# Week 7 Linux Projects - Chapter 5 Linux Filesystem Administration

Activities

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**How to Create Screenshots:** Please use the Windows Snip and Sketch Tool or the Snipping Tool. Paste a screenshot of just the program you are working on. If you are snipping a virtual machine, make sure your focus is outside the virtual machine before you snip.

1. Press and hold down the **Windows key** & **Shift**, then type **S.** This brings up the on-screen snipping tool.
2. Click and Drag your mouse around whatever you want to snip.
3. Release the mouse button. This places the snip into the Windows Clipboard.
4. Go into Word or wherever you want to paste the snip. Hold down **CTRL**, then type **V** to paste the snip.

# Figure It Out

There will be times in any assignment where you may miss a step or the instructions are not quite correct or as clear as they could be. Research and figure out what is needed to complete the assignment. Explain what you did and why. I am looking for evidence of understanding. Directions in IT are not always complete or accurate. They need interpretation and research. Take the concepts of that we are learning and figure out an answer.

## Update Kali Linux

In Kali Linux in the terminal.

|  |
| --- |
| sudo apt update  sudo apt dist-upgrade -y |

# Project 5-1: View and Create Device Files

Time required: 20 minutes

In this hands-on project, you view and create device files.

1. Boot and logon to your Linux virtual machine as **user** using **tty6**
2. Type **ls –l /dev/tty6** Press **Enter**.
3. What device does **/dev/tty6** represent?

Click or tap here to enter text.

1. Is this file a block or character device file? Why?

Click or tap here to enter text.

1. What are the major and minor numbers for this file?

Click or tap here to enter text.

1. Type **sudo rm –f /dev/tty6** Press **Enter**.
2. Type **ls –l /dev/tty6** Press **Enter**.
3. Was the file removed successfully?

Click or tap here to enter text.

1. Switch to the command-line terminal (tty6) by pressing **Ctrl+Alt+F6** and attempt to log in to the terminal as **root.**
2. Were you successful?

Click or tap here to enter text.

1. Switch back to the command-line terminal (tty5) by pressing **Ctrl+Alt+F5**,
2. Type the command **sudo mknod /dev/tty6 c 4 6** at the command prompt, and press **Enter**.
3. What did this command do?

Click or tap here to enter text.

1. Type **ls –l /dev/tty6** Press **Enter**.
2. Was the file re-created successfully?

Click or tap here to enter text.

1. Type **reboot** Press **Enter**.
2. After your Linux system has loaded, switch to a command-line terminal (tty6) by pressing **Ctrl+Alt+F6** and log in to the terminal using the username of **user**
3. Why were you successful?

Click or tap here to enter text.

1. Type **ls –l /dev/tty?** Press **Enter**.
2. What is similar about these files?

Click or tap here to enter text.

1. Is the major number different for each file?

Click or tap here to enter text.

1. Is the minor number different for each file? Why?

Click or tap here to enter text.

1. Type **find /dev** Press **Enter** to list all the filenames underneath the /dev directory.
2. Are there many files?

Click or tap here to enter text.

1. Type **du –s /dev** Press **Enter**.
2. How large in kilobytes are all files within the /dev directory? Why?

Click or tap here to enter text.

1. Type **cat /proc/devices | more** Press **Enter**.
2. Which devices and major numbers are present on your system?

Click or tap here to enter text.

1. What character devices have a major number of 4?

Click or tap here to enter text.

1. How does this compare with what you observed at the beginning of this lab?

Click or tap here to enter text.

1. Type **exit** Press **Enter** to log out of your shell.

# Project 5-3: Hard Disk Partitions

Time required: 30 minutes

In this hands-on project, you work with standard hard disk partitions. You will first create a hard disk partition using the fdisk utility. Next, you create an ext4 filesystem on the partition and mount it to the directory tree. Finally, you use the /etc/fstab file to automatically mount the partition at boot time.

1. Add a second hard drive to your Kali Linux VM. You may have to research how to do this.
2. Switch to a command-line terminal (tty5) by pressing **Ctrl+Alt+F5**.
3. At the command prompt, type **lsblk** and press **Enter**.
4. What block device holds the partitions that you created during installation?

Click or tap here to enter text.

1. At the command prompt, type **sudo fdisk /dev/sdb**. sdb is the second hard drive.
2. At the fdisk prompt, type **m** and press **Enter** to view the various fdisk commands.
3. At the fdisk prompt, type **p** and press **Enter** to view the partition table on your hard disk.
4. Are there any partitions present?

Click or tap here to enter text.

1. Insert a screenshot.

Click or tap here to enter text.

1. At the fdisk prompt, type **n** and press **Enter** to create a new partition.
2. Type **e** to select an extended partition and press **Enter**.
3. When prompted for the start sector, observe the valid range within the brackets and press **Enter** to select the default (the first available sector).
4. When prompted for the end cylinder, observe the valid range within the brackets and press **Enter** to select the default (the last available sector).
5. At the fdisk prompt, type **p** and press **Enter** to view the partition table on your hard disk.
6. How many partitions are present? What type of partition is /dev/sdb1?

Click or tap here to enter text.

1. At the fdisk prompt, type **l** and press **Enter** to view the different partition types.
2. What type is used for Linux swap?

Click or tap here to enter text.

1. Which character would you type at the fdisk prompt to change the type of partition?

Click or tap here to enter text.

1. At the fdisk prompt, type **w** and press **Enter** to save the changes to the hard disk and exit the fdisk utility.
2. At the command prompt, type **reboot** and press **Enter** to reboot your machine and ensure that the partition table was read into memory correctly.
3. At the command prompt, type **mkfs –t ext4 /dev/sdb1** and press **Enter** to format the first logical drive on your first hard disk with the ext4 filesystem.
4. At the command prompt, type **mkdir /newmount** and press **Enter** to create a mount point directory underneath the / directory for mounting the third partition on your first hard disk.
5. At the command prompt, type **mount –t ext4 /dev/sdb1 /newmount** and press Enter. This will mount the filesystem on your first logical drive in the extended partition to the /newmount directory.
6. Type the **mount** command and press **Enter** to verify that the filesystem was mounted correctly.
7. Insert a screenshot.

Click or tap here to enter text.

1. At the command prompt, type **ls –F /newmount** and press **Enter**.
2. Is the lost+found directory present?

Click or tap here to enter text.

1. Type **cp /etc/hosts /newmount** at the command prompt and press **Enter** to copy the hosts file to the new partition. Verify that the copy was successful by typing the **ls –F /newmount** command at the command prompt again, and press **Enter**.
2. Insert a screenshot.

Click or tap here to enter text.

1. At the command prompt, type **umount /newmount** and press **Enter**. Next, type the **mount** command and press **Enter** to verify that the filesystem was unmounted correctly.
2. At the command prompt, type **vi /etc/fstab** and press **Enter**. Observe the contents of the file. Add a line to the bottom of the file as shown below.  
     
   **/dev/sdb1 /newmount ext4 defaults 0 0**
3. Save your changes and quit the vi editor.
4. At the command prompt, type **reboot** and press **Enter**. After your Linux system has been loaded, logon as user.
5. At the command prompt, type **mount** and press **Enter**.
6. Is your new filesystem mounted? Why?

Click or tap here to enter text.

1. At the command prompt, type **umount /newmount** and press **Enter**. Next, type the **mount** command to verify that the filesystem was unmounted correctly.
2. At the command prompt, type **mount -a** and press **Enter**. Next, type the **mount** command and press **Enter**.
3. Is the third partition on your hard disk mounted? Why?

Click or tap here to enter text.

1. Type **exit** and press **Enter** to log out of your shell.

## Assignment Submission

Submit this completed document in Blackboard.