

CS 197U: Lab #2

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NOTE: Submit your question responses to Moodle as a single PDF file.

**If a question asks for command(s), give the complete command with programs, options, arguments, pipes, redirects, etc.
ex: “vim file.txt” instead of “vim”**

The PDF should be named in the format: *lastname_firstname_lab1.pdf*

Introduction

This Lab will primarily entail working with pipes/redirects, file permissions, and process manipulation. Note that since you’ve now learned about pipes and redirects, when we say **one command** in this lab and in future labs, we mean any combination of programs, options, arguments, pipes, and redirects - so long as it is all done in one line.

1 File Systems

Start up your VM and connect to the course server. In case you do not remember, start up a terminal and:

- a) If you’re using the supplied virtual machine, run: **197u**
- b) Otherwise, run: **ssh NETID@197u.adunna.me** (ex: “ssh adunna@197u.adunna.me”)

The program will ask you for your username and password. You should have changed your password from your student ID in the previous Lab.

You should do the following questions and include your responses in your response sheet. All of this should be done in your home directory (i.e. if you’re asked to create/move/modify/remove files, it should all be done in your home directory):

Question 1

Using **uname**, find the kernel name, the kernel release, the node name, and the hardware platform.

Hint: You can use **man** to find out how to do this.

Q: What did you find for each of the requested parameters?

Question 2

Q: In the form of a percentage, how much space is currently used in the file system mounted on the root directory?

Question 3

Q: How much space in kilobytes (KB) does your home directory take up?

Question 4

Q: How much RAM is free in megabytes (MB)? How much in gigabytes (GB)?

Question 5

Q: What is the absolute path to the **df** program? To **bash**? To **fdisk**?

Question 6

Somewhere in the */home* directory, there is a file named *fibber*.

Q: What is the absolute path to this file? What does the file have inside it? What command did you use to find it?

2 Pipes and Redirects

Question 7

Using one command (so you can use pipes/redirects and multiple programs as long as it is in one line), get the current time in UTC and write the output to a file in your home directory named *curr_time.txt*.

Q: Which command did you use?

Question 8

We have some shared files in */home/PUBLIC*. Using one command, write the first 15 lines of Dracula to a file named *dracula-short.txt* in your home directory.

Q: Which command did you use?

Question 9

Create a **Lab2** folder in your home directory and move your *dracula-short.txt* file into it.

Using one command, extract the text “Dracula” from your *dracula-short.txt* file and write it to a file named *dracula-title.txt* in your **Lab2** directory.

Hint: This is easiest using one pipe and one redirect.

Q: What command did you use?

3 More Working With Files

Question 10

Q: How many words are in your *dracula-short.txt* file? What command did you use to find out?

Question 11

Q: Using the file containing male names in the **PUBLIC** directory, what are the first 5 names if it is sorted in alphabetical order? What are the last 5 names? What commands did you use?

Question 12

Q: If you don't sort the file, what are the first 5 names starting with “G”? What are the last 3 names starting with “Q”? (Note that since you're not sorting, these should not be in alphabetical order.)

4 File System Permissions

Question 13

Q: In your own words, why do file systems need permissions?

Question 14

Change your *dracula-short.txt* file to be readable and executable by anyone, but only writable by you.

Q: What command did you use?

Question 15

Change your *dracula-title.txt* file to be only readable and writable by you (not executable), and readable by the group - with no other permissions to the group or others.

Q: What command did you use?

Question 16

Q: Which processes are running in your terminal? What are their PIDs?

Question 17

Start the **sleep** program to run in the background for 5 minutes. Then list your processes and their PIDs again.

Q: What are the processes and PIDs? What do you notice that is different? What full command would you use, including argument(s), to stop the running **sleep** process?

When you're all done, use the **exit** command to logout of the 197U system. Then, you can shutdown your VM. Do this from the command line with **shutdown** and then close VirtualBox. You're done!