Introduction

This file contains the actual test questions. That is, this is not a study guide, and these are not review questions, these are the actual test questions. I suggest that you use this sheet to prepare your answers for the test questions before you start the test in Canvas. I know this is probably much different than what you're used to as in most classes you don't get to see the test questions until you start the test. I think the reason for this is that most instructors have never held jobs outside of academia, so they don't have any idea how the real world functions. In any case, I provide you with the questions ahead of time because as you will see it may take you a significant amount of time to answer all of the questions and do the hands-on work. If you had to actually open the test in Canvas to see the questions it would be difficult to complete all of the test questions in one session. And if you lost your internet connection, or needed to shut down your computer, or needed to move to a different location, your test would close. So … you can use this file to prepare your answers, and then once you're ready open the test and simply input or upload your answers.

Instructions

As you go through the test questions please keep in the mind the following:

1. You must enter your answers to these questions in Canvas to receive credit.

2. You must do your own work. You can use resources such as books or Internet research, but you can NOT collaborate with other students. Any collaboration will be a violation of the CBC Academic Honesty Policy and will result in a grade of 0 for the course. In addition, you will be referred to the CBC Dean of Student Services for possible administrative consequences.

3. Be wary of using the Internet to find your answers. You can use the Internet for research, but you really should avoid just typing in a test question and entering whatever you find on the Internet as your answer without first trying to understand it yourself. In most cases the answers you'll find on the Internet may be correct, but they will be way more complicated than they need to be. And this will make it obvious that you don't really know the answer, you just know how to spell Google. For example, in the past I used a test question that asked about searching for a string in a set of files. The answer was something like `grep banana /home/tests/.dat`. The question was designed to assess whether the students could use grep to search for strings in a file and was simple to answer if you knew how to use `grep`. Apparently if you asked the Internet how to do this the answer provided was `find ./home/tests -type f -name .dat -exec grep "banana" {} \;` This second answer does work and produce the same results as the first answer. But it's also obvious that anyone using this answer doesn't really know how to use `grep`. To handle this situation the grading rubric for some questions is set up so that you can only get full points by providing the simple answer. If you provide a complicated answer that may be technically correct but is also far more complicated than necessary you will only receive partial credit.

4. When you are asked to enter a command that requires root privileges assume that you have root privileges unless otherwise specified. That is, if an answer requires root privileges do NOT add sudo to the start of the command(s).

5. There are several questions that require you to enter what command(s) you would type or use to accomplish a given task. When you enter your answer, you must follow these rules:
   a. Enter the answer in the proper case.
   b. Do not include any white space characters before or after your answer.
   c. Only use a single space between words. Do not use multiple spaces or tabs.
   d. Make sure and include all necessary command arguments and options. Do not include unnecessary arguments or options.
   e. If there are multiple command options enter them in alphabetic order.

For example, if the answer to the question is `ls -al /var/www` the following answers would be **incorrect**:

a. `Ls -al /var/www` (the l in ls is upper case)
b. `ls al /var/www` (the – before the command options is missing)
c. `ls -a /var/www` (the l option is missing)
d. ` ls -al /var/www` (there is a space before the ls command)
e. `ls -al  /var/www` (there is an extra space between the –al and /var/www)
f. `ls -la /var/www` (the –la options are in the wrong order)
g. `ls -alr /var/www` (the –r option is extraneous)

If you fail to follow any of these rules Canvas will mark your answer as incorrect, so double check your answers before submitting.

6. Canvas is super picky when it comes to grading short answer questions. I've put notes in the questions to guide you and to help ensure you enter your answer in a form that Canvas will recognize. In the past I've had one or two students misinterpret this attempt to help you as evidence that I am a very strict grader and a little dictatorial. That's not my intention at all, it's just to try and help you work with Canvas and get Canvas to recognize your answer(s). I always go through every test and check every answer you get wrong to make sure that you didn't just fat finger your answer as you typed it in.

Questions

1. This is a "real" test, which means you must do your own work. It's an open book test, so you can use any resources such as books, your notes, or the computer. However, you must do your own work. This means that you must not ask other students, instructors, acquaintances, paid consultants, Facebook friends, etc. for help. Any violations of the CBC Academic Honesty Policy will result in a failing grade for the course.

   The test must be completed and turned in by 11:59 on the due date to receive full credit. Late tests can be turned in up to 7 days after the original due date, but will receive an automatic 10 point deduction. Tests completed more than 7 days after the due date will not be graded and will receive a grade of 0.
   a. I have read and understand the test rules.
   b. I didn't read the test rules because we don't need no stinkin' rules.

2. True or False. The Hyper-V feature of Windows must be enabled to run virtual machines in Oracle Virtual Box Manager.
   a. True
   b. False

3. Assume that you are trying to run a VM inside of Oracle Virtual Box Manager. When you attempt to start the VM you receive an error message. You check the computer and find that it has been configured with the following UEFI. Settings:
   - CPU Speed: 3600MHz
   - CPU Cores: 1
   - Cache Size: 12288KB
   - Turbo Ratio: Enabled
   - Internal PLL Overvoltage: Auto
   - Hyper-threading: Disabled
   - Virtualization: Disabled

- TPM:Disabled

Which of these settings should you change to allow the VM to run?
- A. CPU Speed: 3600MHz
- B. CPU Cores: 1
- C. Cache Size: 12288KB
- D. Turbo Ratio: Enabled
- E. Internal PLL Overvoltage: Auto
- F. Hyper-threading: Disabled
- G. Virtualization: Disabled
- H. TPM:Disabled

4. One of the requirements for installing Centos is to have a copy of the installation file(s). What format must the file(s) be in to be used for installation?
- a. .zip
- b. .tar
- c. .exe
- d. ISO
- e. The installation files will be in many different formats as there will be executable files, data files, etc.

5. Assume that you want to install the Gnome Desktop Environment for Centos. Can this be done if you download the Minimal ISO and use it for the installation?
- a. Yes
- b. No

6. True or False. You must first create a bootable thumb drive or optical disk to install Centos, or any Linux distribution, on a VM in Virtual Box.
- a. True
- b. False

7. Assume you are installing Centos on a VM in Virtual Box and you notice that the mouse does not work. The mouse does work in the host Windows computer. What is the most likely cause of the problem?
- a. The mouse is an older PS/2 mouse, which is not supported by Centos.
- b. The mouse is an older PS/2 mouse, which is not supported by Virtual Box.
- c. The mouse is plugged into the wrong USB port. It must be in the USB port mapped to COM3.
- d. You have an older version of Centos. You need to download a newer ISO.
- e. The mouse interface in Virtual Box is incorrect. To fix it go to the **System** section of the Virtual Box Settings for the VM. Go to the **Motherboard** tab and set the **Pointing Device** to **USB Tablet**.
- f. The mouse interface in Virtual Box is incorrect. To fix it go to the **System** section of the Virtual Box Settings for the VM. Go to the **Motherboard** tab and set the **Pointing Device** to **USB Mouse**.
- g. The mouse is faulty. To fix it replace it with a new mouse.

8. Assume you are performing an installation of Centos and have made it to the **Installation Summary** page. MUST you select and check the **INSTALLATION DESTINATION**, even if it is set to **Automatic Partitioning Selected,** before proceeding?
- a. Yes
- b. No

9. Assume you want to install Centos on a system that will be used for data acquisition. This system has a relatively small amount of memory and when you work on the system you will be limited to using the command line. Which of the following Software Selections would be the best choice?
- a. Minimal Install
- b. Compute Node

      c.   Infrastructure Server
      d.   Virtualization Host
      e.   GNOME Desktop
      f.   KDE Plasma Workspace
      g.   None of the above

10. How would you refer to the third primary partition on the second SCSI hard disk within Linux?

11. At a minimum, which two partitions do you have to create during a Linux installation? (Choose two answers.)
    a. /
    b. /boot
    c. swap
    d. /home
    e. /var
    f. /usr

12. Assume that you perform an install of Centos and create the following 3 partitions:
-   /
-   Swap
-   /home

    Where would the `/usr` directory be located? That is, which partition would it be in?
    A. `/`
    B. The swap partition
    C. `/home`
    D. `/usr`
    E. Since `/usr` was not given a partition it will not be created
    F. None of the above

13. Assume that you perform an install of Linux on a physical computer with a 500 GB hard drive. You create 4 partitions and allocate the disk to each partition as follows:
-   /   70GB
-   Swap 25GB
-   /usr 255GB
-   /home 50GB

    The system will be used to host up to 100 user accounts for students that will be using the system to practice typing commands. Is this partition scheme optimal for this system and how it will be used?
    A. Yes
    B. No, there is not enough space in the `/` partition. Space should be taken from the `/usr` partition and given to the `/` partition.
    C. No, there is not enough space in the `/` partition. Space should be taken from the `/home` partition and given to the `/` partition.
    D. No, there is not enough space in the `/usr` partition. Space should be taken from the `/home` partition and given to the `/usr` partition.
    E. No, there is not enough space in the `/home` partition. Space should be taken from the `/usr` partition and given to the `/home` partition.
    F. No, there is not enough space in the Swap partition to host this many user accounts.

14. True or False. All Linux installations use exactly the same kernel code.
      a.   True
      b.   False

15. Assume you are running Centos, logged in the root account, and you want to install a program called `blackHole` which is included in the package named `eventHorizon`. What would you type to accomplish this?

16. Which of the following are Environmental Groups in Centos?
    A. Compute Node
    B. Java Platform
    C. Large Systems Performance
    D. Virtualization Host
    E. Basic Web Server
    F. Gnome Desktop

17. True or False. You must supply the DNS name or IP address of at least one repository server any time you update or install a package on Centos.
    A. True
    B. False

18. Who runs and maintains the servers that store and distribute packages for systems running Centos?
    A. Individuals and organizations paid by Linux
    B. Individuals and organizations paid by Redhat
    C. Individuals and organizations paid by Gnu and the Open Software Foundation
    D. The US government
    E. The European Union (EU)
    F. None of the above

19. Which of the following statements is the most correct?
    A. Centos packages typically contain the source code for an application that must be compiled before the application can be used.
    B. Centos packages typically contain a single pre-compiled version of an application because code that can run on one computer running Linux can be run on any other Linux computer.
    C. Centos packages typically contain two pre-compiled version of an application, a 32-bit Linux version and a 64-bit Linux version.
    D. None of the above

20. Assume you are working on a computer running a Centos distribution of Linux. You're trying to install the `sherlock` package, which will allow you to distort and manipulate space and time. However, when you run `yum install sherlock` you get the message

    No package sherlock available.
    Error: Nothing to do

    You know that the package is available from:
     https://baker.street.org/pub/holmes/sherlock-release-latest-7.noarch.rpm

    Which of the following will successfully install the package:

    a. yum install --package https://baker.street.org/pub/holmes/sherlock-release-latest-7.noarch.rpm
    b. yum install sherlock --server https://baker.street.org/pub/holmes/sherlock-release-latest-7.noarch.rpm
    c. rpm – Uvh https://baker.street.org/pub/holmes/sherlock-release-latest-7.noarch.rpm
    d. None of the above

21. What would you type to see the current network configuration information?

22. Assume you are working on an Oracle Box vm running a Centos distribution of Linux. You configure the Linux VM to use a NAT adapter in the Virtual Box settings and enable the IP networking in Linux. What will the IPv4 address of the network interface on the Linux server be?

23. Assume that you are in the root account and want to add a new user account. This account must have the name `carli` and use the shell `/bin/tcsh`. What would you type to create this account? Use the single letter for the command options. For example –h instead of –help.

24. Assume that you have created several user accounts, and the uid for the last account is 1034. This is also the highest uid number in the passwd file. However, you also deleted the account that was assigned uid 1015 and deleted the account that was assigned uid 1008. If you create another user account what will the uid for this new account be set to? Enter your answer as a number. That is, if your answer is 22, enter 22 not twenty two.

25. Assume that you are in the root account and you want to create a new user with the username `srv`. You also want to assign the GECOS information for this user while you create the account. You want to set the name to `Stevie Ray`, assign `Texas` to the office, use `201-2222` for the office phone and `876-5432` for the home phone. What would you type to accomplish this? Use the single letter for the command options. For example –h instead of –help.

26. Which of the following commands, if given a password as an argument, will encrypt the password before storing it?
    A. `useradd -p`
    B. `usermod -p`
    C. `passwd`
    D. `chpasswd`
    E. `vipw -s`
    F. None of the above

27. Assume that you are in the root account and you change a user's username from `yvette` to `isaac,` without changing any other settings for the account. After you change the username, who owns the files and directories that were previously owned by the `yvette` user?
    A. They will now be owned by the `isaac` user.
    B. They will still be owned by the `yvette` user.
    C. Since the `yvette` user no longer exists the system will change the ownership to the `nobody` user.
    D. Since the `yvette` user no longer exists the system will change the ownership to the `root` user.
    E. Since the `yvette` user no longer exists the files and directories will no longer be accessible.
    F. There is not enough information to answer this question.

28. True or False. The `usermod` command can only be used to change a user's groupid to a group that currently exists.
    A. True
    B. False

29. Assume that you are in the root account and want to change the default settings for creating new users so that all new home directories will be in the `/usr/local/home` directory. Using `useradd`, what would you type to accomplish this?

30. Create a new Centos virtual machine in Oracle VirtualBox that meets the following specifications:

    • Do a Minimal installation

    • During the installation change the hostname to `yournameTest2` where `yourname` is your first and last names. For example, my hostname would be `tonysakoTest2` When the Linux VM boots

run the `hostname` command and take a screen shot to demonstrate that the hostname has been set correctly.

- Create at least 20 user accounts. The user name for each account should be `testN` where `N` starts at 1 and ends at 20. For example, the first username would be `test1`, the second username would be `test2`, and the last username would be `test20`. Each user should have a home directory in the `/home` folder, and each user should use the `bash` shell by default. Make a screen shot of the `passwd` file showing entries for the accounts you created (You may not be able to fit all 20 accounts into one screen shot. If this is the case make 2 screen shots.) Make a screen shot showing the user's home directories by doing an `ls` of `/home`.

- Change the settings for `useradd` so that new user accounts will be set to use `/bin/tcsh` instead of `/bin/bash`. Get a screen shot showing the default `useradd` settings.

- Change the settings for password aging for new user accounts to meet the following specifications:

  a. Passwords must be changed at least every 90 days.
  b. There must be at least 21 days between password changes.
  c. Passwords must be at least 12 characters in length.
  d. Users should be notified that their passwords are going to expire starting 7 days before the actual expirations date.

  Take a screen shot showing the default password settings.

- Create at least 10 additional user accounts. The user name for each account should be `cbcUserN` where `N` starts at 1 and ends at 10. For example, the first username would be `cbcUser1`, the second username would be `cbcUser2`, and the last username would be `cbcUser10`. Each user should have a home directory in the `/home` folder, and each user should use the `tcsh` shell by default. Make a screen shot of the `passwd` file showing entries for the accounts you created. Make a screen shot showing the user's home directories by doing an `ls` of `/home`.