

Project : 30%

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| **Course Identification** | |
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| **Name of program – Code:** | **NETWORK MANAGEMENT AND SECURITY (420.BR)** |
| **Course title:** | **Advanced Administration of an Open Source Operating System** |
| **Course number:** | **420-AV3-AS** |
| **Group:** | **07122** |
| **Teacher’s name:** | **Abdelhak Fennouh** |
| **Deadline:** | **Monday Dec 6th** |
| **Semester:** | **F2021** |
| **Student Identification** | |
| Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Student number: \_\_\_\_\_\_\_\_\_\_\_\_\_\_  Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Result: \_\_\_\_\_\_\_\_\_\_\_\_\_\_  I declare that this is an original work, and that I credited all content sources of which I am not the author (online and printed, images, graphics, films, etc.), in the required quotation and citation style for this work. | |
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**NB: Keep in a Word document a record of all the commands you have used to execute the different tasks of the project**

**Project specifications**

The software and hardware requirements for these project include the following:

* The ISO image for Fedora 28 live media (Fedora-Workstation-Live-x86\_64-28-1.1.iso) to download from : https://archives.fedoraproject.org/pub/archive/fedora/linux/releases/28/Workstation/x86\_64/iso/

1. Install Fedora 28 Linux within a virtual machine called Fedora Linux that has the following characteristics:

* 4GB of memory
* An Internet connection via your PC’s network card (preferably using NAT virtual switch or bridge virtual switch)
* A 50GB SATA/SCSI/SAS virtual hard disk (dynamically allocated)
* The virtual machine DVD drive attached to the ISO file for Fedora 28 live media (Fedora-Workstation-Live-x86\_64-28-1.1.iso)
* Storage Configuration: Automatic partitioning
* User and root password: 123456
* Update your Fedora 28 Linux installation

1. Add a second hard drive of 10GB to your virtual machine
2. On the second HDD (/dev/sdb), create the following partitions:
   1. A 2GB primary partition (sdb1)
   2. A 8GB extended partition (sdb2)
   3. Two logical drives of 1GB each (sdb3 and sdb4)
3. Create an ext4 filesystem on the /dev/sdb1 partition
4. Mount /dev/sdb1 partition to a new mount point directory called /partition1
5. Create an ext2 filesystem on the /dev/sdb3 partition
6. Allow the system to mount the /dev/sdb3 partition automatically at every boot
7. Prepare and activate the /dev/sdb4 partition as virtual memory.
8. Use the free remaining space on /dev/sdb to create 2 LV (logical volumes) using the following information:
   1. PV (Physical Volume) name: /dev/sdb5
   2. VG (Volume Group) name: VG1
   3. LV (Logical Volume) name: data1 and size: 1GB
   4. LV (Logical Volume) name: data2 and size: 2GB
9. Create an ext4 filesystem on data1 LV device and mount it to a new mount point directory called /lv1
10. Create an ext4 filesystem on data2 LV device and mount it to a new mount point directory called /lv2
11. Use the CUPS Web administration tool to accomplish the following tasks:
12. Add a new local printer on Serial Port #1 and use the following info:
    1. Name: HP\_LaserJet\_5000
    2. Description: HP LaserJet
    3. Location: Room 3304
    4. Sharing: Share this Printer
    5. Model: HP LaserJet 5000 Series pcl3
    6. Set the HP\_LaserJet\_5000 as the default printer
13. In order to access CUPS remotely or print to your shared IPP printers, you must allow the ports for the HTTP (TCP port 80), HTTPS (TCP port 443), and IPP (TCP port 631) protocols in the firewall that is enabled by default in Fedora. Run the following commands to enable those ports:

# firewall-cmd --add-service http  
# firewall-cmd --add-service https  
# firewall-cmd --add-service ipp

* For the C and D tasks, you need a Windows 10 Professional or Enterprise virtual machine.
* You can download a Windows 10 Enterprise Virtual machine from the following URL: https://developer.microsoft.com/en-us/microsoft-edge/tools/vms/

1. Use the ifconfig command to determine the IP address of your Fedora Linux virtual machine. Following this, access the CUPS administration website using the Web browser on your Windows 10 host computer (URL: <http://Fedora_IP>\_address:631).
2. Finally, add a new printer within Control Panel on your Windows 10 host computer that prints to the URL http://Fedora\_IP\_address:631/printers/ HP\_LaserJet\_5000.  
   Print to this new printer from a Windows program of your choice and verify that the job was submitted to the printer1 print queue using the lpstat –t command on your Fedora Linux virtual machine.
3. Create a user with a login name of wjones.
4. Create a user with a login name of wjenkins
5. Create a user with a login name of bsmith.
6. Create a user with a login name of tbanks
7. Create a group with the name managers
8. Create a user with a login name of bsmith, a UID of 733, a GECOS field entry of “accounting manager,” and a password of Gxj234.
9. Change the properties of the existing user wjones such that the user has a new comment field of “shipping” and an account expiry of March 23, 2032
10. Lock the account of wjenkins
11. Change the password of bsmith to We34Rt
12. Change the properties of the existing user tbanks such that the user is a member of the managers group and has a login name of artbanks
13. Write the command that can be used to perform the following:
14. Compress the symbolic link /root/sfile using the compress utility and display the compression ratio.
15. Compress the contents of the directory /root/dir1 using the gzip utility and display the compression ratio.
16. View the contents of the file /root/letter.zip.
17. Compress the file /root/letter using xz fast compression.
18. Find the compression ratio of the file /root/letter.gz.
19. Perform a test compression of the file /root/sample using the bzip2 utility.
20. Compress the file /root/sample using the bzip2 utility while minimizing memory usage during the compression
21. Back up the contents of the /etc directory (Including sub-directories and symbolically linked files) to the /root/etc.tar file using the tar utility.
22. Append the file /root/anaconda-ks.cfg to the archive created in 24.
23. Create a tarball called /root/stuff.tar.gz that contains all files in the /home directory.
24. Use the cpio utility to back up all files in the /etc directory (which contains symbolically linked files) to the /root/etc.cpio file.
25. Copy the content of the /etc directory (Including sub-directories) to the /dev/sdb1 partition
26. Perform a full filesystem backup of the /dev/sdb1 filesystem in the archive file /root/sdb1.dump using the dump utility and record the event in the /etc/dumpdates file.
27. Create an image of the /dev/sdb4 filesystem to the /root/sdb4.img file.
28. Download the source code for the sneakers and nms (no-more-secrets) programs depicted in the movie Sneakers (1992) from <https://github.com/bartobri/no-more-secrets> and unzip it.
29. Next, change to the repository directory to view the contents. Is there a README file?  
    View the contents of the README.md file to learn how the developer intended for these programs to be compiled and used. Follow the instructions in the README.md file to compile your programs. When finished, execute the programs within your terminal to test them
30. Describe what would happen if you changed the default runlevel/target on your system to runlevel 6 or reboot.target
31. Write the lines that you could use in your user cron table to schedule the **/bin/myscript** command to run:
32. Every Wednesday afternoon at 2:15 PM
33. Every hour on the hour every day of the week
34. Every 15 minutes on the first of every month
35. Only on February 25th at 6:00 PM
36. On the first Monday of every month at 12:10 PM
37. For each question, write the command you used to obtain the answer. If there are multiple commands that can be used to obtain the answer, list all of the commands available.
38. What are the total number of inodes in the root filesystem? How many are currently utilized? How many are available for use?
39. What filesystems are currently mounted on your system?
40. What filesystems are available to be mounted on your system?
41. What filesystems will be automatically mounted at boot time?