# CompTIA Linux+

## Design Hard Disk Layout



# Introduction

Welcome to the Design Hard Disk Layout Practice Lab. In this module you will be provided with the instructions and devices needed to develop your hands-on skills.

Hard Disk
Design Layout
Linux
Architecture

# Learning Outcomes

In this module, you will complete the following exercise:

- Exercise 1 - Design Hard Disk Layout

After completing this lab, you will be able to:

- Ensure the /boot partition conforms to the hardware architecture.

# Exam Objectives

The following exam objectives are covered in this lab:

- LPI: 102.2 Install a boot manager.
- LPI: 102.1 Design hard disk layout.
- LPI: 1.4 Given a scenario, manage storage in a Linux environment.
- CompTIA: 1.1 Explain Linux boot process concepts.

# Exercise 1 - Design Hard Disk Layout

Partitioning a hard disk helps speed-up file-checks, design enhanced data-security, and configure a wider range of file accessibility modes.

In this exercise, you will understand how Linux lays out the directory structure on the hard disk.

# Learning Outcomes

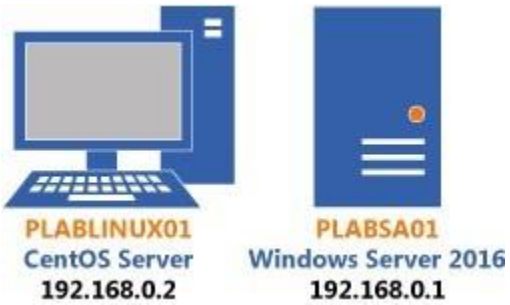
After completing this exercise, you will be able to:

- Log into a Linux system
- Ensure the /boot partition conforms to the hardware architecture

# Your Devices

You will be using the following device in this lab. Please power these on now.

- PLABSA01 (Windows Server 2016)
- PLABLINUX01 (CentOS Server)



## Task 1 - Ensure the /boot partition conforms to the hardware architecture

To perform any operations on the system, you need to log into the system. In this task, you will log into a CentOS Linux system on the lab.

To log into a Linux system, perform the following steps:

# *Step 1*

On the desktop, right-click and select Open Terminal.

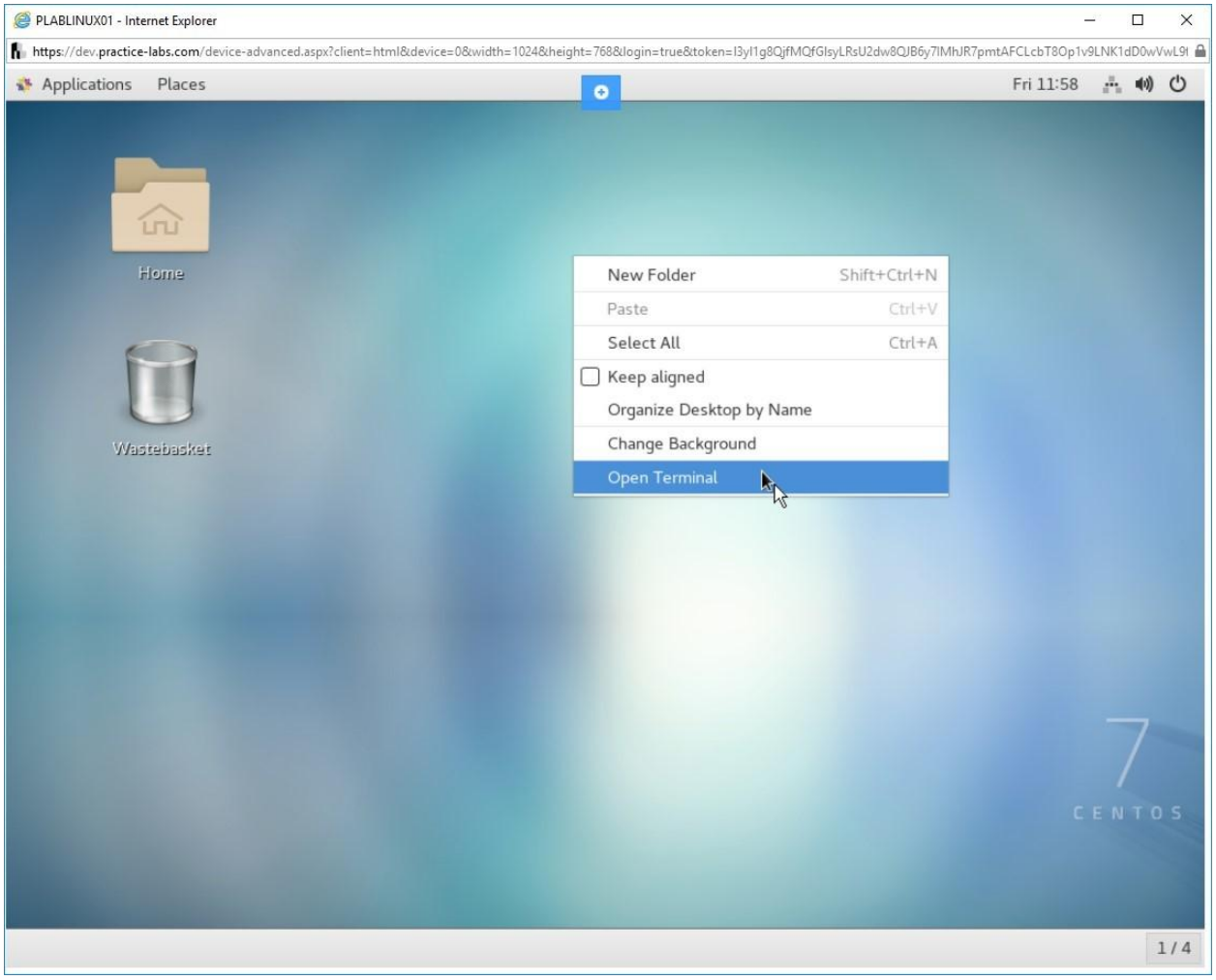



Figure 1.1 Screenshot of PLABLINUX01: Selecting the Open Terminal option from the context menu.

## *Step 2*

The command prompt window is displayed. Type the following command:

```
su -
```

Press Enter.

At the Password prompt, type the following password:

**`Passw0rd`**

Press Enter.

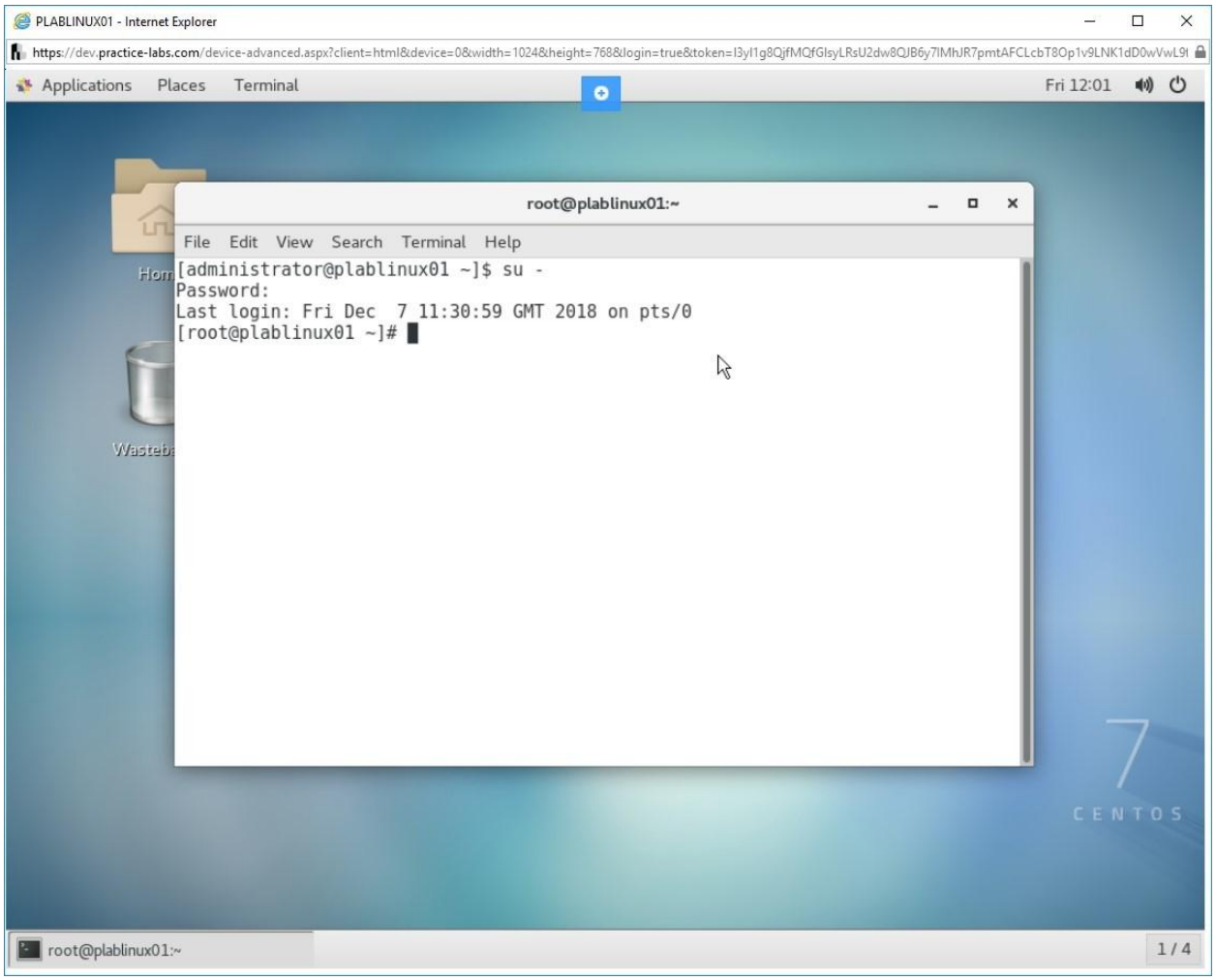



Figure 1.2 Screenshot of PLABLINUX01: Changing the account to the root account with the su - command.

## *Step 3*

Clear the screen by entering the following command:

```
clear
```

Press Enter.

*Note: The clear command is used before every step to enable the learners to get a clear view of the output of each command. Otherwise, it is not mandatory to use the clear command before every command.*

Go to the root directory by entering the following command:

```
cd ..
```

Note that this command will change the directory.

*Note: The cd .. command is used to navigate 1 directory back which would be the root directory in this scenario while the cd / command is used to navigate directly to the root.*

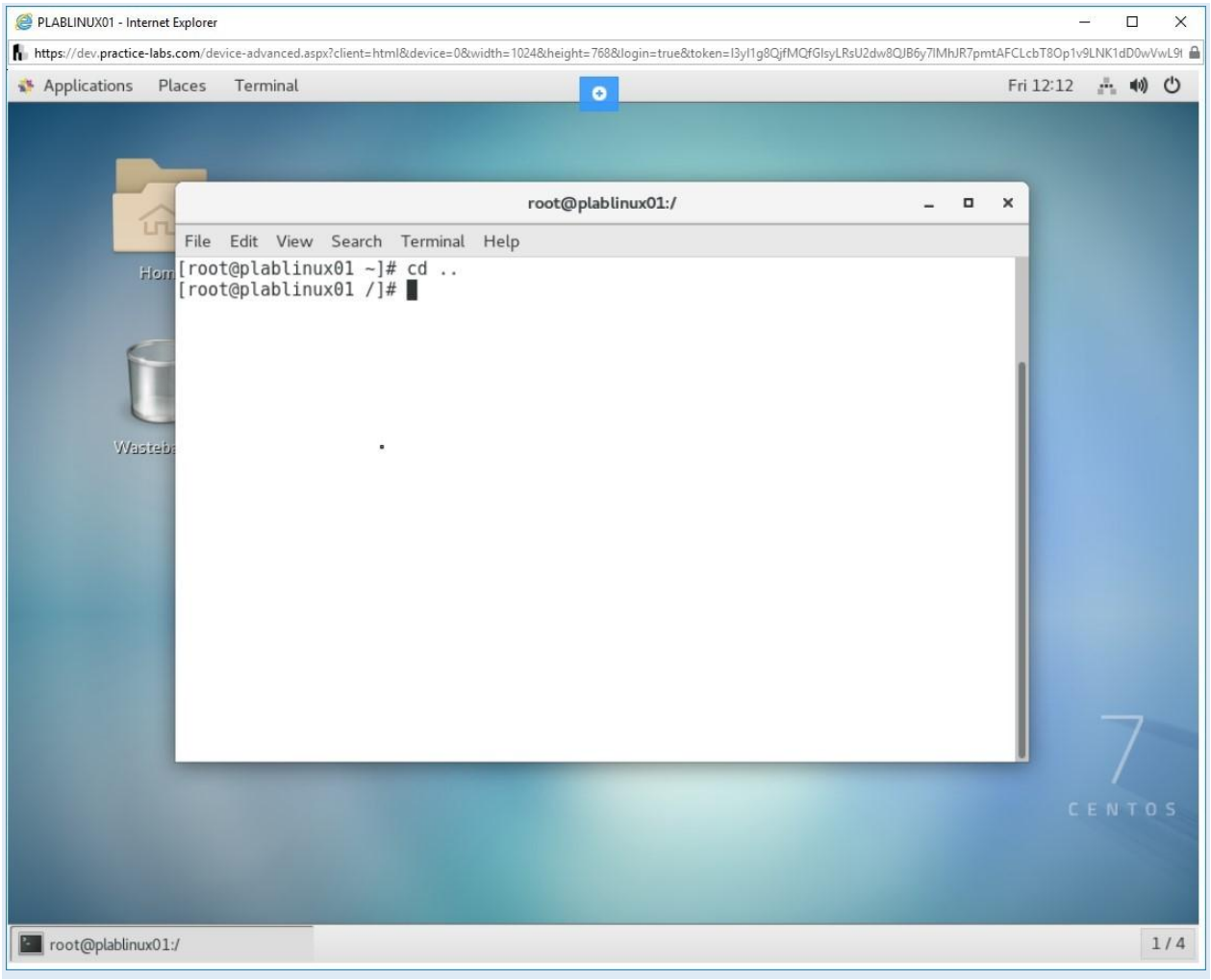


Figure 1.3 Screenshot of PLABLINUX01: Changing the directory using the cd command.

## *Step 4*

Now, list the root directory structure by entering the following command:

```
ls -l
```

Note that the root directory (/) contains some of the following directories:

- boot
- usr
- var
- tmp
- home

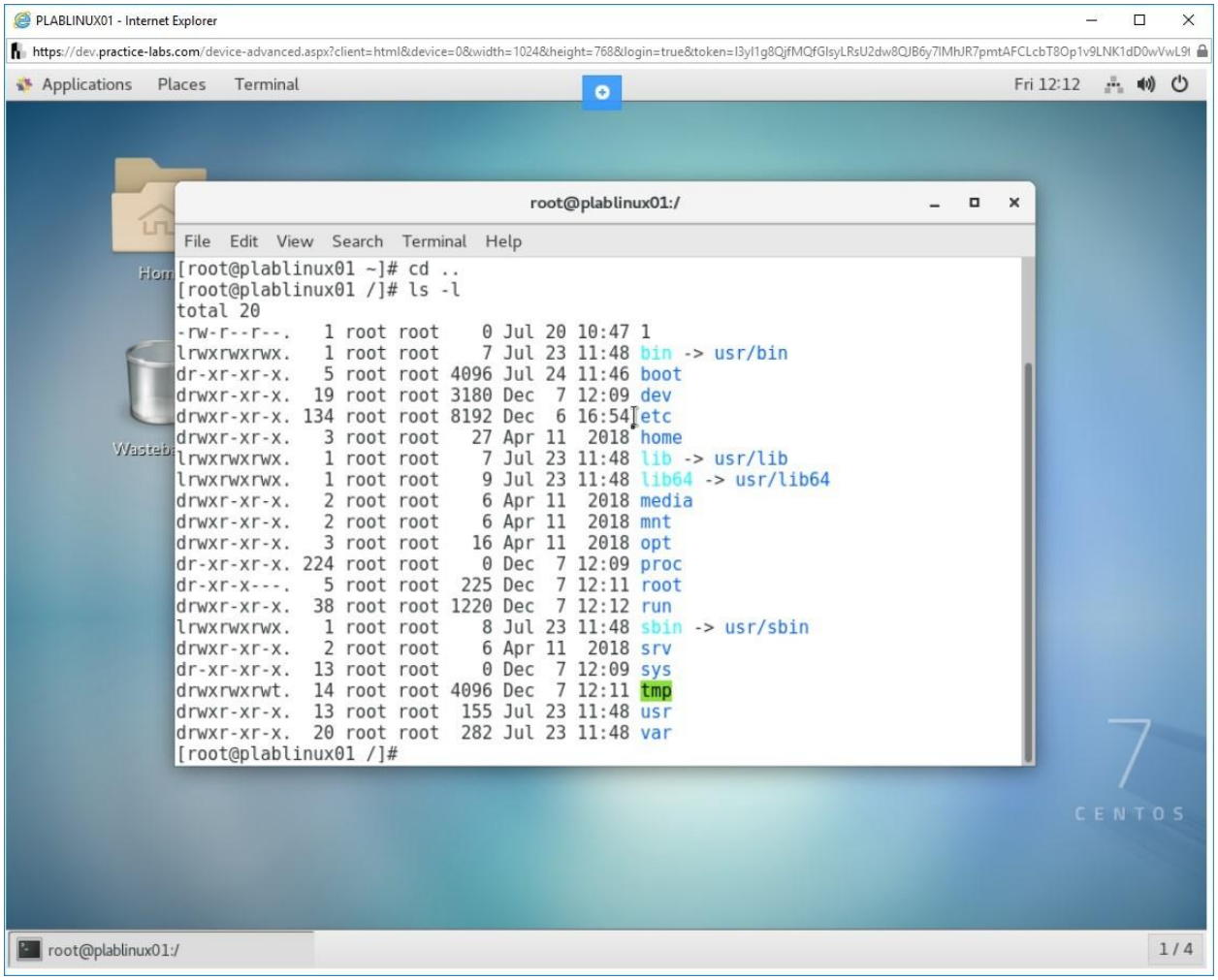



Figure 1.4 Screenshot of PLABLINUX01: Using the ls -l command to display the root directory structure.

## *Step 5*

Clear the screen by entering the following command:

```
clear
```

Press Enter. You can also find the total space taken by each of the directories. To find out this detail, type the following command:

```
du -h --max-depth=1
```

Press Enter.

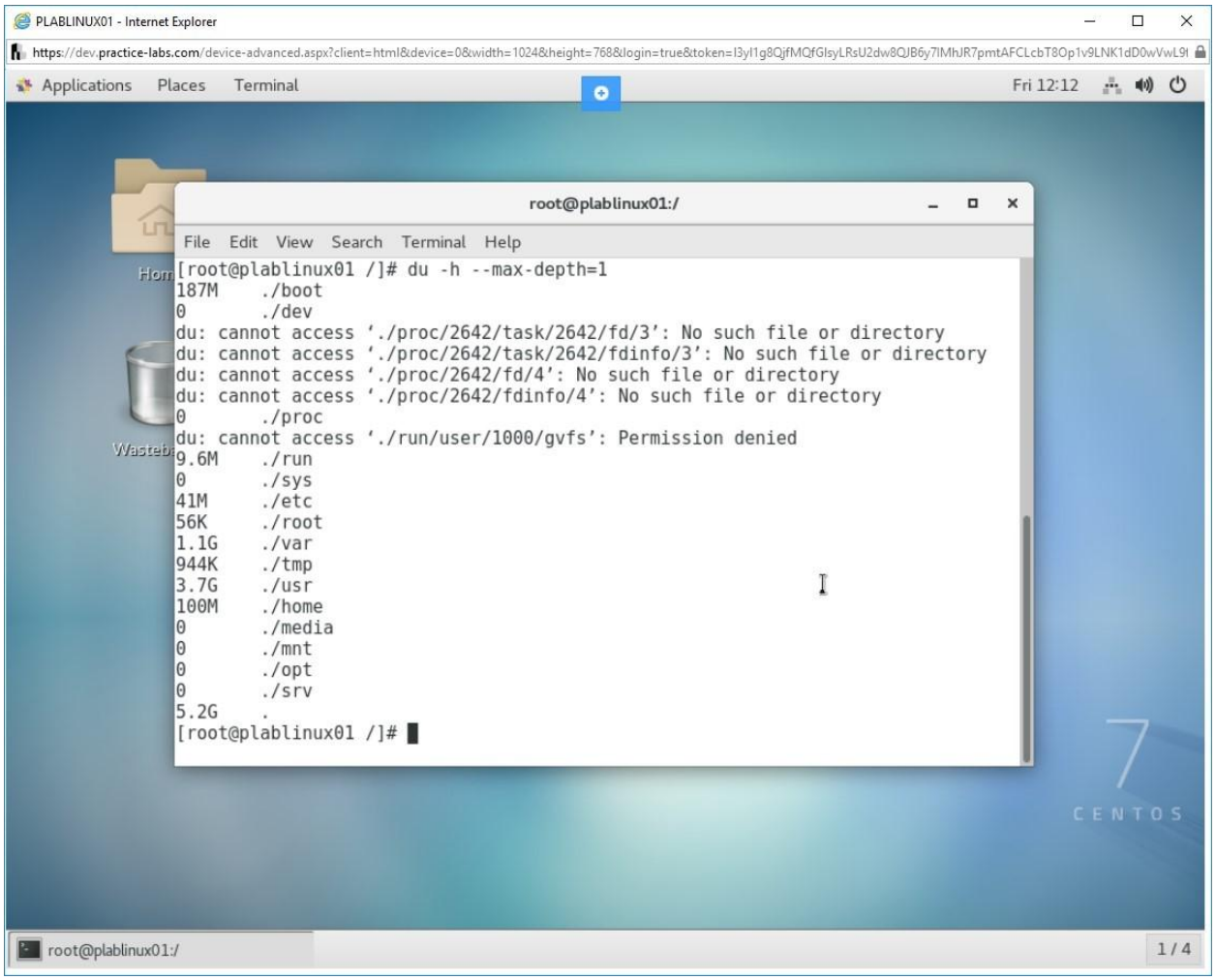



Figure 1.5 Screenshot of PLABLINUX01: Finding the total space taken by each of the directories with the du command.

## *Step 6*

Clear the screen by entering the following command:

```
clear
```

Press Enter. You can also find the space used up individually by each sub-directory as well as the total space used up by the main directory.

For example, to find out the space taken up individually by the sub-directories and the total space taken up by the /usr directory, enter the following command:

```
du -h --max-depth=1 /usr
```

Press Enter.

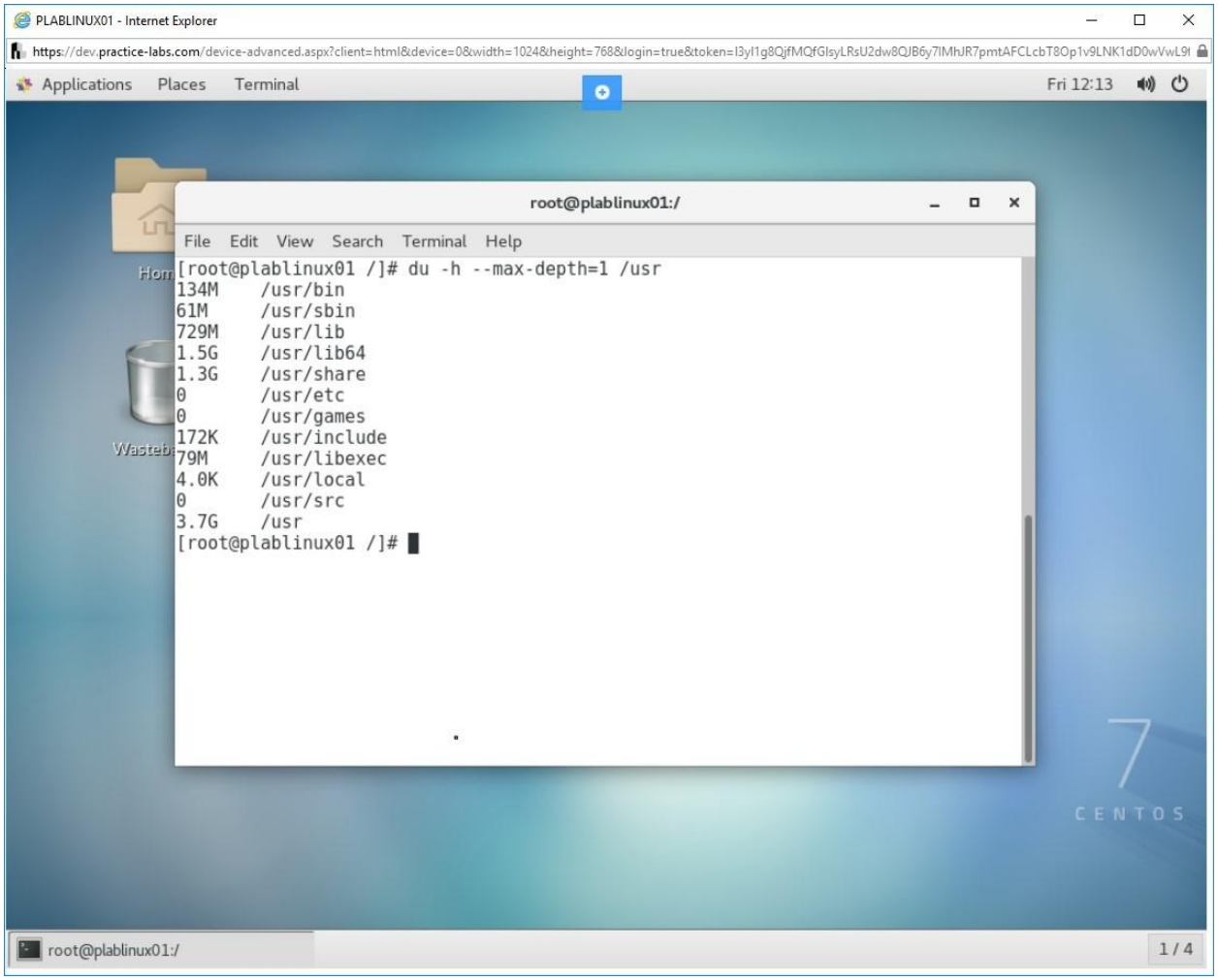



Figure 1.6 Screenshot of PLABLINUX01: Finding out the space taken up individually by the sub-directories and the total space taken up by the /usr directory

## *Step 7*

Clear the screen by entering the following command:

```
clear
```

Press Enter. The swap partition is a separate partition that moves items from computer memory to its hard drive. You can check for the swap partition and its space in Linux by entering the following command:

```
swapon -s
```

Press Enter.

*Note: The swap partition size depends on the amount of RAM in the system.*

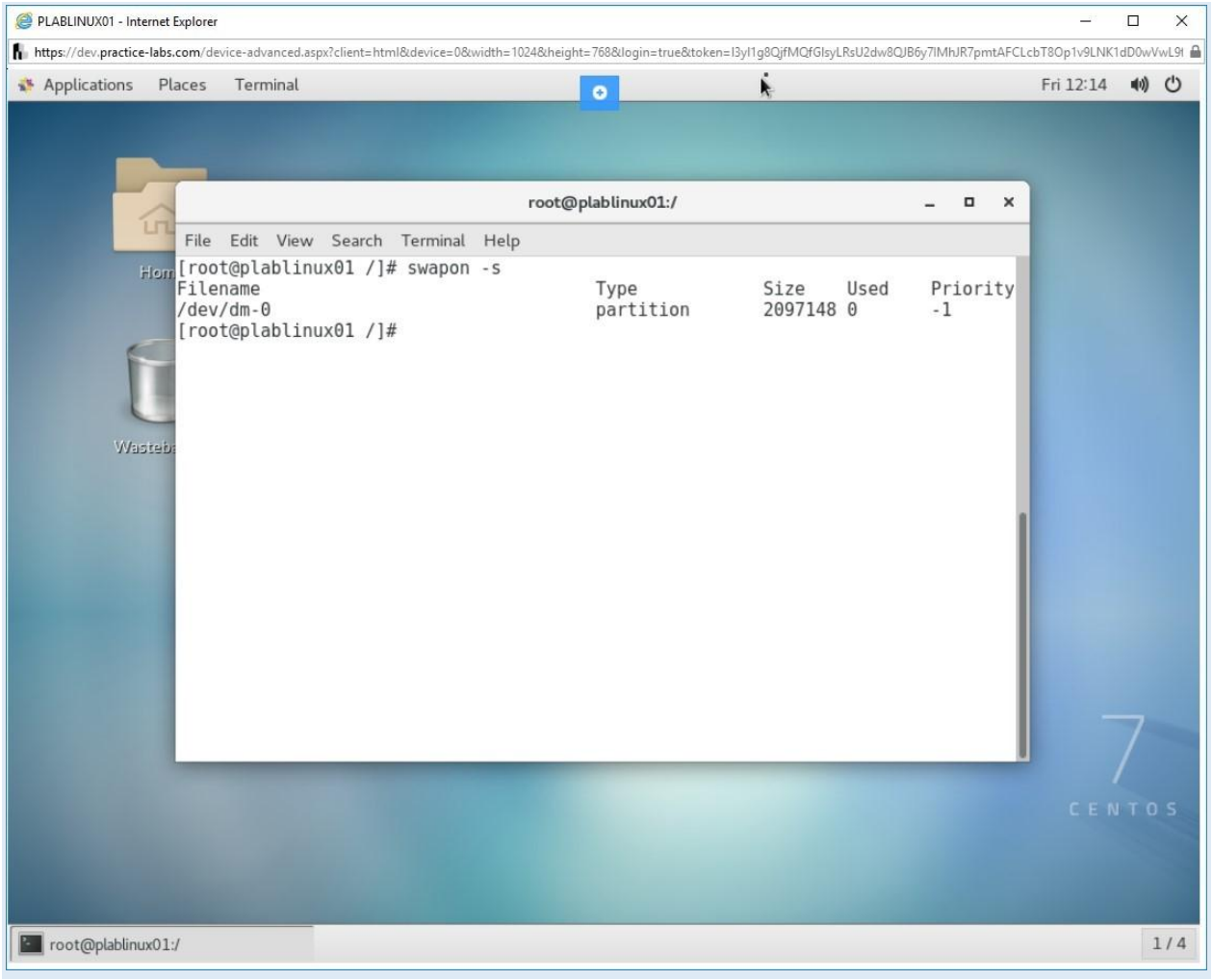



Figure 1.7 Screenshot of PLABLINUX01: Verifying the swapon partition and its space using the swapon -s command.

## *Step 8*

Clear the screen by entering the following command:

```
clear
```

Press Enter. You can also list all the partitions on the hard disk and their mount points by entering the following command:

```
mount
```

Press Enter.

*Note: Maximize the command terminal window.*

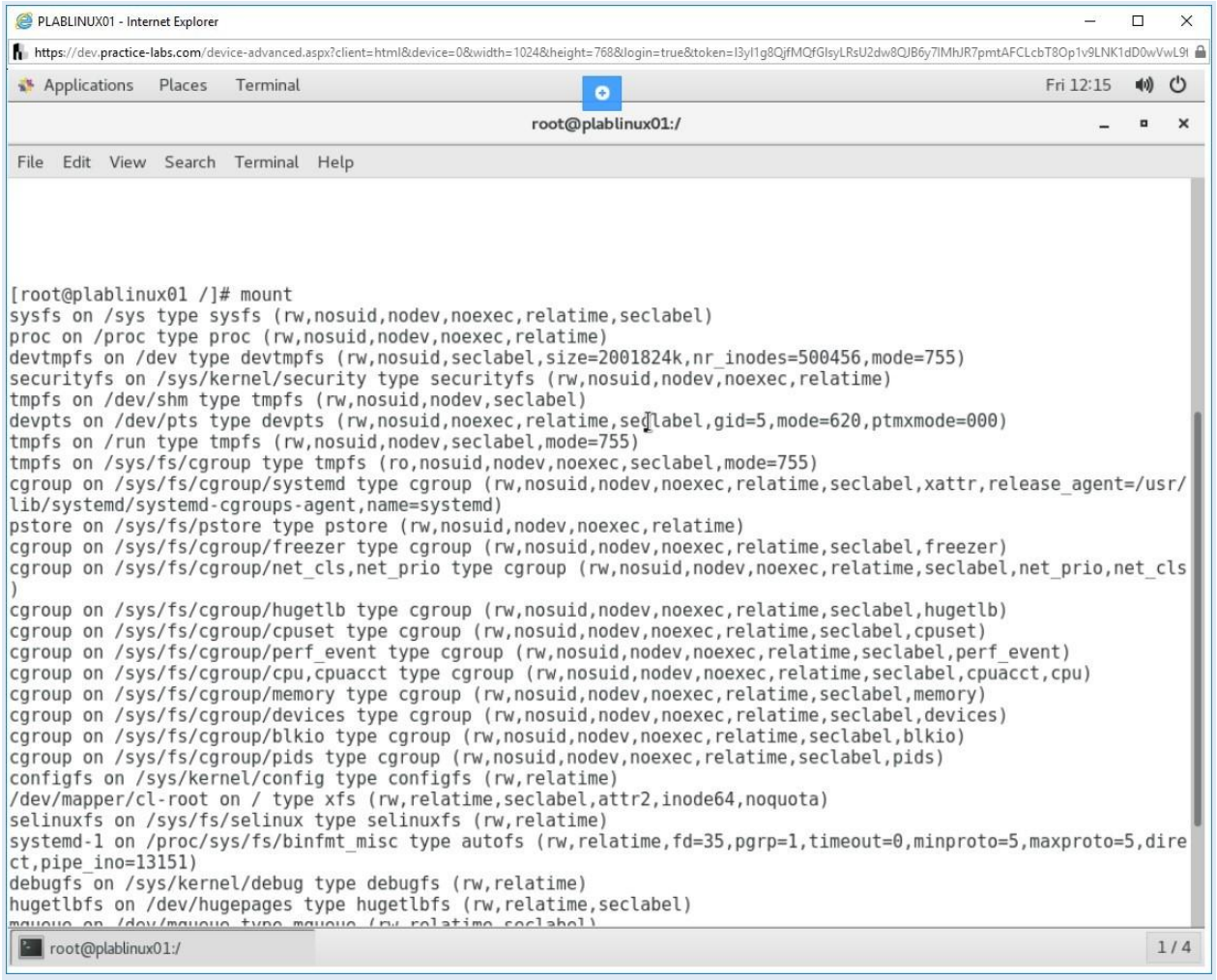



Figure 1.8 Screenshot of PLABLINUX01: Listing all the partitions on the hard disk and their mount points by using the mount command.

## *Step 9*

In the output of the command, note that /dev/sda1 is mounted on the /boot partition.

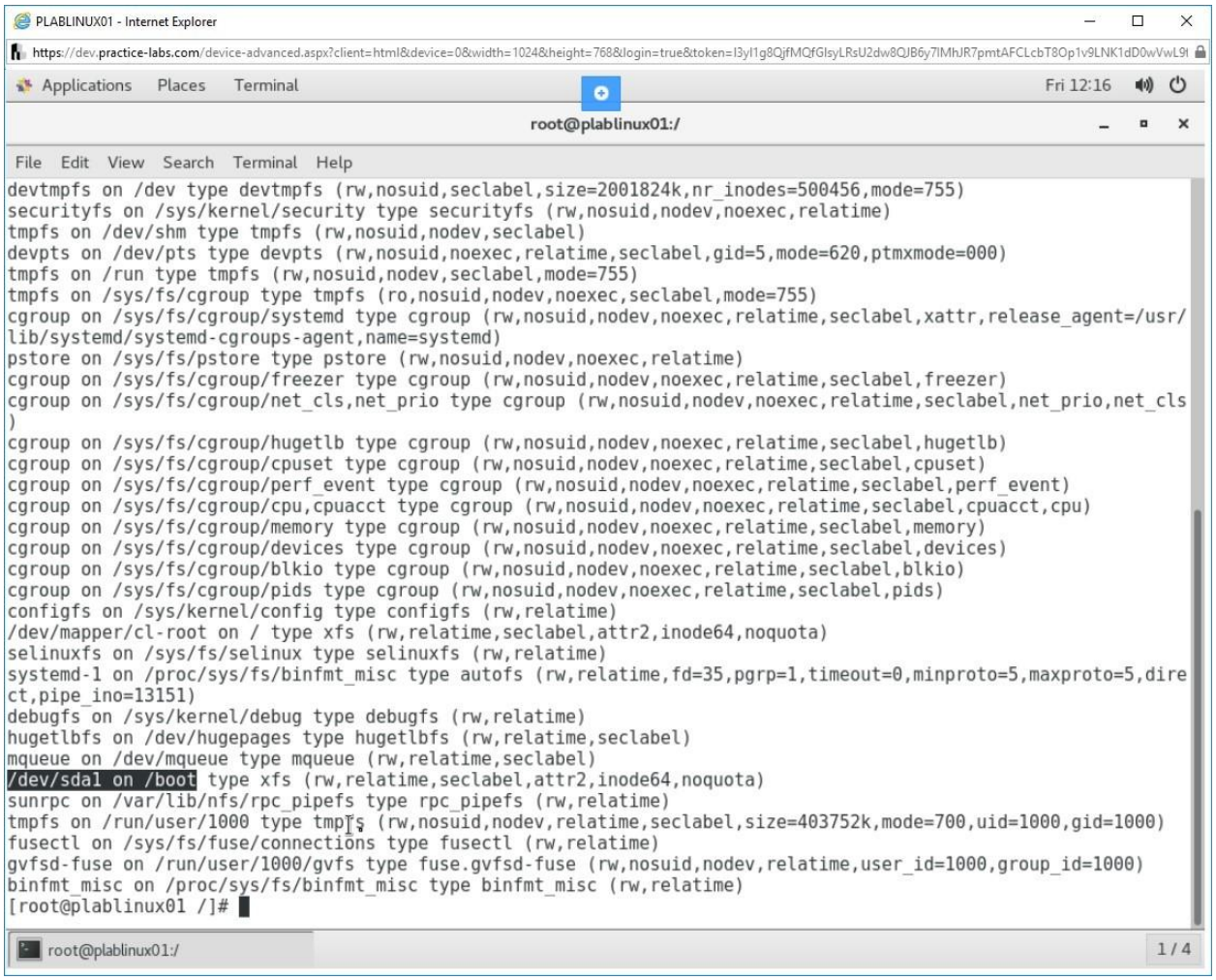



Figure 1.9 Screenshot of PLABLINUX01: Verifying that /dev/sda1 is mounted on the /boot partition.

Keep all devices in their current state and proceed to the next exercise.

# Review

Well done, you have completed the Design Hard Disk Layout Practice Lab.

# Summary

You completed the following exercise:

- Exercise 1 - Design Hard Disk Layout

You should now be able to:

- Ensure the /boot partition conforms to the hardware architecture