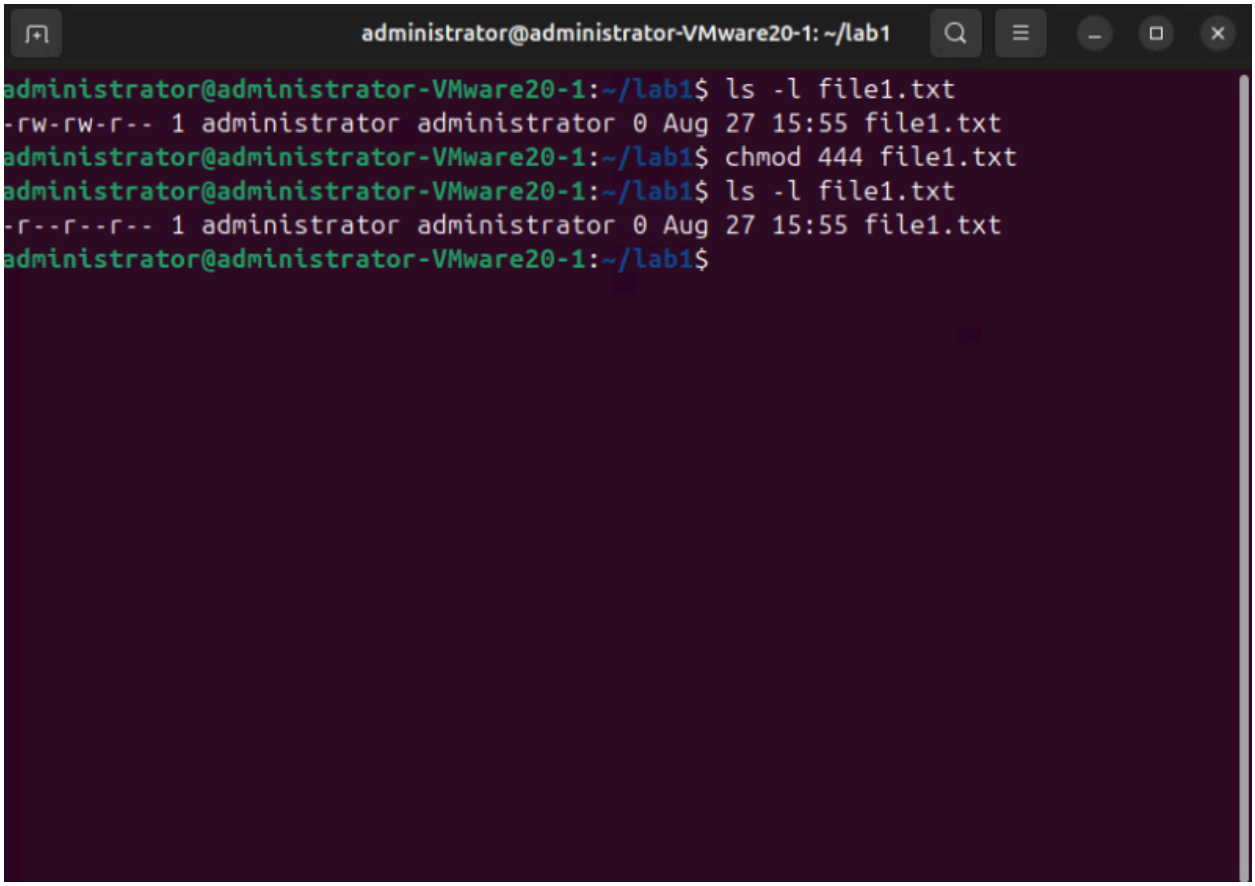
4. Within lab1, create three text files (file1.txt, file2.txt, and file3.txt) using touch.

   What command did you use? touch file1.txt, touch file2.txt, touch file3.txt



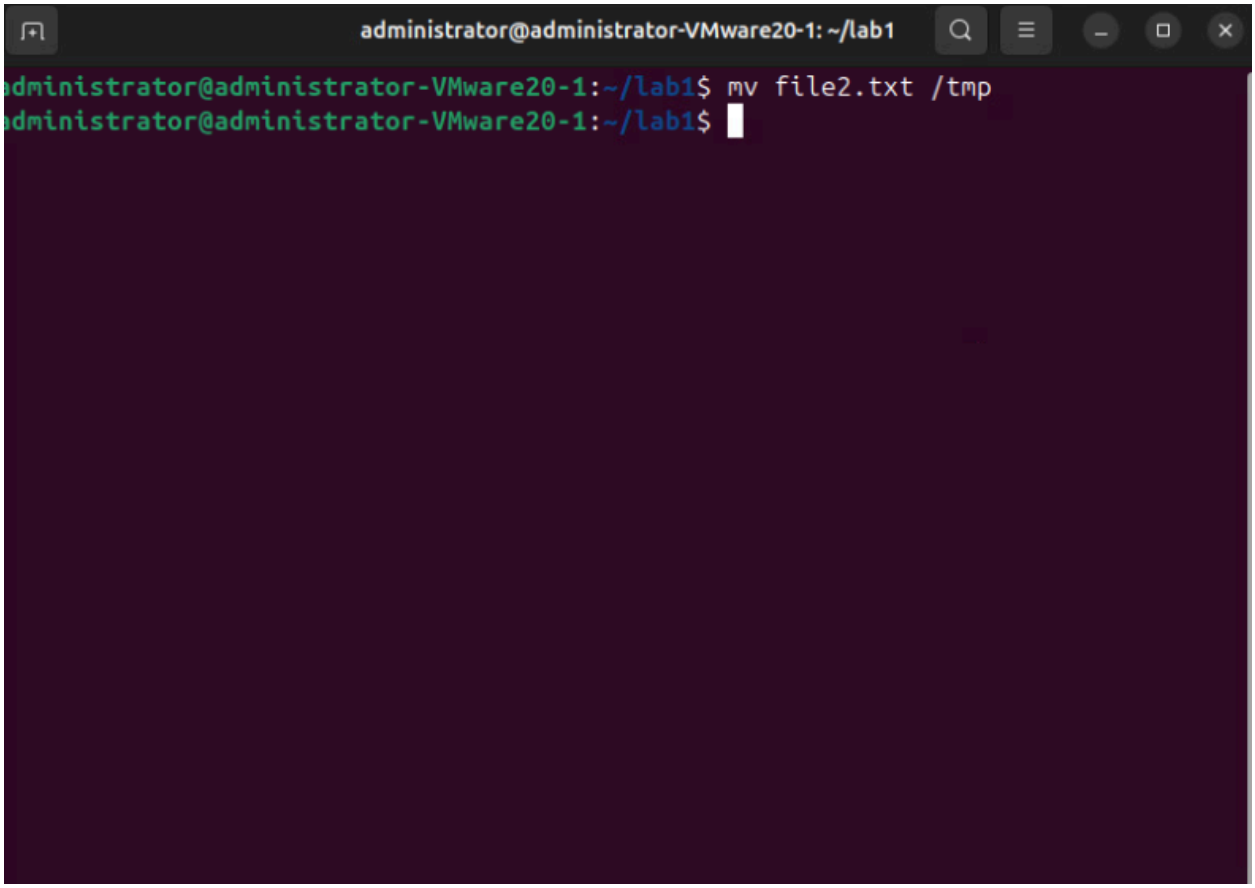
5. Check and note the permissions of file1.txt using ls -l. Change its permissions to read-only for all users using chmod 444 file1.txt. Verify the change with ls -l.

   What is your output? -r–r–r– 1 onworks 0 Aug27 18:56 file1.txt



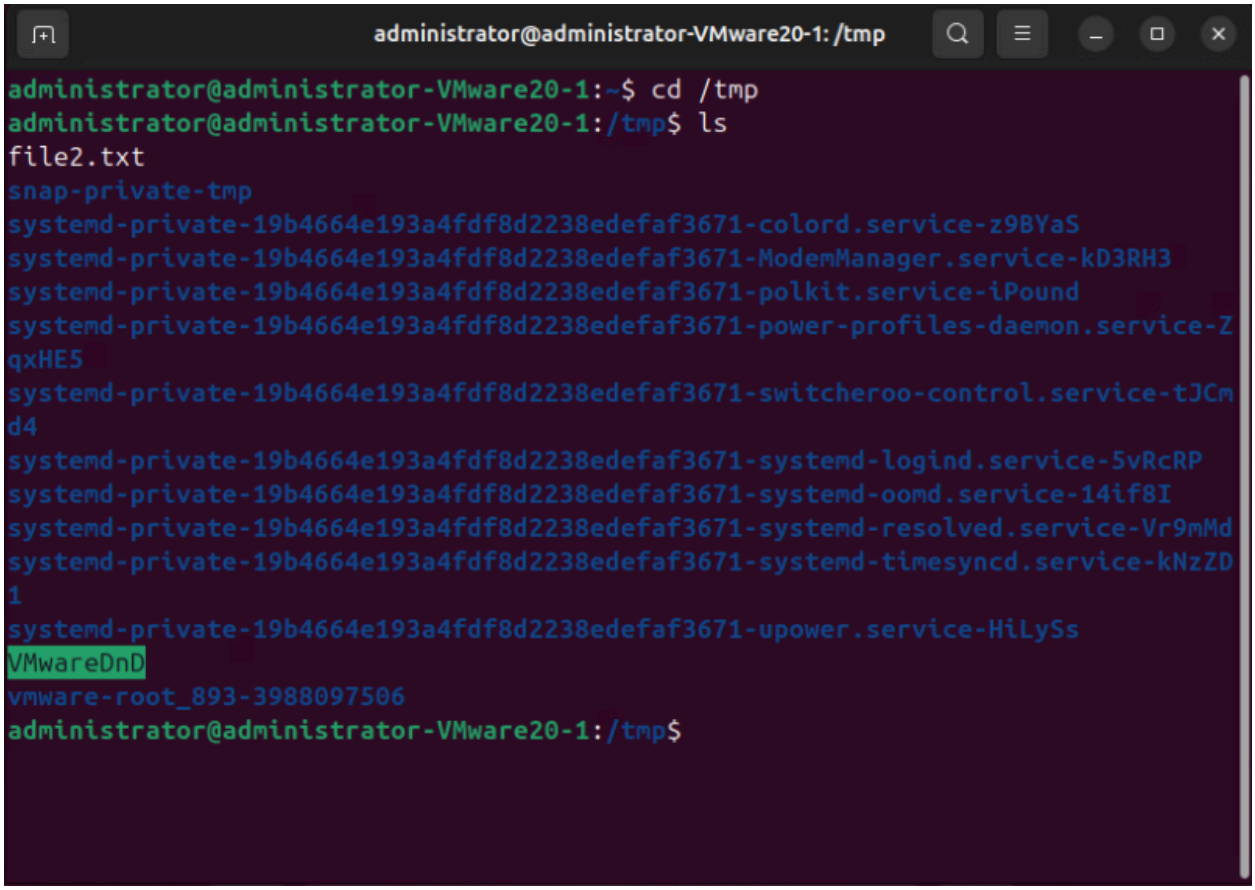
6. Move file2.txt to the /tmp directory using the mv command.

   What command did you use? mv file2.txt /tmp



7. Confirm the file exists in /tmp by navigating there and listing the contents.

   What command did you use? cd /tmp



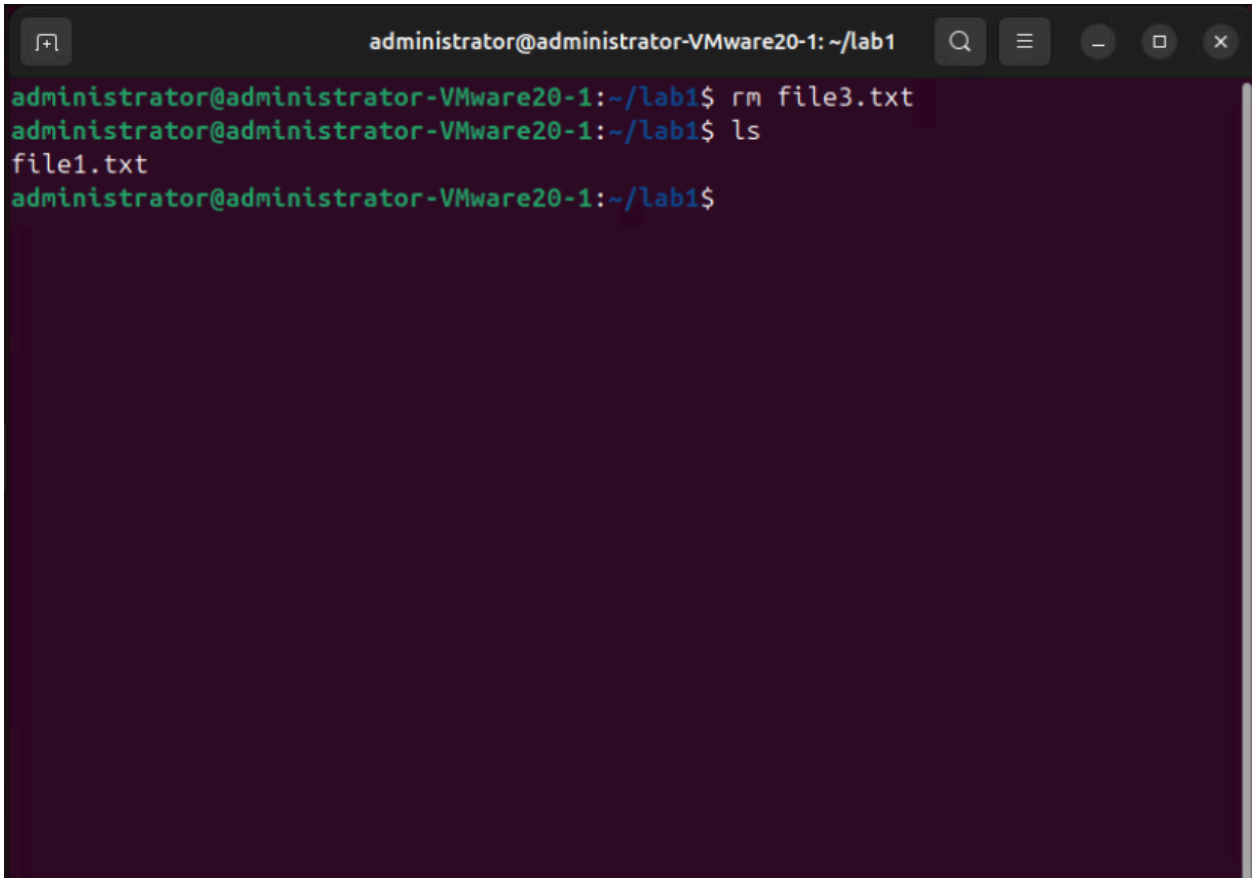
8. Delete file3.txt using rm.

What is your command and output?

rm file3.txt

ls

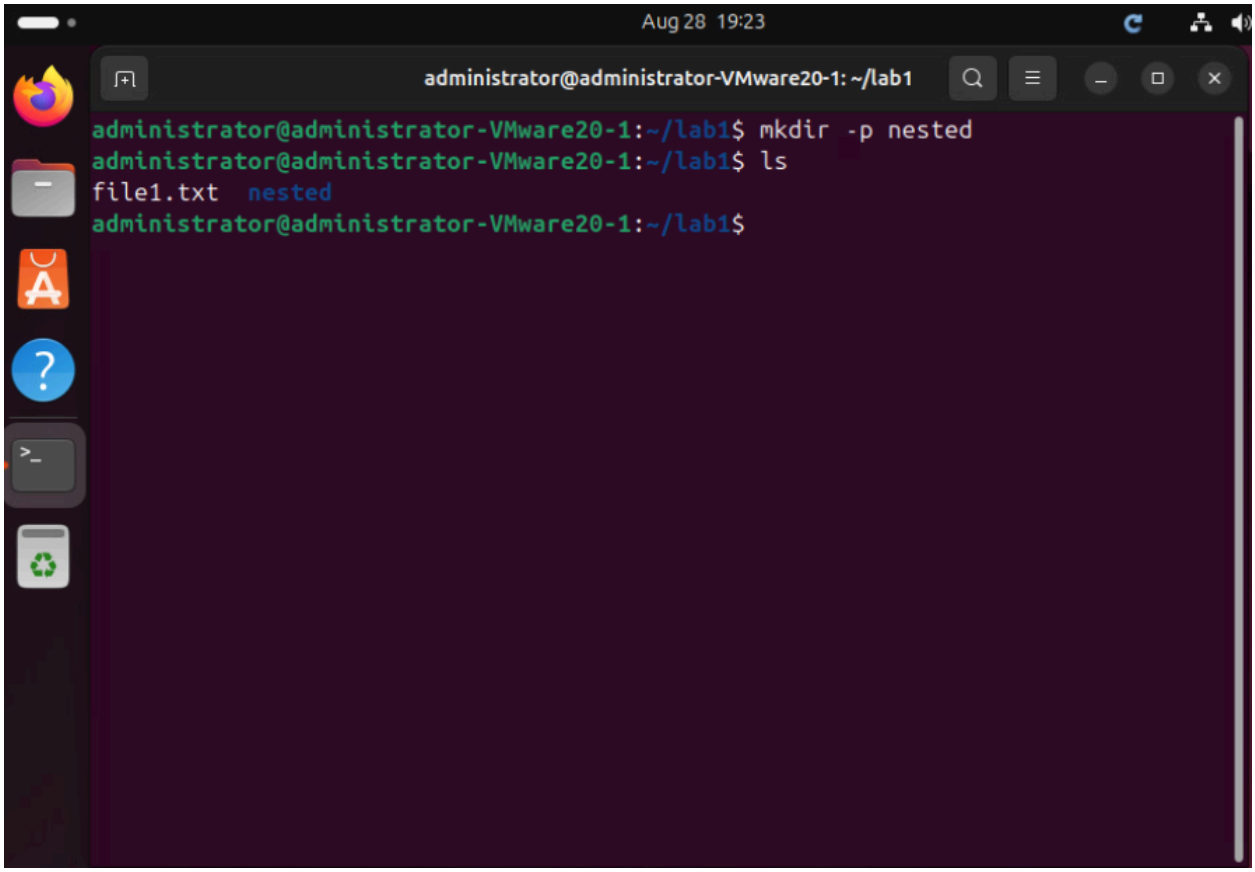
file1.txt



9. Create a nested directory structure within lab1: nested/inside. Use mkdir with the -p flag.

What command did you use?

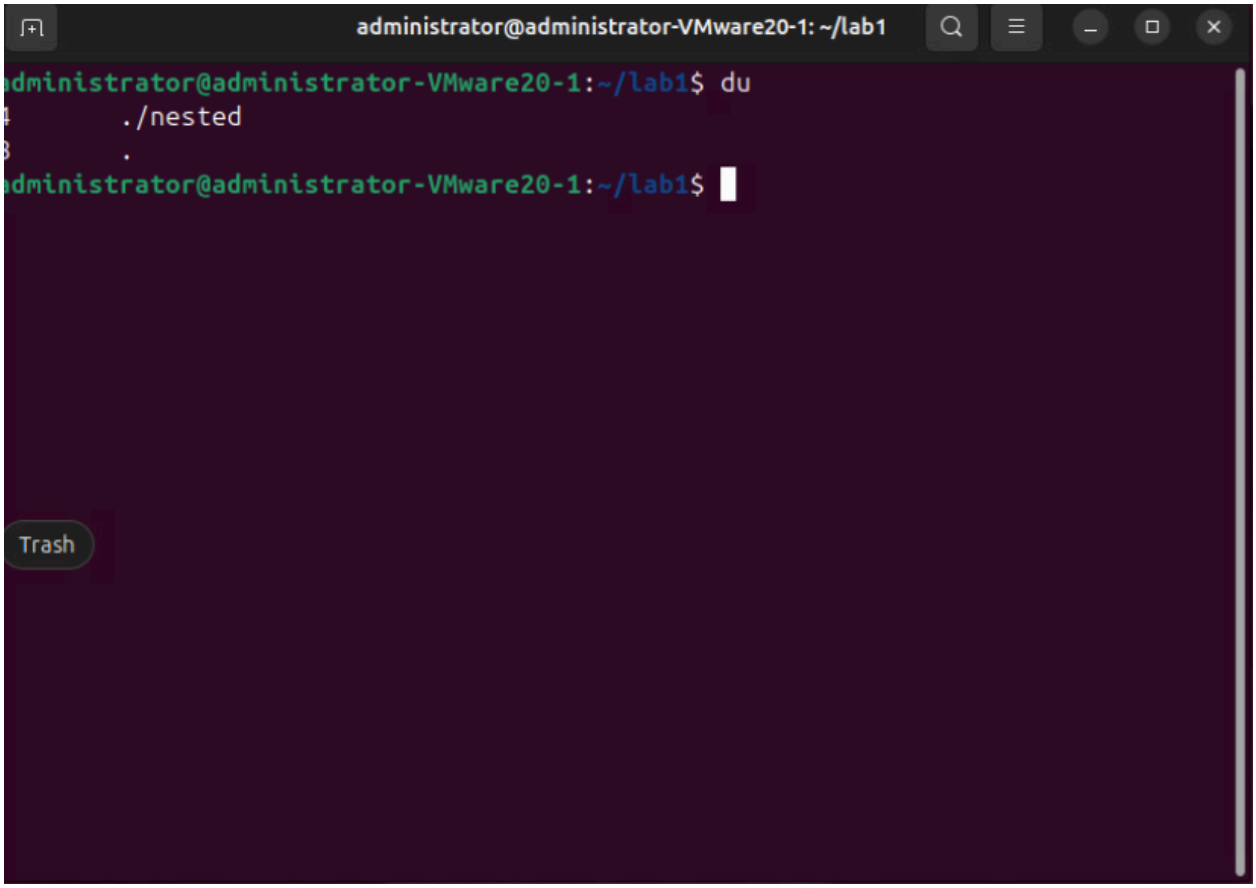
mkdir -p nested



10. Use the du command to find the size of lab1 and its subdirectories.

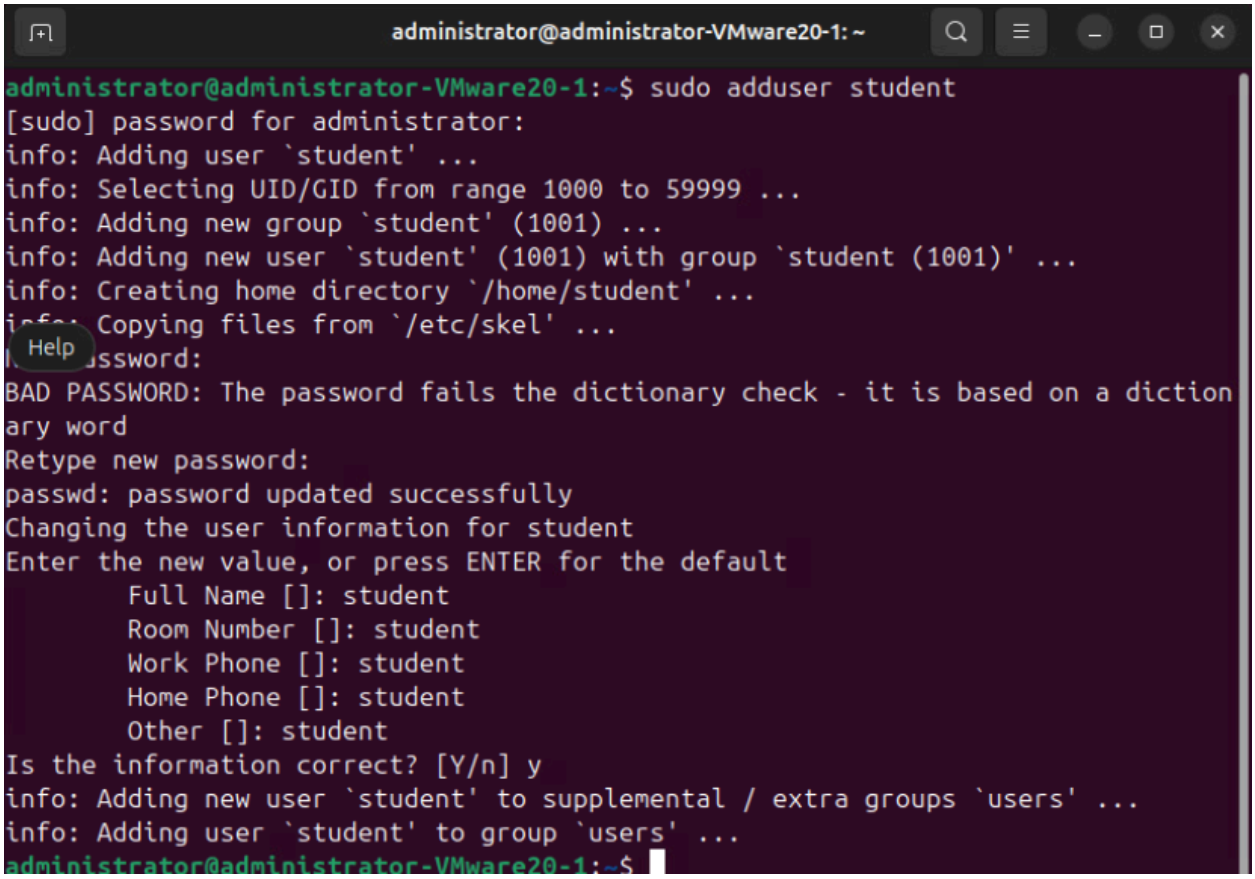
What command did you use?

du



11. Add a new user named student and set a password for this user. Log in as student using su student.

What command did you use?
sudo adduser student

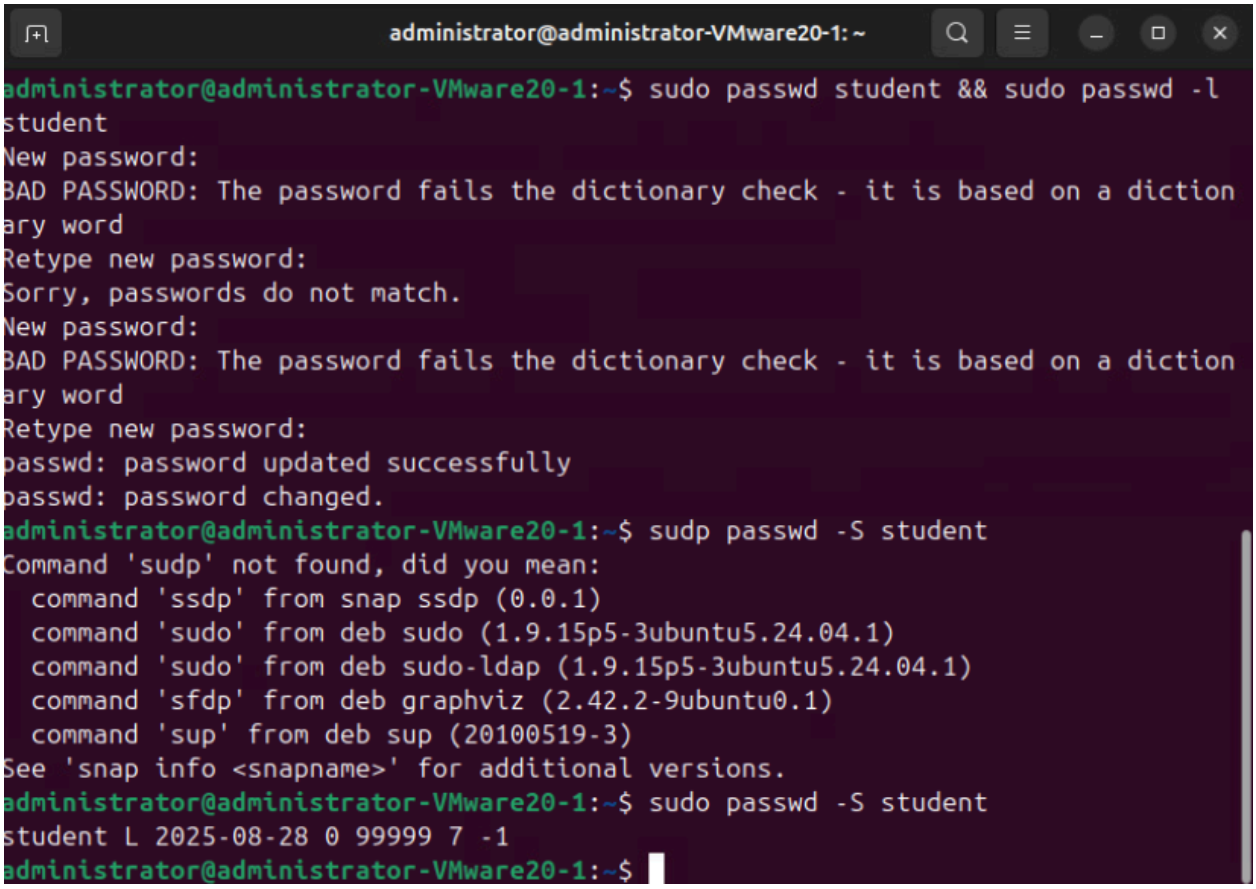


12. Change the password for student to something new and lock their account. Verify the lock status.

    What command did you use?

    sudo passwd student && sudo passwd -l student

    sudo passwd -S student



Lab 2: Advanced Ubuntu Features

Objective: Master advanced Ubuntu commands for searching, archiving, and process management.

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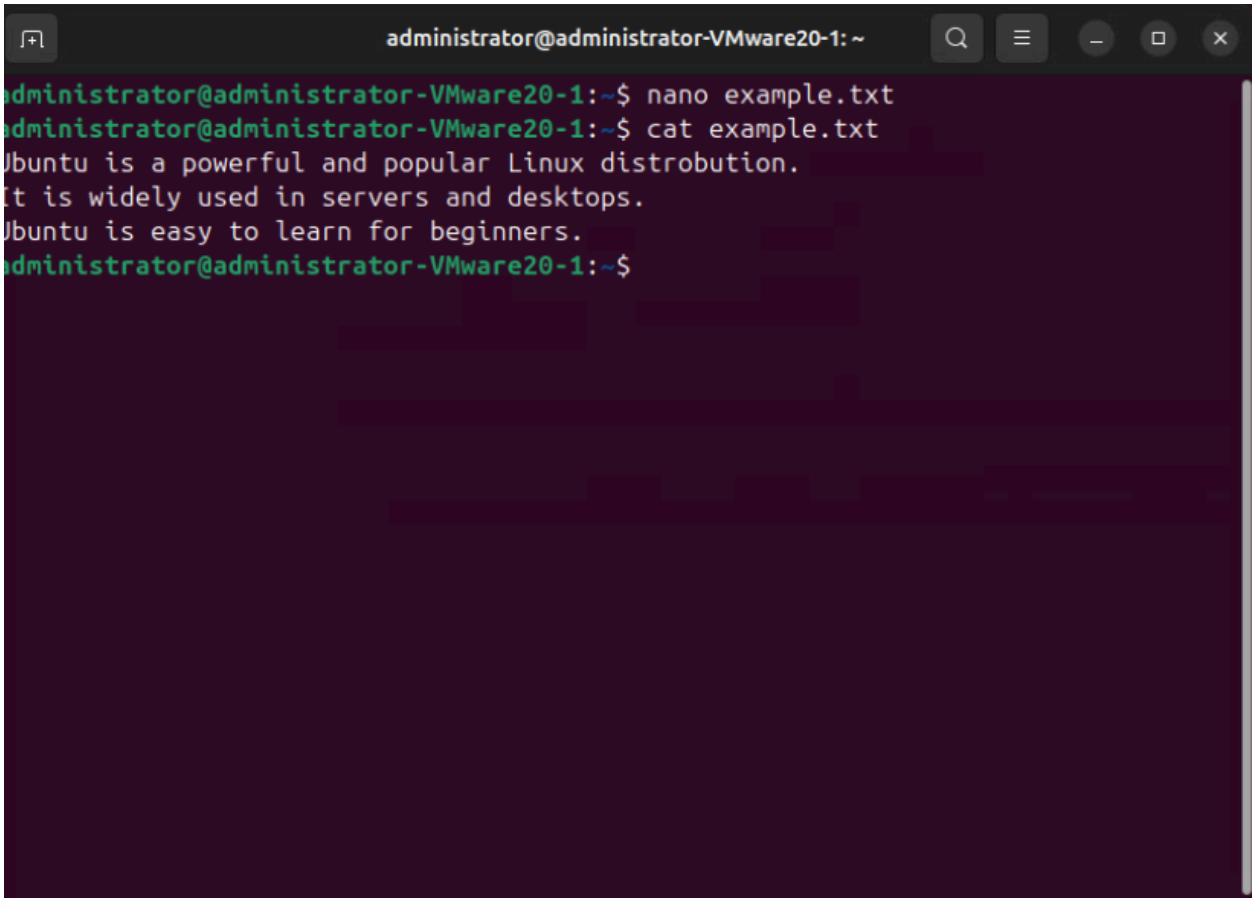
1. Create a file called example.txt with the following content:

   “Ubuntu is a powerful and popular Linux distribution.

   It is widely used in servers and desktops.

   Ubuntu is easy to learn for beginners.”



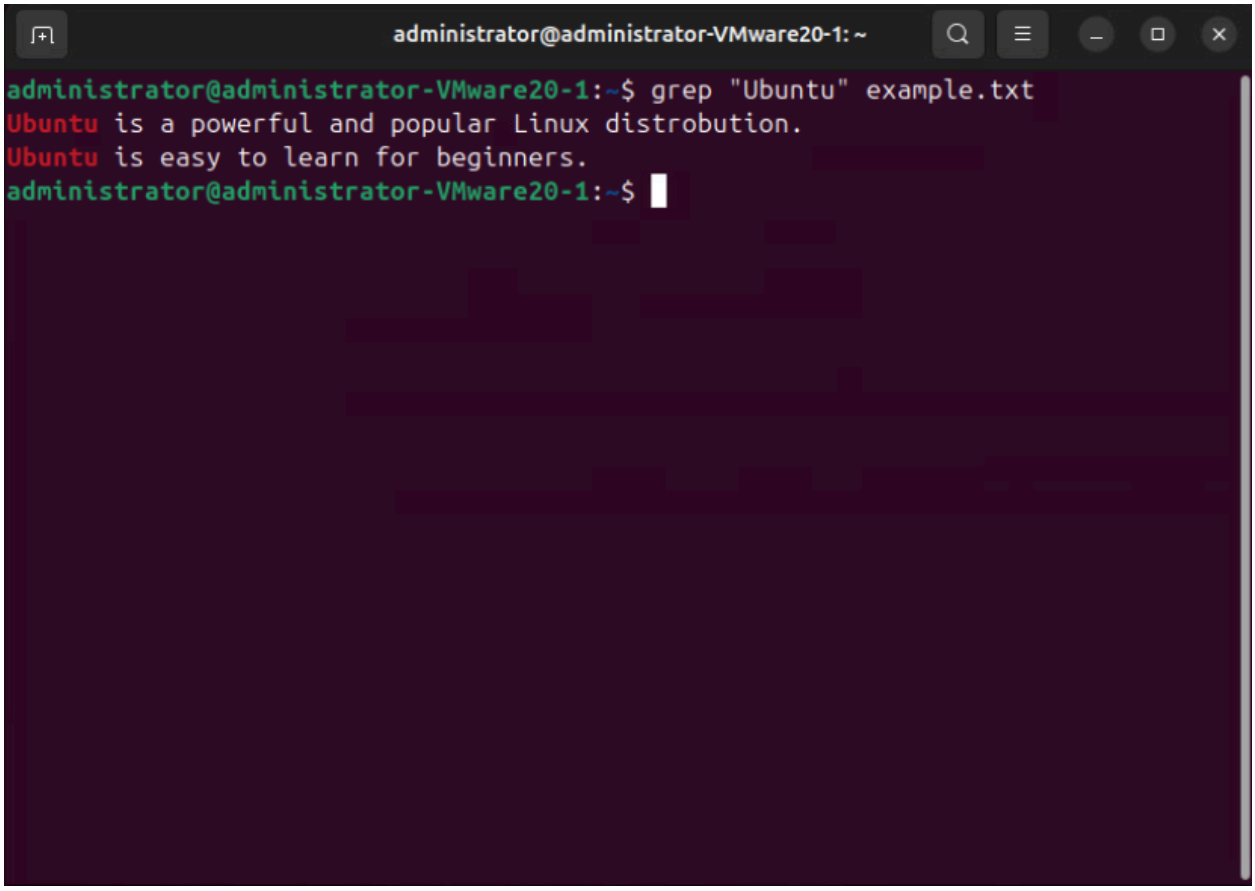
2. Use grep to search for the word "Ubuntu" in example.txt.

What command did you use? What is your output?

grep “Ubuntu” example.txt

Ubuntu is a powerful and popular Linux distribution.

Ubuntu is easy to learn for beginners.



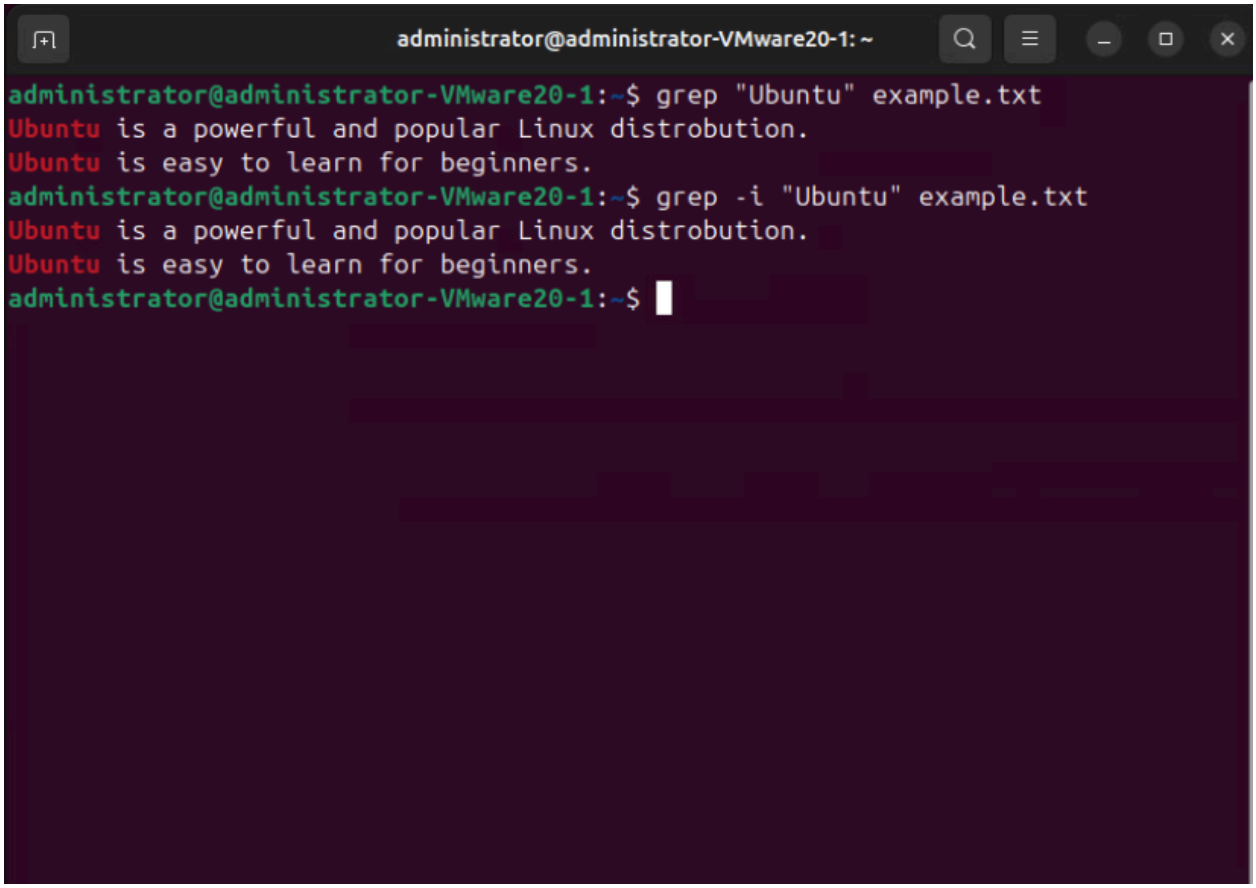
3. Modify the search to ignore case sensitivity using an appropriate flag.

What command did you use? What is your output?

grep -i “Ubuntu” example.txt

Ubuntu is a powerful and popular Linux distribution.

Ubuntu is easy to learn for beginners.



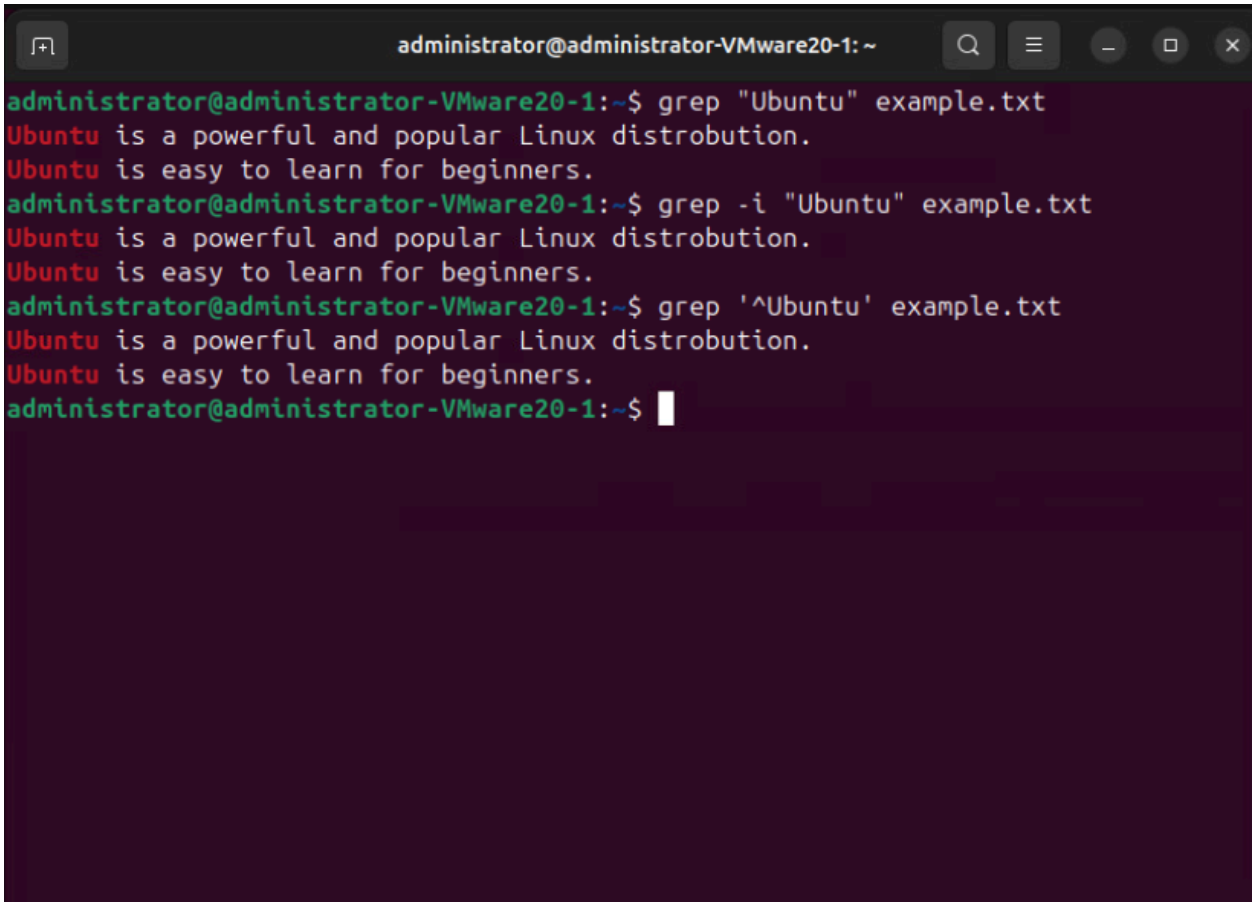
4. Find all lines in example.txt that begin with "Ubuntu" using grep and regex.

   What command did you use? What is your output?

   grep '^Ubuntu' example.txt

   Ubuntu is a powerful and popular Linux distribution.

   Ubuntu is easy to learn for beginners.



5. Compress the example.txt file using gzip (gzip example.txt). List the contents of the directory to confirm the compressed file.

   What command did you use? What is your output?

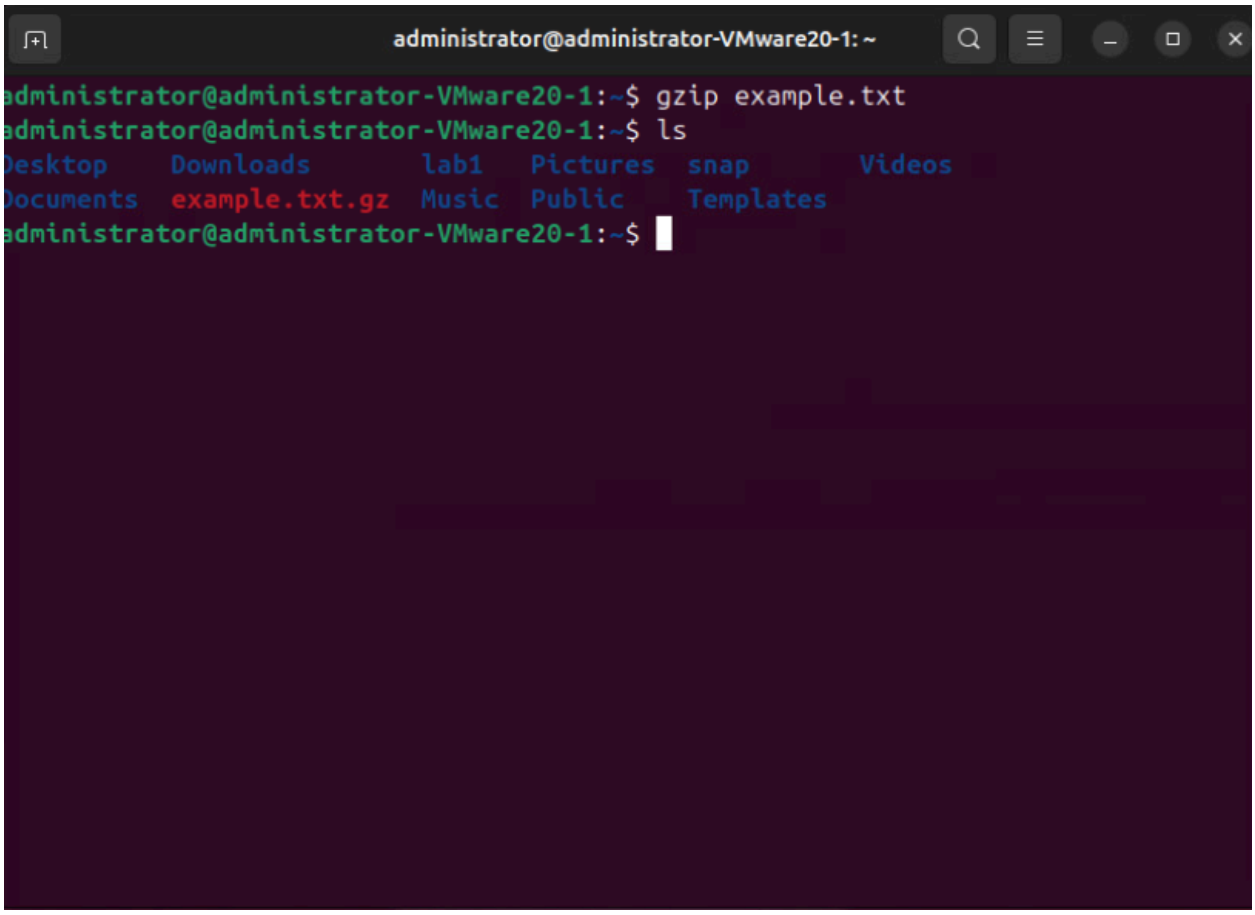
6. Decompress the file using gunzip.

   What command did you use?

   gzip example.txt

   ls

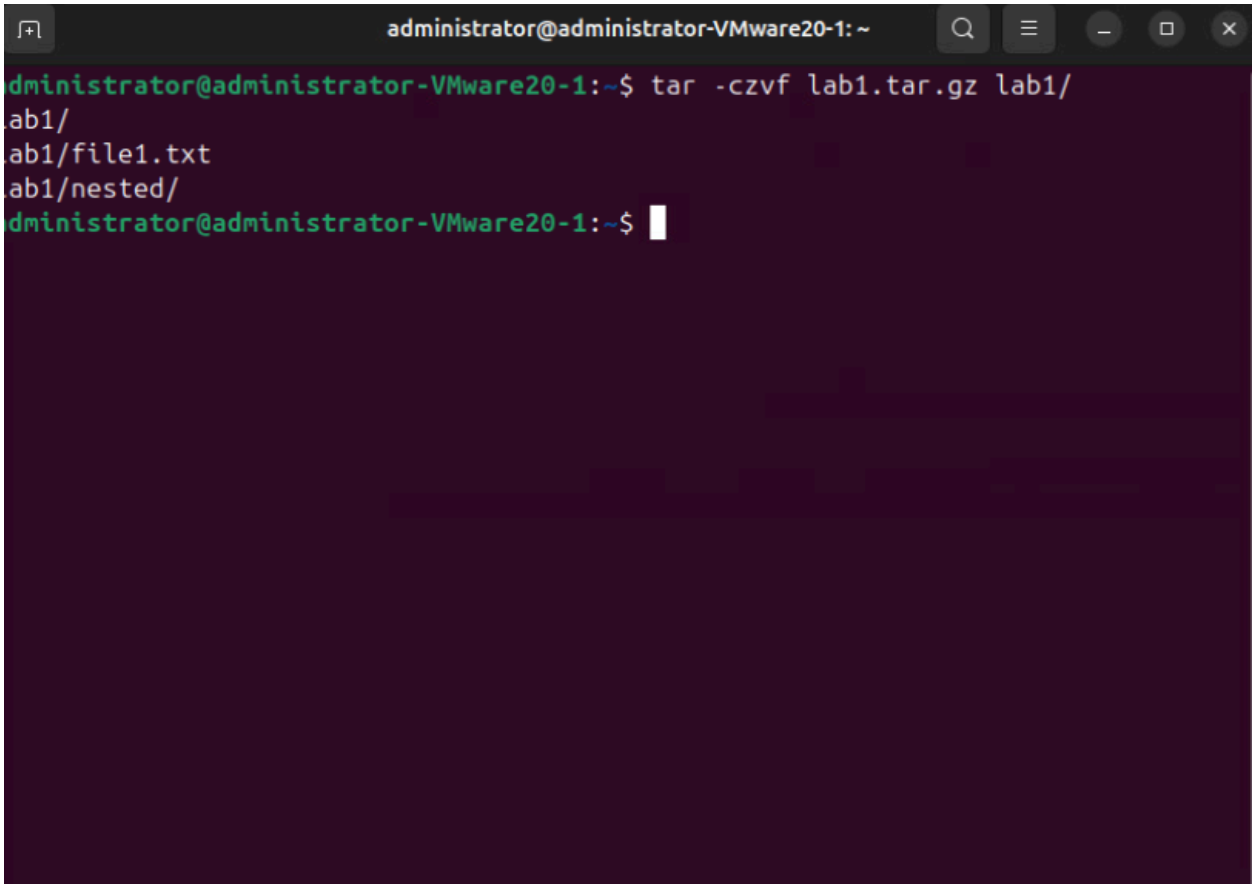
   example.txt.gz



7. Create a tar archive of the lab1 directory and compress it using gzip.

   What command did you use?

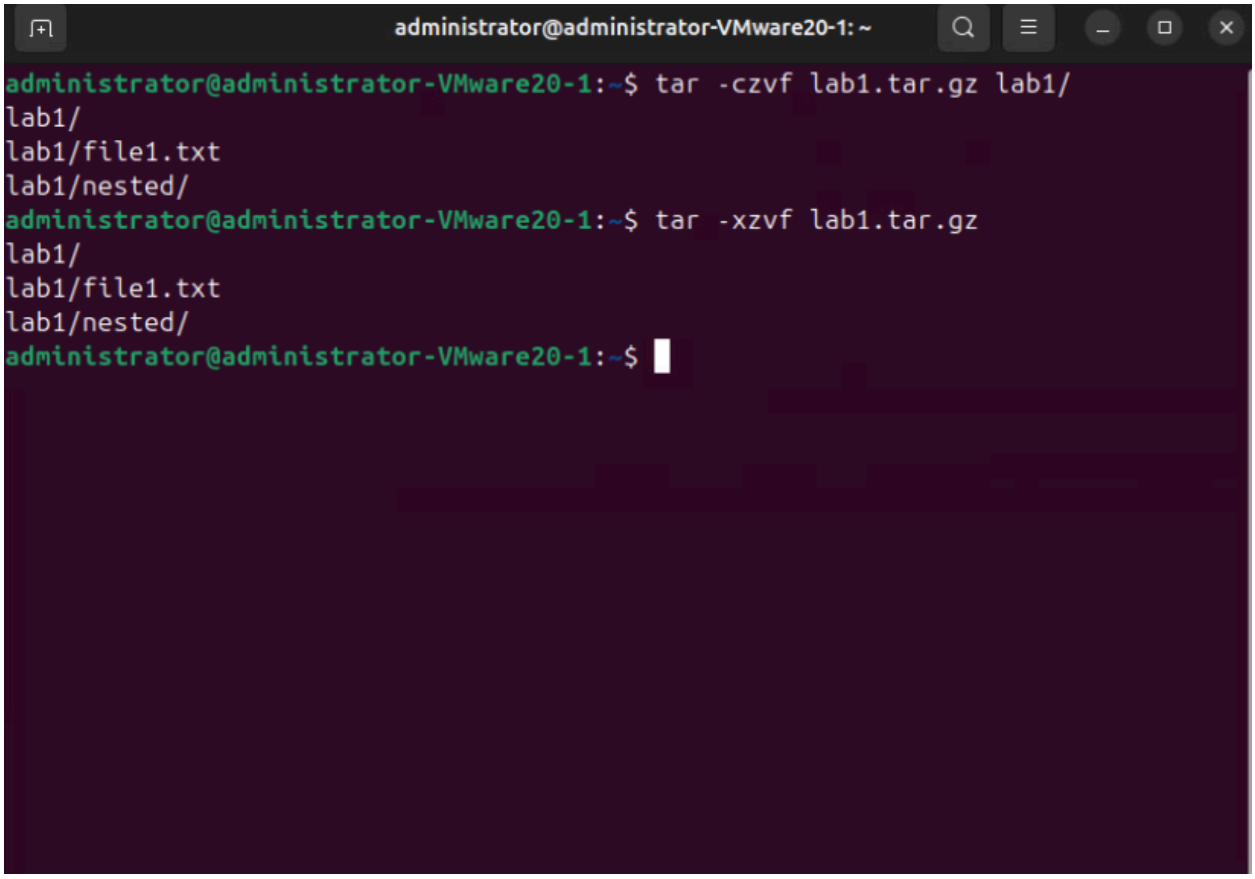
   tar -czvf lab1.tar.gz lab1/



8. Extract the tar.gz file to confirm its contents.

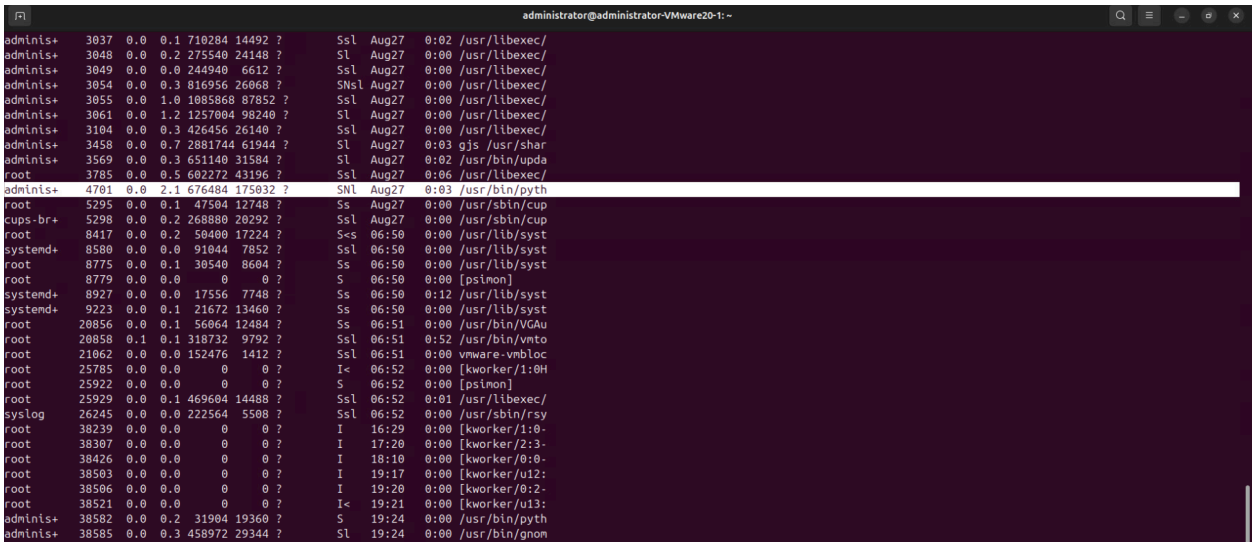
   What commands did you use?

   tar -xzvf lab1.tar.gz



9. Use ps aux to list all processes. Identify the most resource-intensive process.

What is your output?adminis+ 4701 0.0 2.1 676484 175032 ? SNl Aug27 0:03 /usr/bin/pyth



10. Use kill to terminate a dummy process you create (e.g., running sleep 1000 in another terminal).

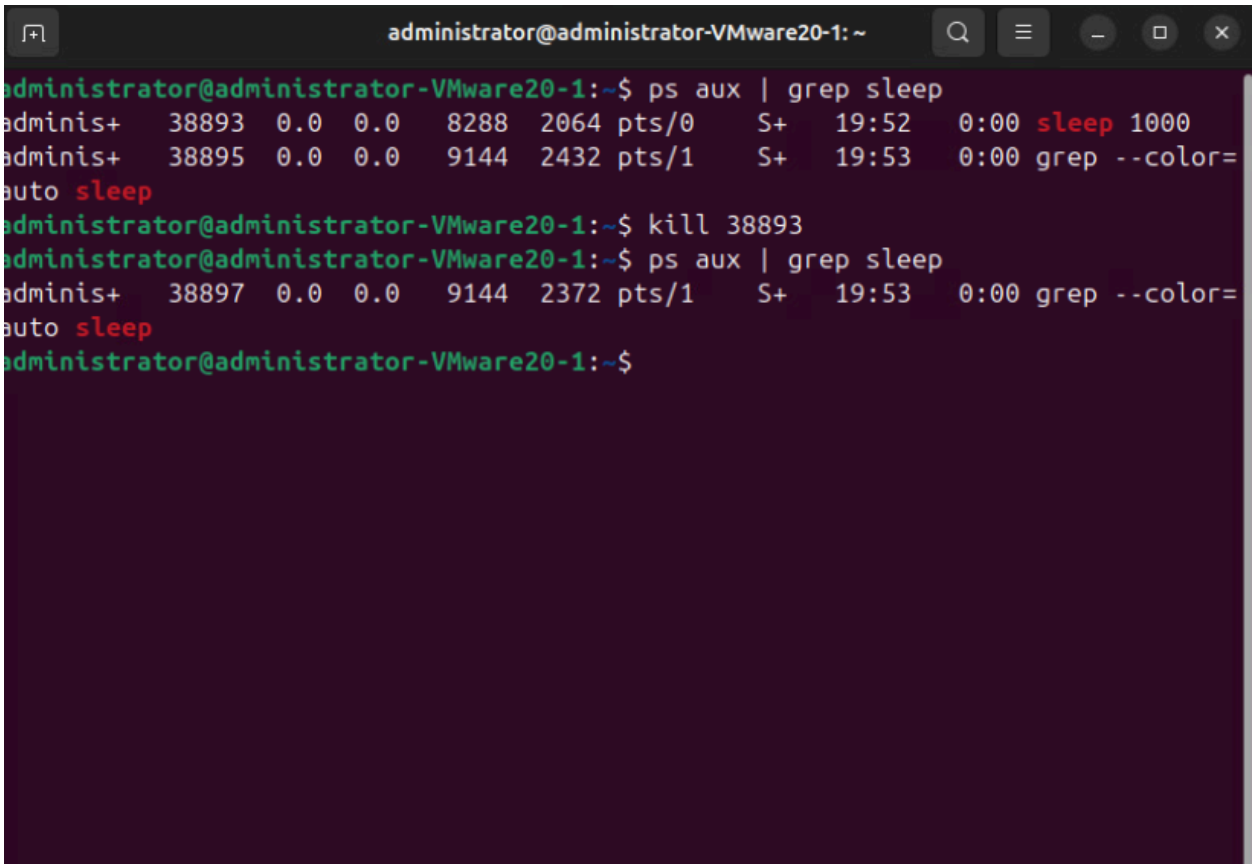
    What is your output?

    sleep 1000

    ps aux | grep sleep

    kill 38893

    ps aux | grep sleep



Submission: Submit a single Word or PDF document with:

- The answers to the questions highlighted with blue font.
- Screenshots showing the output of each step.
