

Practice with the Command Line and Filters

In order to help you get familiar with your new operating system, I have given you a bunch of questions to answer. I don't expect everyone to be able to answer all of them (at least without some good digging), but you should be able to answer a lot of them. You may use any reference you want (man pages, books, Google, etc.) The only thing you can't use is another person, whether that is a student, teacher, or some other person inside or outside Digipen. All of the necessary tools are already installed, so you just have to figure out which ones to use, which is the purpose of this assignment.

Also, all of the answers must be done from the command line. Many of these can be done with the GUI, but all of them are actually easier from the command line. You just need to know the command! And yes, I know you can answer some of the questions like "Is it a 64-bit Linux" by saying, "Yes, because I downloaded and installed the 64-bit version." No good. You have to pretend that you don't know anything about the system.

To clarify, I am not interested in the *answer* to the question, I am interested in how you found the answer. In other words, what command (including any options or command line parameters) you used to find the answer. For example, the answer to the first question below regarding the release version of the kernel is `4.4.0-21-generic` (for Linux Mint 18), but I want you to tell me what command you used to find that information.

Some of the commands you will use will require `root` access, so you will need to use `sudo` for those commands. Many of them don't require any special privileges and you can run them as a normal user. Also, there are several ways to find the answers to the questions, so some students will have different commands and still arrive at the same answer.

I fully expect that you will be using Google or some other search method to find the solutions. You can even search on the exact question! That's fair. I just want you to start actively figuring out how to answer these questions. For example, when I Google for "Linux finding largest file", the first link has the answer. Well, maybe not "the" answer, but, "an" answer.

Also, DO NO FREAK OUT about this. I know that I haven't covered a lot of this stuff in detail yet (e.g. file systems). Some of you know more about computers in general than others, that's expected. If you really have no idea how to answer these, don't worry about it. Yet. I just want you to start to get the feel for this stuff and give you a chance to get the sense that you are able to figure things out. By giving you exact questions, you don't have to think about what to do to "experiment" with the operating system.

Finally, many of the answers will require you to use filters in some way or another. All of those filters are available to you and are likely in the `/usr/bin` directory.

1 Basic stuff

- a) What version of the Linux kernel are you running?
- b) Is the kernel a 32-bit or 64-bit kernel?

2 Memory

- a) How much memory is in the computer?
- b) How much memory is in use?
- c) How much memory is available?

3 CPU and Cache

- a) What kind of CPU is in the computer?
- b) How fast is the CPU?
- c) How many cores does the CPU have?
- d) How big is the cache?

4 Storage and File System

- a) How many hard drives are in the computer?
- b) What is the vendor, model number, and serial number of each drive?
- c) What is the disk ID of each drive?
- d) How many partitions are on each drive?
- e) What file system is on each partition?
- f) What is the largest file you can create on that file system?
- g) What is the most number of files you can put on that file system?

5 Users

- a) How many user accounts are setup in the computer? (Hint, it's probably more than 20)
- b) What are those account names?
- c) What is the password for each account?
- d) How many users are currently on the computer and what are they doing?

6 Files and Folders

- a) How many folders and/or files are on the computer?
- b) What's the largest file on the hard drive?
- c) How many files are between 10,000 bytes and 20,000 bytes in size?
- d) How many files are owned by a user other than you and root?

7 Processes

- a) How many processes (programs) are currently running on the computer?
- b) How many processes are owned by you?
- c) How many processes are owned by root?
- d) How many processes are owned by someone else?
- e) Which process is taking up the most memory?
- f) Which process is taking up the CPU time?