Linux Administration & Security Homework 2

Section Objectives

After finishing this section, you should be able to:

1. Describe the basic steps for creating virtual machines (VM) in Oracle Virtual Box Manager
2. Install CentOS on a VM
3. Perform disk partitioning in Linux, and describe how to refer to disks
4. Connect to Linux host using ssh
5. Describe what packages are, and how to manage packages
6. Install, configure, and use Guest Additions in Oracle Virtual Box Manager
7. Add and remove users
8. Configure password settings

Notes and Tips

As you complete the homework please keep in the mind the following:

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

2. You have 2 attempts at this homework. If you choose to use both attempts your score will be the average of the 2 attempts. For example if you score 30 on your first attempt and 50 on your second attempt you will receive 40 points for the assignment. If you only take one attempt, your score will be the score for that attempt.

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. For all questions you can assume that you have root permission unless explicitly stated otherwise.

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, and give you credit or partial credit if it appears you made a mistake entering the answer.

Exercises

1. Which of the following software applications allow you to create a virtual machine and install Linux?
    A. Oracle VirtualBox
    B. TerraVM
    C. Microsoft Hyper-V
    D. Spiceworks
    E. VMWare
    F. HyperActive Hypervisor

2. True or False. All computers running Windows can run virtual machines created by Oracle Virtual Box Manager.
    a. True
    b. False

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

4. Assume that you are trying to create and install a new Linux virtual machine in Oracle VirtualBox on a computer running Windows. However, when you try and run your virtual machine you get an error message from Windows. Which of the following could be the cause of the error? Note – there is more than one correct answer.
    A. The CPU does not support virtualization
    B. The CPU supports virtualization, but hardware support has been disabled in the UEFI/BIOS settings
    C. Hyper-V is enabled. It must be disabled to run virtual machine in VirtualBox.
    D. Hyper-V is disabled. It must be enabled to run virtual machine in VirtualBox.
    E. It is not possible to run a Linux VM on a Windows host. The Linux VM must be created on a host computer that is running Linux.
    F. It is not possible to run a Linux VM in VirtualBox. VirtualBox will only create Windows VMs.
    G. The boot order must be changed to boot the VM before booting to Windows.

5. One of the requirements for installing CentOS is to have a copy of the install media. Where can you get a copy of the CentOS installation files?
    a. The installation media can be purchased from CentOS.com.
    b. The installation media can be downloaded from any of the supported mirror sites.
    c. CentOS is a version of RedHat. The only trusted source for the install media is RedHat. Other sites download are known for including malware.
    d. CentOS is community supported and the code is available on Github. You must download and compile this code to create the installation media.
    e. None of the above

6. Assume that you want to install a minimal version of CentOS. Can this be done if you download the DVD ISO as opposed to the Minimal ISO?
    a. Yes
    b. No

7. Assume that you want to install the Basic Web Server Environment for CentOS. Can this be done if you download the Minimal ISO and use it for the installation?
    a. Yes
    b. No

8. Which of the following ISO versions can be used to install the Compute Node Environment for CentOS?
    a. Full ISO
    b. DVD ISO
    c. Compute Node ISO
    d. Complete ISO
    e. Minimal ISO

9. Assume you are installing CentOS on a physical computer as opposed to installing it on a virtual machine. Which of the following would allow you to create a boot device?
    a. Download the CentOS ISO and then create a bootable thumb drive by copying the ISO to the thumb drive. However, the thumb drive must be formatted as NTFS if the ISO file is larger than 2 GB.
    b. Download the CentOS ISO and then create a bootable thumb drive using an application like Rufus or UNetbootin.
    c. Download the CentOS ISO and then create a bootable optical drive by copying the ISO to a blank CD or DVD.
    d. In Windows 10, download the CentOS ISO and then create a bootable optical drive by right-clicking the ISO and selecting "Burn disc image".

10. True or False? You can install CentOS on a VM in Virtual Box without using a mouse.
    a. True
    b. False

11. Which of the following must you do to use a USB mouse in a CentOS VM running in Virtual Box?
    a. Enable the **USB Ports** in the **System** section of the Virtual Box Settings for the VM.
    b. Go to the **Serial Port** section of the Virtual Box Settings for the VM. Enable **Port 3**, set it to **COM3**, and then set the **Mode** to **USB Mouse**.
    c. Download the USB mouse drivers. During the installation process select **Install Drivers** and then select the mouse driver files.
    d. 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**.
    e. 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**.
    f. None of these actions are required. Any USB mouse will work with CentOS and Virtual Box using the default drivers.

12. Assume you are installing CentOS on a VM in Virtual Box. You are able to use the mouse inside of the Virtual Box window, but you cannot get it to move outside of the window so that you can use it with the host Windows computer. How do you free the mouse?
    a. Left `<ctrl>`
    b. Right `<ctrl>`
    c. `<F12>`
    d. Click the right mouse button and select **Host**
    e. Click the right mouse button and uncheck **Guest**
    f. None of the above

13. Assume you are performing an installation of CentOS and have made it to the **Installation Summary** page. Which of the following MUST you select and check before proceeding?
    a. INSTALLATION DESTINATION
    b. KDUMP
    c. NETWORK & HOSTNAME
    d. SECURITY POLICY
    e. All of the above

14. True or False. When you are installing CentOS and select a **Base Environment**, all the packages listed in the **Adds-Ons For Selected Environment** will also be installed.
    a. True
    b. False

15. A partition on a hard disk that can be further subdivided into components called logical drives is known as which of the following?
    A. Master Boot Record
    B. swap partition
    C. SSD
    D. extended partition
    E. primary partition
    F. UEFI

16. Which of the following refers to the first primary partition on the second SCSI hard disk within Linux?
    a. hda1
    b. sda1
    c. hda2
    d. sda2
    e. hdb1
    f. sdb1
    g. hdb2
    h. sdb2
    e. None of the above

17. Which of the following refers to the second partition on the second SCSI hard disk within Linux?
    a. hda1
    b. sda1
    c. hda2
    d. sda2
    e. hdb1
    f. sdb1
    g. hdb2
    h. sdb2
    e. None of the above

18. Which of the following refers to the first primary partition on the first SCSI hard disk within Linux?
    a. hda1
    b. sda1
    c. hda2
    d. sda2
    e. hdb1
    f. sdb1
    g. hdb2
    h. sdb2
    e. None of the above

19. How would you refer to the second partition on the fourth SCSI hard disk within Linux?

20. Assume that you perform an install of CentOS and create the following 3 partitions
    -   /
    -   Swap
    -   /home

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

21. Assume that you perform an install of CentOS and create the following 3 partitions
    -   /
    -   Swap
    -   /home

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

22. Assume that you perform an install of CentOS and create the following 4 partitions
    -   /
    -   Swap
    -   /usr
    -   /home

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

23. 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:
    - `/       20GB`
    - `Swap   25GB`
    - `/usr   155GB`
    - `/home 300GB`

    The system will be used as a web server and will not host any user accounts other than the root user. 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 for running the web server and hosting the web files.
    C. No, there is not enough space in the `/usr` partition for running the web server and hosting the web
       files.
    D. No, there is not enough space in the `/home` partition for running the web server and hosting the web
       files.
    E. No, there is not enough space in the Swap partition to host the web server.

24. The OS component which loads all other components and serves to centrally control the activities of the
computer is known as which of the following?
    A. kernel
    B. terminal
    C. UEFI/BIOS
    D. shell
    E. MBR
    F. Boot loader
    G. init
    H. None of the above

25. What is the name of the main package management utility in CentOS 7?
    A. yum
    B. rpm
    C. cpm
    D. systemctl
    E. pacman
    F. None of the above

26. If you do a minimal install of CentOS how many packages are installed?
    A. 0
    B. 1-200
    C. 201-500
    D. 500-1000
    E. More than 1000

27. Assume you are running CentOS, logged in the root account, and that there is a package named
`traveler` that you want to install. What would you type to accomplish this?

28. Assume you are running CentOS, logged in the root account, and that there is a package named `ace` that
you want to update. What would you type to accomplish this?

29. Assume you are running CentOS, logged in the root account, and that there is a package named
`forensics` that you want to update. What would you type to accomplish this?

30. Assume you are running CentOS, logged in the root account, and that there is a package named `depp`
that you want to remove. What would you type to accomplish this?

31. Assume you are running CentOS, logged in the root account, and that there is a package named `ring` that you want to remove. What would you type to accomplish this?

32. Assume you are running CentOS, logged in the root account, and that there is a package named `ace` that you want to remove. What would you type to accomplish this?

33. True or False. You have the option of supplying the DNS name or IP address for a specific repository server any time you use yum to install a package on CentOS.
    A. True
    B. False

34. What are the servers called that store and distribute packages for systems running CentOS?
    A. Package Servers
    B. Yum Servers
    C. RPM Servers
    D. Pacman Servers
    E. Depository Servers
    F. Repository Servers
    G. None of the above

35. Which of the following items are included in packages that contain an application?
    A. The executable code for the application
    B. The source code for the application
    C. Registry setup files for the application
    D. A hash file that can be used to validate the package
    E. The make file used to compile the application
    F. None of the above

36. Which of the following statements is the most correct?
    A. CentOS packages typically contain everything required to run an application.
    B. CentOS packages may not contain everything required to run an application. If extra files or applications are required, they must be downloaded and installed manually.
    C. CentOS packages may not contain everything required to run an application. If extra files or applications are required, their packages are installed automatically.
    D. None of the above

37. Assume you are installing a package but find out that the package you want requires other packages to function. What is the relationship called between the package you want and the packages it requires?
    A. Requirements
    B. Dependencies
    C. Connections
    D. Child packages
    E. Parent packages
    F. Related packages
    G. There is no name for this relationship

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

    No package tardis available.
    Error: Nothing to do

    You know that the package is available from:
      https://dl.gallifrey.org/pub/who/tardis-release-latest-7.noarch.rpm

    Which of the following would be the best to use to tell the package installer to not use the default package repository list, and instead go directly to the package server:

    a. yum install --package https://dl.gallifrey.org/pub/who/tardis-release-latest-7.noarch.rpm
    b. yum install tardis --server https://dl.gallifrey.org/pub/who
    c. rpm - Uvh https://dl.gallifrey.org/pub/who/tardis-release-latest-7.noarch.rpm
    d. None of the above

39. What would you type to see the network configuration information?
    a. network –p
    b. ip add
    c. cat /etc/network/ip.conf
    d. All the above

40. 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 name of the network interface that is connected to the NAT adapter on the Linux server be?
    a. localhost
    b. eth0
    c. enp0s3
    d. It depends on the type of network adapter. It may be eth1, na1, vmeth0, etc.
    e. You can, and must, set the name of the network adapter to any valid value you like by editing the /etc/hosts file.
    f. This is a trick question. If you configure the VM to use a NAT adapter you will not be able to use an IPv4 address.

41. 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?
    a. 127.0.0.1
    b. 10.0.2.15
    c. 192.168.0.15
    d. 192.168.0.nnn where nnn is a number between 1 and 254 that you set in the /etc/hosts file.
    e. You can, and must, set the IP address to any valid value you like by editing the /etc/hosts file.
    f. This is a trick question. If you configure the VM to use a NAT adapter you will not be able to an IPv4 address.

42. Assume you are working on an Oracle Box VM running a CentOS distribution of Linux. You're trying to use ssh to connect to the Linux VM from the host computer, however you are not able to connect. Which of the following steps need to be done to make this connection?
    a. In the Linux VM set a port forwarding rule that maps packets coming in to IP Address 127.0.0.1 port *nnnn* to go to IP Address 127.0.0.1 port 22. Where *nnnn* is any port number above 1024.
    b. In the Linux VM set a port forwarding rule that maps packets coming in to IP Address 127.0.0.1 port 22 to go to IP Address 127.0.0.1 port *nnnn*. Where *nnnn* is any port number above 1024.
    c. In the Linux VM set a port forwarding rule that maps packets coming in to IP Address 10.0.2.15 port *nnnn* to go to IP Address 127.0.0.1 port 22. Where *nnnn* is any port number above 1024.
    d. In the Linux VM set a port forwarding rule that maps packets coming in to IP Address 10.0.2.15 port 22 to go to IP Address 127.0.0.1 port *nnnn*. Where *nnnn* is any port number above 1024.
    e. In the Linux VM set a port forwarding rule that maps packets coming in to IP Address 127.0.0.1 port *nnnn* to go to IP Address 10.0.2.15 port 22. Where *nnnn* is any port number above 1024.
    f. In the Linux VM set a port forwarding rule that maps packets coming in to IP Address 127.0.0.1 port 22 to go to IP Address 10.0.2.15 port *nnnn*. Where *nnnn* is any port number above 1024.
    g. In the Virtual Box Settings for the Network Adaptor for Linux vm, set a port forwarding rule that maps packets coming in to IP Address 127.0.0.1 port *nnnn* to go to IP Address 127.0.0.1 port 22. Where *nnnn* is any port number above 1024.
    h. In the Virtual Box Settings for the Network Adaptor for Linux vm, set a port forwarding rule that maps packets coming in to IP Address 127.0.0.1 port 22 to go to IP Address 127.0.0.1 port *nnnn*. Where *nnnn* is any port number above 1024.
    i. In the Virtual Box Settings for the Network Adaptor for Linux vm, set a port forwarding rule that maps packets coming in to IP Address 127.0.0.1 port 22 to go to IP Address 10.0.2.15 port *nnnn*. Where *nnnn* is any port number above 1024.
    j. In the Virtual Box Settings for the Network Adaptor for Linux vm, set a port forwarding rule that maps packets coming in to IP Address 127.0.0.1 port 22 to go to IP Address 10.0.2.15 port 22.
    k. In the Virtual Box Settings for the Network Adaptor for Linux vm, set a port forwarding rule that maps packets coming in to IP Address 10.0.2.15 port 22 to go to IP Address 127.0.0.1 port *nnnn*. Where *nnnn* is any port number above 1024.
    l. In the Virtual Box Settings for the Network Adaptor for Linux vm, set a port forwarding rule that maps packets coming in to IP Address 10.0.2.15 port *nnnn* to go to IP Address 127.0.0.1 port 22. Where *nnnn* is any port number above 1024.
    m. None of the above.

43. Which of the following commands can be used to add a new user on a Linux system?
    a. `newuser`
    b. `adduser`
    c. `add`
    d. `useradd`
    e. `user`
    f. None of the above

44. On a Linux system, which file(s) is/are modified when a new user is created?
    a. /etc/users
    b. /etc/password
    c. /etc/passwd
    d. /etc/accounts
    e. /etc/shadow
    f. /etc/groups
    g. /etc/group
    h. /etc/gpasswd
    i. /etc/gshadow
    j. None of the above

45. Which of the following is NOT true regarding `vipw`?
    a. It uses the same commands as vi.
    b. It automatically opens the /etc/passwd file.
    c. It places a lock on the /etc/passwd file.
    d. If a new user is added, then the user's home directory is created.

46. Which of the following commands can be used to remove a user on a Linux system?
    ```
    a. rmuser
    b. rm user
    c. userrm
    d. userdel
    e. deluser
    f. user rm
    g. user del
    ```
    h. None of the above

47. Assume that you have a user account with the username `spin6`. What would you type to remove the account, remove the user's home directory and delete the user's mailbox?

48. True or False. Assume that you have a user account with the username `jamaal`. Entering the command `rm jamaal` would remove the account, remove the user's home directory, and delete the user's mailbox?
    a. True
    b. False

49. 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. If you create another user account what will the uid be set to? Enter your answer as a number. That is, if your answer is 22, enter 22 not twenty two.

50. Assume that you are in the root account and you want to create a new user with the username `rush`. You also want to assign the uid of 2112 to this user while you create the account. What would you type to create the user and assign the uid?

51. Match the useradd options with their function
    a. –g
    b. –u
    c. –p
    d. –c
    e. –s
    f. –d
    g. –a
    h. –h

    not used
    display help
    set home directory
    set finger information
    set groupid
    set shell
    set uid
    set password

52. Assume that you are in the root account and you want to create a new user with the username `rush`. You also want to assign the GECOS information for this user while you create the account. You want to set

the name to `Geddy Lee, Toronto` to the office, use `444-2101` for the office phone and `100-1001` 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.

53. Assume that you are in the root account and you want to create a new user with the username **tyrion**. You also want this user to use the tcsh shell by default and have a home directory of **/home/lannister**. What would you type to accomplish this? Use the single letter for the command options. For example –h instead of –help.

54. Assume that you are in the root account and you want to create a new user with the username `seahawk`. You also want to set this user's password to `iLuvSeattle`. What would happen if you typed the command: `useradd -p iLuvSeattle seahawk`
   A. The account would be created, and the password would be hashed and stored in the /etc/shadow file.
   B. The account would be created, and the password would be stored in the /etc/shadow file without hashing.
   C. The account would not be created as the password is not hashed, which would cause an error in `useradd`.
   D. The `useradd` command would throw an error as the –p option is invalid.

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

56. Which of the following commands, if given a password as an argument, will NOT hash the password before storing it?
   A. `useradd -p`
   B. `usermod -p`
   C. `passwd`
   D. `chpasswd`
   E. `vipw -s`
   F. None of the above

57. Assume that you are in the root account and you want to change a user's username from `basil` to `coco` without changing any other settings for the account. Without using `vipw` what would you type to accomplish this? Use the single letter for the command options. For example **–h** instead of **–help**.

58. Assume that you are in the root account and you use `usermod` to change a user's username from `basil` to `coco,` without changing any other settings for the account. Before the change, the user's home directory was named `/home/basil`. When you change the username, will `usermod` also automatically change the name of the user's home directory to `/home/coco`?
   A. Yes
   B. No

59. Assume that you are in the root account and you change a user's username from `basil` to `coco,` without changing any other settings for the account. After you change the username, if you run the `ls -al` command what names will be displayed as the owner of the files and directories that were previously owned by the `basil` user?
   A. They will now be owned by the `coco` user.

B. They will still be owned by the `basil` user.

C. Since the `basil` user no longer exists the system will change the ownership to the `nobody` user.

D. Since the `basil` user no longer exists the system will change the ownership to the `root` user.

E. Since the `basil` user no longer exists the files and directories will no longer be accessible.

F. There is not enough information to answer this question.

60. Assume that you are in the root account and you change the uid for the user with the username `watson` from `1234` to `5000` without changing any other settings for the account. Without using `vipw` what would you type to accomplish this? Use the single letter for the command options. For example –h instead of –help.

61. Assume that you are in the root account and you change the uid for a user with the username `basil` from 1234 to 4567, without changing any other settings for the account. After you change the uid, who owns the files and directories that were previously owned by the `basil` user?

A. They will still be owned by the `basil` user.

B. Since the uid associated with the `basil` user no longer exists the system will change the ownership of all basils's files and directories to the `nobody` user.

C. Since the uid associated with the `basil` user no longer exists the system will change the ownership of all basils's files and directories to the `root` user.

D. Since the uid associated with the `basil` user no longer exists all basils's files and directories will no longer be accessible.

E. There is not enough information to answer this question.

62.   True or False. The `usermod` command can only be used to change a user's groupid to a group that does NOT currently exist.

A. True

B. False

63. Assume that you are in the root account and want to change the finger information for a user with the username `caterina`. You want to set the full name to Jane Bond, the office location to Tampa, the first phone number to 1234 and the second phone number to 007. Without using `vipw` or `chfn` what would you type to accomplish this?

64.   True or False. With the exception of `-l` the `usermod` command uses the same options for modifying user accounts settings as the `useradd` command. That is, the options for changing the uid, gecos field, home directory and default shell are the same for both commands.

A. True

B. False

65.   True or False. Only the root account should be assigned the uid of 1, as this is what differentiates the root account from other accounts and allows it to do anything.

A. True

B. False

66.   True or False. Only the root account should be assigned the uid of 0, as this is what differentiates the root account from other accounts and allows it to do anything.

A. True

B. False

67.   What uid is associated with the root account?

A. 0

B. 1

C. 100

D. Any uid will work, as long as the username for the account is root.

68. Which of the following commands displays the `useradd` command default settings?
    A. `useradd -D`
    B. `useradd -d`
    C. `useradd -list`
    D. `userdefault`
    E. `userdefault -D`
    F. `usermod`
    G. `usermod -D`
    H. None of the above

69. Assume that you are in the root account and want to change the default settings for creating new users so that the default shell is set to `/bin/tcsh`. Using `useradd`, what would you type to accomplish this? You can assume that `tcsh` has been installed. Use the single letter for the command options. For example –h instead of –help.

70. Assume that you are in the root account and want to change the default settings for creating new users so that the default shell is set to `/bin/ksh`. Using `useradd`, what would you type to accomplish this? You can assume that `ksh` has been installed on the system. Use the single letter for the command options. For example –h instead of –help.

71. What is the name of the file that holds the default settings used by `useradd`? Type the entire path starting with a /

Hands- On Exercises

The following exercises have been designed to provide you with experience applying what you've learned. Each exercise requires you to do some hands-on work and take screenshots to demonstrate that you were able to successfully complete each process. The hands-on exercises are in a separate assignment in Canvas to make it easier for you to go through the homework in Canvas more than once. That is, if all the exercises were in the same Canvas assignment you would have to upload your screenshots every time you completed the homework in Canvas. Separating the hands on exercises means you only have to submit your screenshots once.

Note 1

You must upload the screenshots and files for these tasks into the Canvas assignment labelled **Homework 2 – Hands-On Portion** to receive credit.

Note 2

Save all your screenshots to a **SINGLE** file, such as a word document, ensuring that each exercise number is also included. If you do not complete one of the hands-on exercises include the exercise and the text **NOT COMPLETED**.

Note 3

There will only be one question in Canvas that allows you to upload a file. Hopefully it's obvious that you should upload the file with all the screenshots to the single question that allows you to upload a file.

1. (5 points) 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 `yournameMin` where `yourname` is your first and last names. For example, my hostname would be `tonysakoMin` When the Linux VM boots run the `hostname` command and take a screen shot to demonstrate that the hostname has been set correctly.

   - Verify that the network is up and running. Run the `ip add` command and do a screen shot.

   - Set a port forwarding rule in Virtual Box Manager to allow ssh connections to the VM. Create a screen shot showing the port forwarding rule(s).

   - Use putty on the host computer to make an ssh connection to the Linux VM. Make a screen shot showing the putty settings before connecting. That is, show the IP address and port you are connecting to. Make a screen shot showing the putty window after you have successfully logged in to the Linux VM.

2. (5 points) Create a new CentOS virtual machine in Oracle VirtualBox that meets the following specifications:

   - Choose the Gnome Desktop during the Software Selection portion of the install.

   - During the installation change the hostname to `yournameGnome` where `yourname` is your first and last names. For example, my hostname would be `tonysakoGnome` When the Linux VM boots run the `hostname` command and take a screen shot to demonstrate that the hostname has been set correctly.

   - Install Guest Additions and enable Shared Folders. You can Automount the shared folder if you want. Add a file named **caring.txt** to the shared folder in Windows with the content:
       Name: Put your name here
       I love Linux
       Sharing is caring

     On the Windows host, make a screen shot showing the contents of the shared folder. On the Linux server, move to the shared folder. Run the `ls` command and make a screen shot showing the content of the shared folder. Run either the `more` or `cat` command and make another screen shot showing the result of the command, which should be the text in the file.

3. (8.6 points) 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 `yournameServer` where `yourname` is your first and last names. For example, my hostname would be `tonysakoServer` 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 `hwN` where `N` starts at 1 and ends at 20. For example, the first username would be `hw1`, the second username would be `hw2`,

and the last username would be `hw20`. 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 users accounts to meet the following specifications:

  a. Passwords must be changed at least every 180 days.
  b. There must be at least 14 days between password changes.
  c. Passwords must be at least 10 characters in length.
  d. Users should be notified that their passwords are going to expire starting 10 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 `tcshUserN` where `N` starts at 1 and ends at 10. For example, the first username would be `tcshUser1`, the second username would be `tcshUser2`, and the last username would be `tcshUser10`. 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`.