CSC 120 Lab 06

Instructions: Please provide screenshots for Questions 1,2,3 and 6.

1. **Question 1 Install VirtualBox on your system.**   **(5 points)**

   In this exercise you will be installing Virtual Box on your system. (Windows or Mac). After installing VirtualBox you will be using it for installing a linux operating system (Ubuntu) by creating a Virtual Machine in Virtual Box. (Read online about what a virtual machine is).

   VirtualBox Download link https://www.virtualbox.org/wiki/Downloads

2. **Question 2 Install Ubuntu 20.04 as a virtual machine using VirtualBox.**

   (25 points)

   Step 0: Open VirtualBox on your machine.

   Step 1: Download the ISO for Ubuntu 20.04 to install it using Virtual Box.
   Ubuntu 20.04 ISO Download Link https://ubuntu.com/download/desktop

   Step 2: Read more about what an ISO is below.
   Note: You just need to download an ISO for this exercise and not burn or mount one.

   Reading : https://www.lifewire.com/iso-file-2625923

   Step 3: Follow the steps provided in the tutorial below to install Ubuntu 20.04 using VirtualBox.
   Ubuntu installation Video link: https://youtu.be/3qcK_Bwa0sU
   Ubuntu Installation Screenshots Link: https://itsfoss.com/install-linux-in-virtualbox/
   Note: The above tutorial is for installing Ubuntu 17.04, but the steps are still the same.

   Step 4 Paste a screenshot of the virtual machine by opening the terminal and typing "whoami"

3. **Question 3 Running basic commands on the terminal. Paste the screenshots of the output for each sub-question**   **(30 points)**

   1. After installing Ubuntu on Virtual Box, open Virtual Box and run the virtual machine using the play button.

2. Then open the terminal by typing terminal in the search box.

a. Open the terminal and type "mkdir CSC_!20". Read more about how to create a directory using mkdir. Paste the screenshot of the command and the output below.

b. Type the "ls" command on the terminal. Then try the "ls -l" command. Read online more about what an ls command is and how to use it. Write a brief answer about how and when to use it.

c. Use the cd command to navigate to the Desktop directory or any other directory of your choice. Read online more about what a cd command is and how to use it. Write a brief answer about how and when to use it.

d. In Linux based operating systems, there is a command known as "sudo" that gives super user privileges. Read more about the sudo command and summarize your observations.

e. In order to install software on Ubuntu using the command line, you can use the apt package manager (or apt-get). Read more about installing packages using apt (or apt-get) and install the vlc player on your VM. What was the command that you used/. You will also need to use sudo.

f. Type the pwd command. What is the output. What does the pwd command do?

4. Question 4 Exploration   (10 points)

Explain the difference between a Virtual Machine and the Host Operating System. Research online about how VM's are used by technology companies for cloud computing today. Answer in 1-2 paragraphs.

5. Question 5 Conceptual Question

● (+5 points) Explain the concept of a process. In operating systems.

- (+5 points) What is the distinction between application software and system software? Give an example of each.

6. Question 6 Programming Question   (20 points)

Given the string
SCORES = [40,91,85,15]

Write a program to find all the pairs of scores in the above list. The output should be

40,91
40,85
40,15
91.85
91,15
85,15

Extra Credit Challenge Question   (20 points)

Given the string,
```
s = "i_love_programming_in_python_and_i_will_alzways_program"
```

Find all the unique characters in this string. You can use dictionaries or two for loops. A unique character is one which appears only once in the given string. For example, z or v

Extra Linux Commands for interested students (No credit)

These questions have been created for students who want to learn more about how to use linux. This will help you become comfortable with the terminal and approve as an asset during system administration work or working on remote servers.

a. Learn how to use the mkdir command to create a directory from terminal
b. Read about man pages and how to use them.
c. Learn how to see the permissions on a file using the ls -l command.
d. Learn how to set permissions on a file using the chmod command.
e. Learn how to copy files from one folder to another using cp.
f. Learn how to move a file or directory from one folder to another using mv command
g. Read more about bash scripting and why it is useful.
h. Read more about using regular expressions.
i. Read more about using the grep command
j. Learn how to use the file command
k. Learn how to use the redirect operator > to redirect the output
l. Learn how to use the pipe operator "!" to chain commands.

Instructions: Upload the file with the screenshot on Blackboard with your firstname_lastname.docx