**EASTERN INTERNATIONAL UNIVERSITY** **Practice Assignment – Quarter 2, 2024-2025**

**SCHOOL OF COMPUTING Course Name:** Special Topic 1

**AND INFORMATION TECHNOLOGY** **Course Code:** CSE 484

🙙🕮🙛 **Student’s Full Name: Hà Quang Minh**

**Student ID: 1931220012**

**Lab 1**

**Background / Scenario**

A Linux environment and commands are essential for network automation due to their widespread use in networking tools and infrastructures. Linux supports powerful command-line tools like ssh, grep, and awk, enabling efficient network management and troubleshooting. Its compatibility with scripting languages such as Python and Bash allows for automating repetitive tasks and configuring devices. Many network automation frameworks, like Ansible and Netmiko, run natively on Linux. Additionally, Linux provides robust networking features, supports DevOps practices like containerization, and serves as the backbone for open-source tools. Mastering Linux is crucial for developing and executing effective automation workflows in modern networks.

In this lab, you review basic Linux skills including command navigation, file management, regular expressions, and system administration.

**Required Resources**

* 1 PC with operating system of your choice
* Virtual Box or VMWare
* DEVASC Virtual Machine

**Instructions**

**Part 1: Launch the DEVASC VM**

Launch the DEVASC VM that you already have in Part 1. If you have not already done Part 1, please do so.

**Part 2: Review Command Syntax Navigation**

In this part, you will use the **ls**, **pwd**, **cd**, and **sudo** commands to review basic command syntax navigation.

**Step 1: Open a terminal in the DEVASC-LABVM.**

1. Double-click the Terminal Emulator icon on the desktop to open a terminal window.

**Step 2:Exploring or reviewing Linux commands**

This step requires you to run some commands and capture the results of those commands.

|  |  |
| --- | --- |
| **Commands/Requirements** | **Images showing the results** (Student run the commands, capture the result and paste into this column) **or answers for questions** |
| **Navigate directories** | |
| Use the **ls** command to display a listing of the current directory. Remember that commands are case-sensitive. |  |
| Use the **ls** command with the **labs** argument to display the contents of the labs folder. |  |
| Use the **ls** command with the **-l** option to display a "long display" of the contents of the current directory. |  |
| Multiple options can be used at the same time. Use the **ls** command with both the **-l** and **-r** options to display the contents of the current directory both in long and reverse order. |  |
| Use the **man** command with the argument **ls** to see all the possibilities in the manual. |  |
| Use the **pwd** command to display the current working directory. |  |
| Use the **cd** command to change the directory to /home/devasc/Documents |  |
| Use the **cd** command with the **/** symbol to change directories to the root directory. Use **pwd** again to see that you are now in the root directory. |  |
| Return to the **/home/devasc/Documents** directory |  |
| **Use super user commands for administrative access** | |
| Run apt-get update | (Capture the result and explain) |
| Use the **sudo** command to issue a single command as the root user. A new terminal will not be created.  Use the **sudo apt-get update** command to update to refresh the list of available packages installed on the VM. |  |
| **Review File Management** | |
| Use the **ls Desktop -l** to display the contents of the Desktop folder |  |
| Use the command **cd** to change to the Documents directory. |  |
| Use the command **echo** to create a shell script file, that will have the command **ls ../Desktop** inside the file. Remember that the greater than (>) character redirects command output to a file.  **echo "ls ../Desktop" > myfile.sh** |  |
| The **myfile.sh** script is stored in the **/Documents** directory. Use the **cat** command to view the only  command in the script. This file will be used as an example to modify permissions and ownership. |  |
| Use the command **./myfile.sh** to run the script. Access is denied because you must set the permission of executable on the file. |  |
| Use the command **ls -l myfile.sh** to view the current file permissions. |  |
| Find the way to execute the **myfile.sh** script | Note your answer here |
| Use the command **mv** to move the myfile.sh file to the desktop. |  |
| Display the contents of the **Desktop** folder. |  |
| Return the file to the **Documents** folder. |  |
| Use the command **cp** to make a copy of the **myfile\_renamed.sh** file. |  |
| Use the **rm** command to remove the **myfile\_renamed\_and\_copied.sh** file. |  |
| Use the redirect (>) to place text into a new file called **linux.txt**.  devasc@labvm:~$ echo "Linux is AWESOME!" > linux.txt  devasc@labvm:~$ |  |
| Use the command **cat** to redirect the contents of linux.txt to another file (**linux2.txt**). |  |
| Use the **echo** command to append text to the **linux2.txt** file. |  |
| Use the **cat** command to view the contents of the **linux2.txt** file. |  |
| Use the **echo** command to overwrite the contents of the **linux.txt** file using the single angle bracket (>). |  |
| Use the **cat** command to view the contents of the **linux.txt** file |  |
| **Use the vi text editor** | |
| Use the following command to start the **vi** text editor and open a text file.  devasc@labvm:~$ vi linux2.txt | |
| Use the text editor to change the content to the following:  Linux is Linux  I am AWESOME! | |
| Save the text to a new file called "linux3.txt". | |
| Use the cat command to view the contents of the linux3.txt file. |  |
| **Review Regular Expressions** | |
| Use the **grep** command to filter the contents of the **passwd** file to display the line from the **passwd** file containing **devasc**  devasc@labvm:~$ grep devasc /etc/passwd |  |
| Use the **grep** command to show how many times **root** appears in the **passwd** file |  |
| Use the **grep** command with the anchor character **^** to find the word, but only at the beginning of the line.  devasc@labvm:~$ grep '^root' /etc/passwd |  |
| Use the grep command with the anchor character $ to find a word at the end of a line.  devasc@labvm:~$ grep 'false$' /etc/passwd |  |
| Use the **grep** command with the anchor character **.** to match specific length words with different letters in them.  devasc@labvm:~$ grep 'd..m' /etc/passwd |  |
| Use the **grep** command to find lines where only the numbers 8 or 9 are present. Notice that only the lines containing an 8, a 9, or both are returned.  devasc@labvm:~$ grep '[8-9]' /etc/passwd |  |
| Use the grep command to find literal characters. Notice that only the lines containing a comma are  returned.  devasc@labvm:~$ grep '[,]' /etc/passwd |  |
| Use the **grep** command to find occurrences of zero or more of the patterns preceding it. Notice that only the lines with either new or ne are returned  devasc@labvm:~$ grep 'new\*' /etc/passwd |  |
| **Review System Administration** | |
| Use the command **shutdown now** to initiate a shutdown of the OS (and the VM) immediately | |
| Use the command **date** to check set date of the OS. |  |
| Use the command **shutdown +1 "Come back soon!"** to shut down the OS in 1 minute and display the message "Come back soon!". Be sure to cancel or your VM will shut down. | |
| Use the **ip address** command to display the network configuration |  |
| Use the command **ping** with the options **-c 4** to ping a computer on your local network four times. Student can configure the VM so that it can ping to the host computer. |  |
| You can also **ping** a name and Domain Name System (DNS) will resolve the name to an IP address. |  |
| Use the **ps** command to display the processes that are running in the current terminal. |  |
| Use the **ps** with the **-e** option to display all the processes that are running on the computer. |  |
| You can pipe any command output to one screen at a time by adding **| more** |  |
| **Manage packages.** | |
| Use the command **apt-get update** to refresh the list of available packages in the OS, as shown  previously in Part 1 of this lab. You must use administrative level permissions to use this command. |  |
| Use the command **apt-cache search** to find a specific package. |  |
| Use the command **apt-get install** to install a package (speedtest-cli). |  |
| Now you can use the **speedtest-cli** command to test your current Internet connection speed. |  |
| Use the command **apt-get upgrade** to update all packages and dependencies on the computer. |  |
| Use the command **apt-get purge** to completely remove a package (speedtest-cli) from the computer. |  |
| **Update Passwords** | |
| Use the command passwd to update your password.  **Note**: If you change the password for your devasc user, make sure you remember it. |  |
| Use the command **passwd** with the option **-S** to view the status of your password. |  |
| Use the manual pages for the passwd command (**man passwd**) to research the **-S** option and find the  answer the following questions. | |
| What is the current status of the password? | P — Password is active |
| What is the minimum number of days that must pass before the password can be changed? | 0 days |
| What is the number of days after password expiration that the account remains active? | -1 |

***LAB 1.3***

A screenshot of a computer

Description automatically generated

A computer screen shot of a black screen

Description automatically generated

A screenshot of a computer program

Description automatically generated

A screenshot of a computer program

Description automatically generated

A computer screen shot of a computer

Description automatically generated

A computer screen shot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

User : cisco

Pass : cisco123!

A screenshot of a computer

Description automatically generated

**Submit: Must include:**

* a **pdf** report file containing your information (student id, name), and images of the diagrams, codes, answers, evident,…
* and all source **code files** (if any)

in a **zipped** (.zip or \*.rar) file to Moodle