

**SCHOOL OF COMPUTING
AND INFORMATION TECHNOLOGY****Lab 1****Course Name:** Special Topic 1**Course Code:** CSE 484**Student's Full Name:** Hà Quang Minh**Student ID:** 1931220012**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

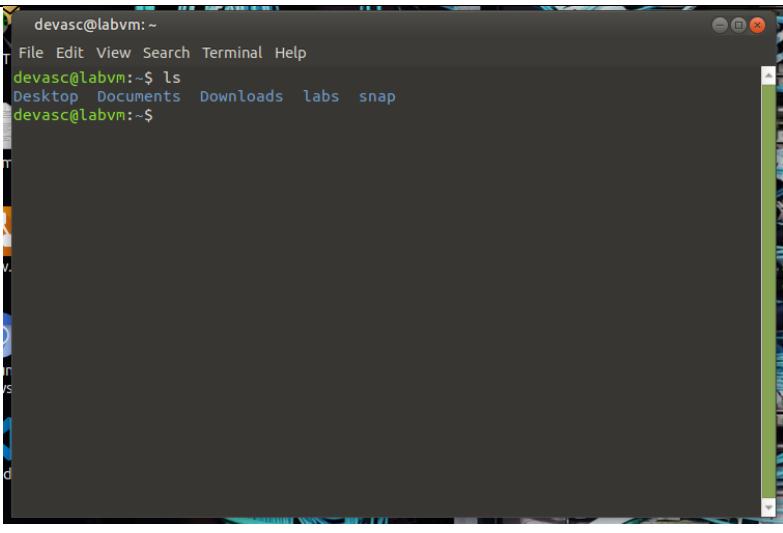
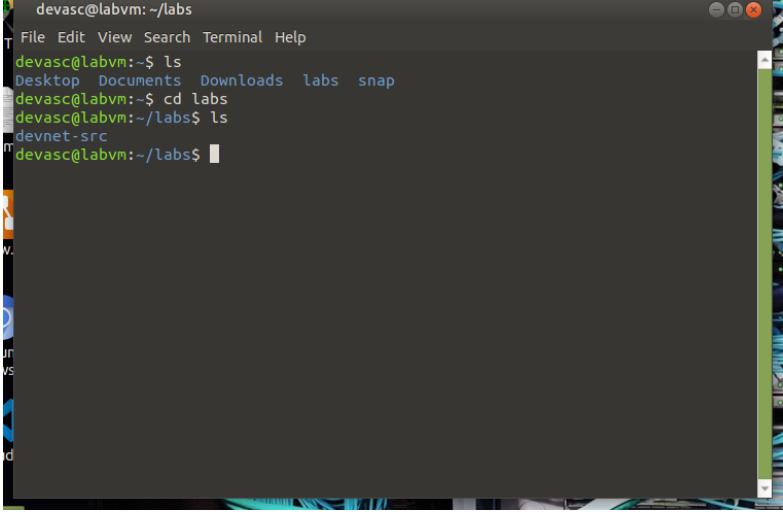
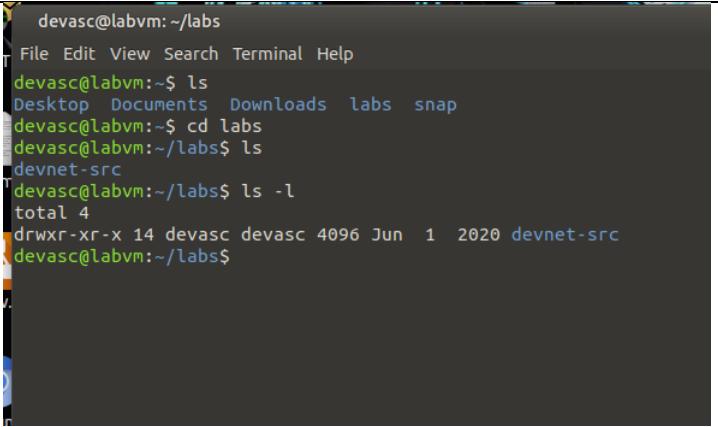
In this part, you will use the **ls**, **pwd**, **cd**, and **sudo** commands to review basic command syntax navigation.

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

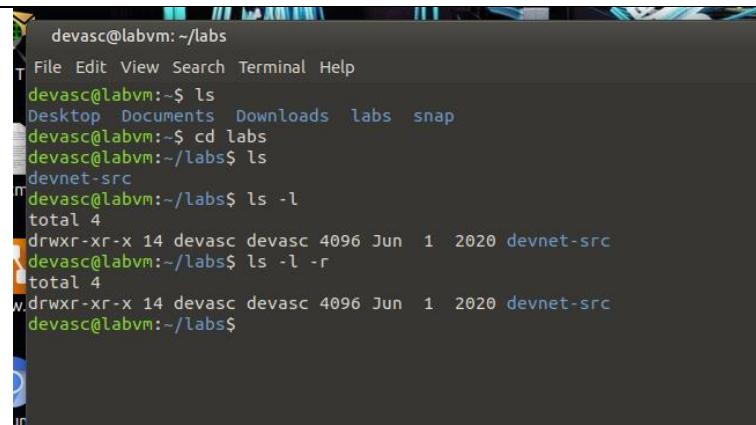
- a. Double-click the Terminal Emulator icon on the desktop to open a terminal window.

Step 2: Exploring or reviewing Linux commands

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

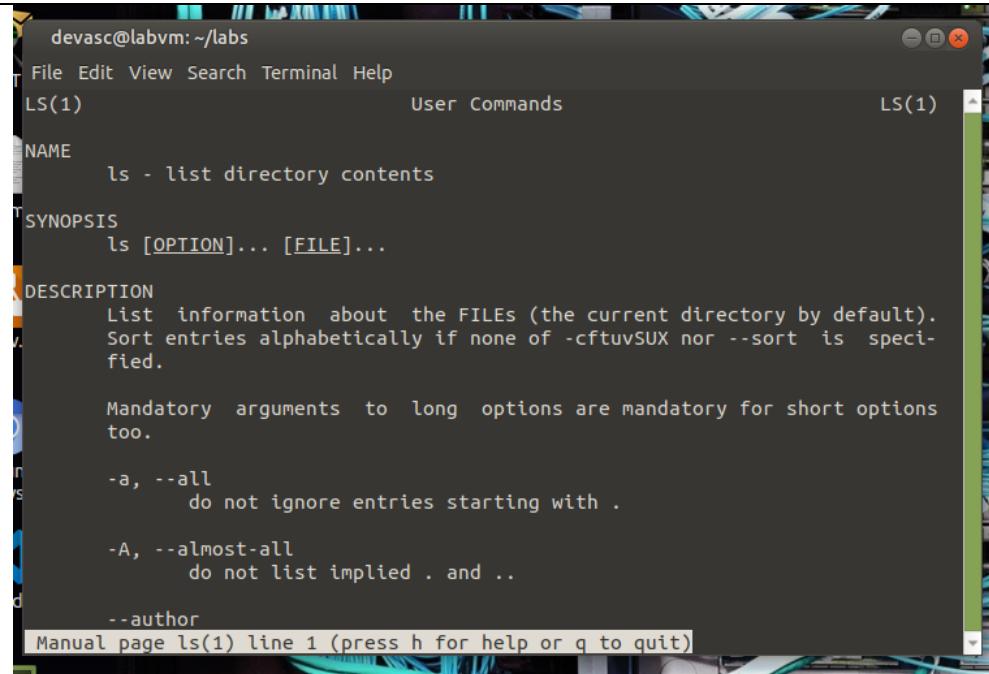
Commands/Requirements	Images showing the results (Student run the commands, capture the result and paste into this column) or answers for questions
Navigate directories	
<p>Use the ls command to display a listing of the current directory.</p> <p>Remember that commands are case-sensitive.</p>	 <pre>devasc@labvm:~\$ ls Desktop Documents Downloads labs snap devasc@labvm:~\$</pre>
<p>Use the ls command with the labs argument to display the contents of the labs folder.</p>	 <pre>devasc@labvm:~/labs devasc@labvm:~\$ ls Desktop Documents Downloads labs snap devasc@labvm:~\$ cd labs devasc@labvm:~/labs\$ ls devnet-src devasc@labvm:~/labs\$</pre>
<p>Use the ls command with the -l option to display a "long display" of the contents of the current directory.</p>	 <pre>devasc@labvm:~/labs devasc@labvm:~\$ ls Desktop Documents Downloads labs snap devasc@labvm:~\$ cd labs devasc@labvm:~/labs\$ ls devnet-src devasc@labvm:~/labs\$ ls -l total 4 drwxr-xr-x 14 devasc devasc 4096 Jun 1 2020 devnet-src devasc@labvm:~/labs\$</pre>

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.



```
devasc@labvm:~/labs
File Edit View Search Terminal Help
devasc@labvm:~$ ls
Desktop Documents Downloads labs snap
devasc@labvm:~$ cd labs
devasc@labvm:~/labs$ ls
devnet-src
devasc@labvm:~/labs$ ls -l
total 4
drwxr-xr-x 14 devasc devasc 4096 Jun  1 2020 devnet-src
devasc@labvm:~/labs$ ls -l -r
total 4
w.drwxr-xr-x 14 devasc devasc 4096 Jun  1 2020 devnet-src
devasc@labvm:~/labs$
```

Use the **man** command with the argument **ls** to see all the possibilities in the manual.



```
devasc@labvm:~/labs
File Edit View Search Terminal Help
LS(1)                               User Commands                               LS(1)
NAME
    ls - list directory contents
SYNOPSIS
    ls [OPTION]... [FILE]...
DESCRIPTION
    List information about the FILEs (the current directory by default).
    Sort entries alphabetically if none of -cftuvSUX nor --sort is specified.

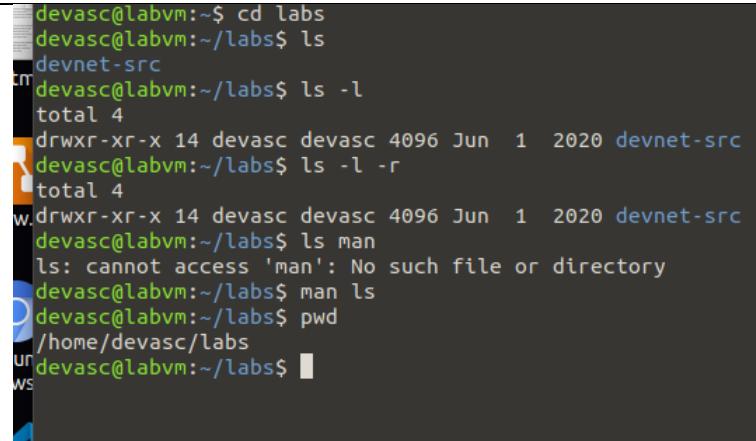
    Mandatory arguments to long options are mandatory for short options too.

    -a, --all
        do not ignore entries starting with .

    -A, --almost-all
        do not list implied . and ..

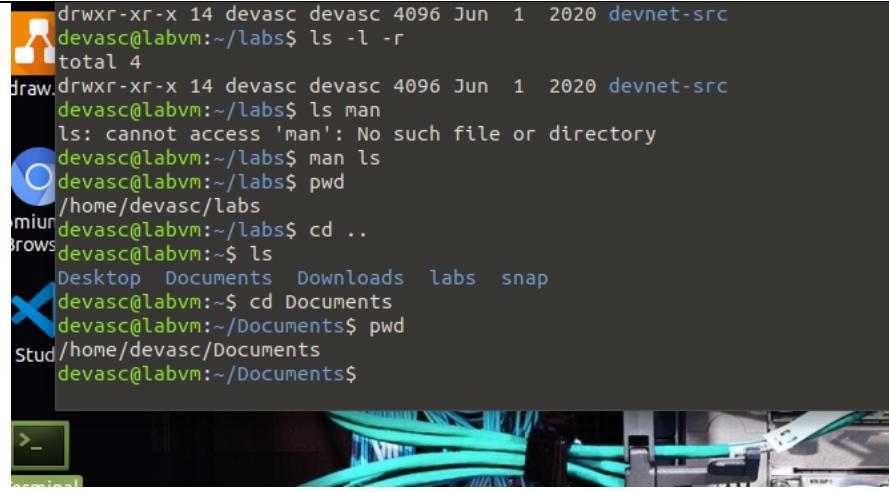
    --author
    Manual page ls(1) line 1 (press h for help or q to quit)
```

Use the **pwd** command to display the current working directory.



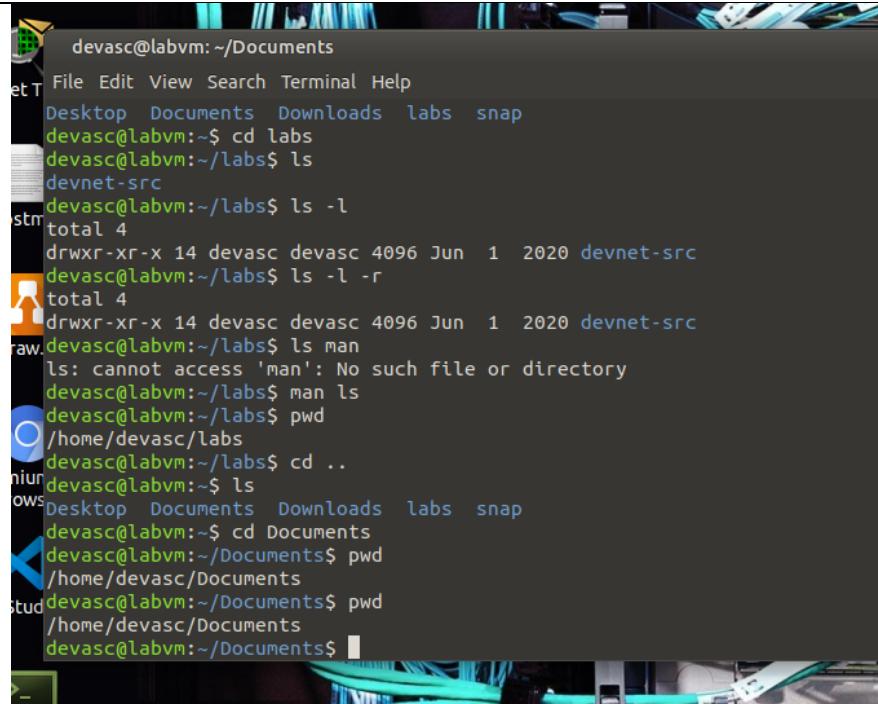
```
devasc@labvm:~$ cd labs
devasc@labvm:~/labs$ ls
devnet-src
devasc@labvm:~/labs$ ls -l
total 4
drwxr-xr-x 14 devasc devasc 4096 Jun  1 2020 devnet-src
devasc@labvm:~/labs$ ls -l -r
total 4
w.drwxr-xr-x 14 devasc devasc 4096 Jun  1 2020 devnet-src
devasc@labvm:~/labs$ man
ls: cannot access 'man': No such file or directory
devasc@labvm:~/labs$ man ls
devasc@labvm:~/labs$ pwd
/home/devasc/labs
devasc@labvm:~/labs$
```

Use the **cd** command to change the directory to /home/devasc/Documents



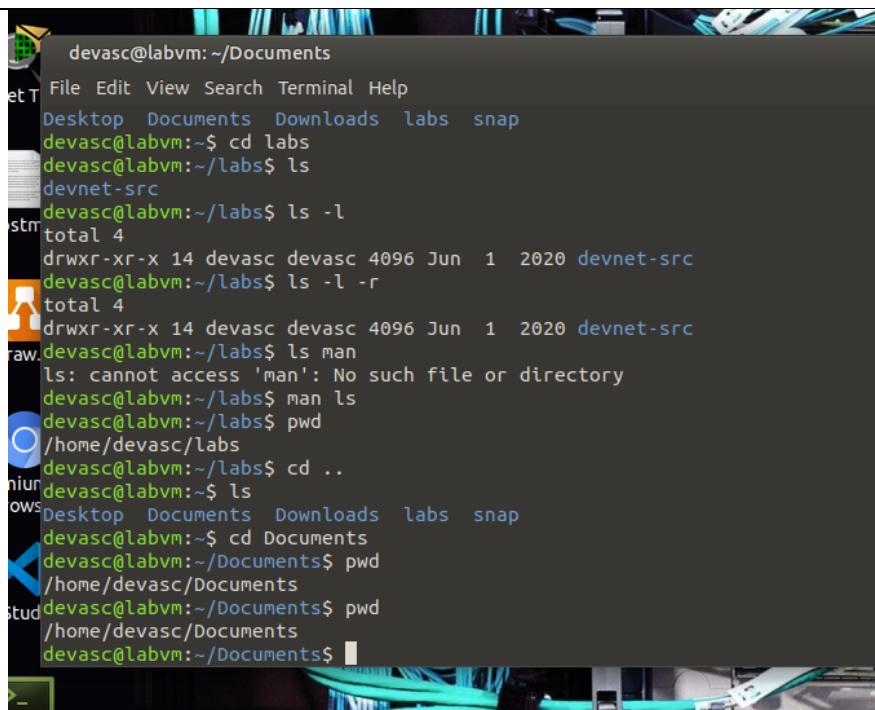
```
drwxr-xr-x 14 devasc devasc 4096 Jun  1  2020 devnet-src
devasc@labvm:~/labs$ ls -l -r
total 4
drwxr-xr-x 14 devasc devasc 4096 Jun  1  2020 devnet-src
devasc@labvm:~/labs$ ls man
ls: cannot access 'man': No such file or directory
devasc@labvm:~/labs$ man ls
devasc@labvm:~/labs$ pwd
/home/devasc/labs
miur
rows
draws
devasc@labvm:~/labs$ cd ..
devasc@labvm:~$ ls
Desktop Documents Downloads labs snap
devasc@labvm:~$ cd Documents
devasc@labvm:~/Documents$ pwd
Stud
/home/devasc/Documents
devasc@labvm:~/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.



```
File Edit View Search Terminal Help
Desktop Documents Downloads labs snap
devasc@labvm:~/Documents
devasc@labvm:~$ cd labs
devasc@labvm:~/labs$ ls
devnet-src
stn
stn
devasc@labvm:~/labs$ ls -l
total 4
drwxr-xr-x 14 devasc devasc 4096 Jun  1  2020 devnet-src
devasc@labvm:~/labs$ ls -l -r
total 4
drwxr-xr-x 14 devasc devasc 4096 Jun  1  2020 devnet-src
raw.devasc@labvm:~/labs$ ls man
ls: cannot access 'man': No such file or directory
devasc@labvm:~/labs$ man ls
devasc@labvm:~/labs$ pwd
/home/devasc/labs
miur
rows
draws
devasc@labvm:~/labs$ cd ..
devasc@labvm:~$ ls
Desktop Documents Downloads labs snap
devasc@labvm:~$ cd Documents
devasc@labvm:~/Documents$ pwd
/home/devasc/Documents
devasc@labvm:~/Documents$ pwd
/home/devasc/Documents
devasc@labvm:~/Documents$
```

Return to the
/home/devasc/Documents directory



```

devasc@labvm: ~/Documents
File Edit View Search Terminal Help
Desktop Documents Downloads labs snap
devasc@labvm:~$ cd labs
devasc@labvm:~/labs$ ls
devnet-src
devasc@labvm:~/labs$ ls -l
total 4
drwxr-xr-x 14 devasc devasc 4096 Jun  1  2020 devnet-src
drwxr-xr-x 14 devasc devasc 4096 Jun  1  2020 devnet-src
raw.devasc@labvm:~/labs$ ls -l -r
total 4
drwxr-xr-x 14 devasc devasc 4096 Jun  1  2020 devnet-src
raw.devasc@labvm:~/labs$ ls man
ls: cannot access 'man': No such file or directory
devasc@labvm:~/labs$ man ls
devasc@labvm:~/labs$ pwd
/home/devasc/labs
devasc@labvm:~/labs$ cd ..
devasc@labvm:~$ ls
Desktop Documents Downloads labs snap
devasc@labvm:~$ cd Documents
devasc@labvm:~/Documents$ pwd
/home/devasc/Documents
devasc@labvm:~/Documents$ pwd
/home/devasc/Documents
devasc@labvm:~/Documents$
```

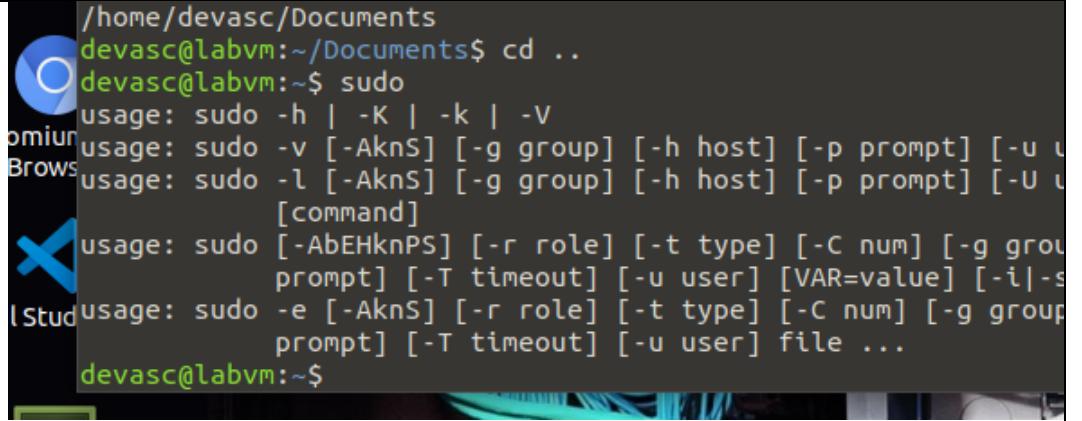
Use super user commands for administrative access

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.



```

/home/devasc/Documents
devasc@labvm:~/Documents$ cd ..
devasc@labvm:~$ sudo
usage: sudo -h | -K | -k | -V
usage: sudo -v [-AknS] [-g group] [-h host] [-p prompt] [-u user]
usage: sudo -l [-AknS] [-g group] [-h host] [-p prompt] [-U user]
      [-c command]
usage: sudo [-AbEHknPS] [-r role] [-t type] [-C num] [-g group]
            [-p prompt] [-T timeout] [-u user] [VAR=value] [-i|-s]
usage: sudo -e [-AknS] [-r role] [-t type] [-C num] [-g group]
            [-p prompt] [-T timeout] [-u user] file ...
devasc@labvm:~$
```

```

devasc@labvm:~$ 
File Edit View Search Terminal Help
usage: sudo [-AbEHknPS] [-r role] [-t type] [-C num] [-g group] [-h host]
            prompt] [-T timeout] [-u user] [VAR=value] [-i|-s] [<command>]
usage: sudo -e [-AknS] [-r role] [-t type] [-C num] [-g group] [-h host] [
            prompt] [-T timeout] [-u user] file ...
devasc@labvm:~$ sudo apt-get update
Err:1 http://security.ubuntu.com/ubuntu focal-security InRelease
      Temporary failure resolving 'security.ubuntu.com'
Err:2 http://archive.ubuntu.com/ubuntu focal InRelease
      Cannot initiate the connection to archive.ubuntu.com:80 (2620:2d:4000:1::
      - connect (101: Network is unreachable) Cannot initiate the connection to ar
      ve.ubuntu.com:80 (2620:2d:4000:1::16). - connect (101: Network is unreache
      annot initiate the connection to archive.ubuntu.com:80 (2620:2d:4002:1::10
      connect (101: Network is unreachable) Cannot initiate the connection to ar
      ubuntu.com:80 (2620:2d:4000:1::19). - connect (101: Network is unreachable
      ot initiate the connection to archive.ubuntu.com:80 (2620:2d:4000:1::102).
      nect (101: Network is unreachable) Cannot initiate the connection to archi
      ntu.com:80 (2620:2d:4002:1::102). - connect (101: Network is unreachable)
      s initiate the connection to archive.ubuntu.com:80 (2620:2d:4002:1::101). -
      ct (101: Network is unreachable) Cannot initiate the connection to archive
      u.com:80 (2620:2d:4000:1::103). - connect (101: Network is unreachable) Co
      t connect to archive.ubuntu.com:80 (91.189.91.82), connection timed out Co
      t connect to archive.ubuntu.com:80 (91.189.91.81), connection timed out Co
      t connect to archive.ubuntu.com:80 (91.189.91.83), connection timed out Co
      t connect to archive.ubuntu.com:80 (185.125.190.39), connection timed out

```

Review File Management

Use the **ls Desktop -l** to display the contents of the Desktop folder

```

devasc@labvm:~$ 
devasc@labvm:~$ 
devasc@labvm:~$ ls Desktop -l
total 36
-rwxr-xr-x 1 devasc devasc 1095 Jun 17 2020 chromium_chromium.desktop
-rwxr-xr-x 1 devasc devasc 228 Jun 17 2020 cisco-pt7.desktop
-rwxr-xr-x 1 devasc devasc 795 Jun 17 2020 code.desktop
-rwxrwxr-x 1 devasc devasc 319 Jul 21 2020 'DPI Scanling.desktop'
-rwxr-xr-x 1 devasc devasc 392 Jun 17 2020 drawio_drawio.desktop
-rwxr-xr-x 1 devasc devasc 99 Jun 17 2020 labs.desktop
-rwxr-xr-x 1 devasc devasc 284 Jun 17 2020 mate-keyboard.desktop
-rwxr-xr-x 1 devasc devasc 353 Jun 17 2020 postman_postman.desktop
-rwxr-xr-x 1 devasc devasc 254 Jun 17 2020 Terminal.desktop
devasc@labvm:~$ 

```

Use the command **cd** to change to the Documents directory.

```

chromium
Brows
al Stud
devasc@labvm:~$ 
devasc@labvm:~$ 
devasc@labvm:~$ ls
Desktop Documents Downloads labs snap
devasc@labvm:~$ cd Downloads
devasc@labvm:~/Downloads$ 

```

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.

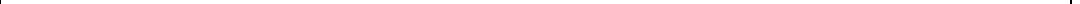
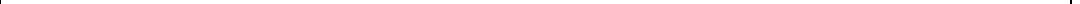
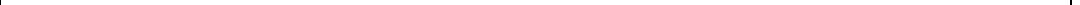
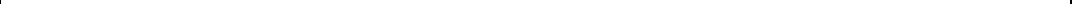
echo "ls ..Desktop" > myfile.sh

```
-rwxr-xr-x 1 devasc devasc 254 Jun 17 2020 Terminal  
devasc@labvm:~$  
devasc@labvm:~$  
devasc@labvm:~$ ls  
Desktop Documents Downloads labs snap  
devasc@labvm:~$ cd Downloads  
devasc@labvm:~/Downloads$ cd ..  
devasc@labvm:~$ echo "ls ..Desktop" > myfile.sh  
devasc@labvm:~$
```

```
devasc@labvm:~$  
devasc@labvm:~$  
devasc@labvm:~$ ls  
Desktop Documents Downloads labs snap  
devasc@labvm:~$ cd Downloads  
devasc@labvm:~/Downloads$ cd ..  
devasc@labvm:~$ echo "ls ..Desktop" > myfile.sh  
devasc@labvm:~$ cd Desktop  
devasc@labvm:~/Desktop$ ls  
chromium_chromium.desktop 'DPI Scanling.desktop' mate-keyboa  
cisco-pt7.desktop drawio_drawio.desktop postman_pos  
code.desktop labs.desktop Terminal.de  
devasc@labvm:~/Desktop$
```

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.

```
devasc@labvm:~$ ls  
Desktop Documents Downloads labs myfile.sh snap  
devasc@labvm:~$ cd Documents  
devasc@labvm:~/Documents$ ls  
devasc@labvm:~/Documents$ ls -l  
total 0  
devasc@labvm:~/Documents$ echo "ls ..Desktop" > myfile.sh  
devasc@labvm:~/Documents$ ls  
myfile.sh  
devasc@labvm:~/Documents$ cat myfile.sh  
ls ..Desktop  
devasc@labvm:~/Documents$
```

<p>Use the command ./myfile.sh to run the script. Access is denied because you must set the permission of executable on the file.</p>	<pre>myfile.sh devasc@labvm:~/Documents\$ cat myfile.sh ls/Desktop chromium_chromium.desktop 'DPI Scanling.desktop' mate-keyboard.desktop cisco-pt7.desktop drawio_drawio.desktop postman_postman.desktop code.desktop labs.desktop Terminal.desktop devasc@labvm:~/Documents\$</pre> 
<p>Use the command ls -l myfile.sh to view the current file permissions.</p>	<pre>myfile.sh chromium_chromium.desktop 'DPI Scanling.desktop' mate-keyboard.desktop cisco-pt7.desktop drawio_drawio.desktop postman_postman.desktop code.desktop labs.desktop Terminal.desktop devasc@labvm:~/Documents\$ ls -l myfile.sh -rwxrwxr-x 1 devasc devasc 14 Oct 18 08:59 myfile.sh devasc@labvm:~/Documents\$</pre> 
<p>Find the way to execute the myfile.sh script</p>	<p>Note your answer here</p> <pre>chromium_chromium.desktop 'DPI Scanling.desktop' mate-keyboard.desktop cisco-pt7.desktop drawio_drawio.desktop postman_postman.desktop code.desktop labs.desktop Terminal.desktop devasc@labvm:~/Documents\$ ls -l myfile.sh -rwxrwxr-x 1 devasc devasc 14 Oct 18 08:59 myfile.sh devasc@labvm:~/Documents\$./myfile.sh chromium_chromium.desktop 'DPI Scanling.desktop' mate-keyboard.desktop cisco-pt7.desktop drawio_drawio.desktop postman_postman.desktop code.desktop labs.desktop Terminal.desktop devasc@labvm:~/Documents\$</pre> 
<p>Use the command mv to move the myfile.sh file to the desktop.</p>	<pre>code.desktop labs.desktop Terminal.desktop devasc@labvm:~/Documents\$ mv myfile.sh > Desktop mv: missing destination file operand after 'myfile.sh' Try 'mv --help' for more information. devasc@labvm:~/Documents\$ mv myfile.sh > ~/Desktop bash: /home/devasc/Desktop: Is a directory devasc@labvm:~/Documents\$ mv myfile.sh ~/Desktop/ devasc@labvm:~/Documents\$</pre> 

Display the contents of the **Desktop** folder.

```
devasc@labvm:~/Documents$ mv myfile.sh ~/Desktop/
devasc@labvm:~/Documents$ cd ..
devasc@labvm:~$ ls
Desktop Documents Downloads labs myfile.sh snap
devasc@labvm:~$ cd Desktop
devasc@labvm:~/Desktop$ ls
chromium_chromium.desktop  drawio_drawio.desktop  postman_p
cisco-pt7.desktop          labs.desktop           Terminal.
code.desktop                mate-keyboard.desktop
'DPI Scanling.desktop'    myfile.sh
devasc@labvm:~/Desktop$
```



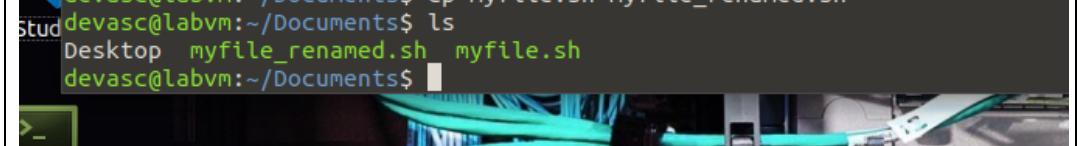
Return the file to the **Documents** folder.

```
cisco-pt7.desktop      labs.desktop        Terminal.desktop
code.desktop            mate-keyboard.desktop
'DPI Scanling.desktop' myfile.sh
devasc@labvm:~/Desktop$ mv myfile.sh > ~/Documents/
bash: /home/devasc/Documents/: Is a directory
devasc@labvm:~/Desktop$ mv ~/Desktop/myfile.sh ~/Documents/
devasc@labvm:~/Desktop$ cd ..
devasc@labvm:~$ cd Desktop
devasc@labvm:~/Desktop$ ls
chromium_chromium.desktop  'DPI Scanling.desktop'  mate-keyboard.de
cisco-pt7.desktop          drawio_drawio.desktop   postman_postman.
code.desktop                labs.desktop          Terminal.desktop
devasc@labvm:~/Desktop$
```



Use the command **cp** to make a copy of the **myfile_renamed.sh** file.

```
cp: cannot stat 'myfile.sh': No such file or directory
raw:devasc@labvm:~/Desktop$ ls
chromium_chromium.desktop  'DPI Scanling.desktop'  mate-keyboard.deskt
cisco-pt7.desktop          drawio_drawio.desktop   postman_postman.des
code.desktop                labs.desktop          Terminal.desktop
devasc@labvm:~/Desktop$ cd ..
devasc@labvm:~$ ls
Desktop Documents Downloads labs myfile.sh snap
devasc@labvm:~$ cd Documents
devasc@labvm:~/Documents$ ls
Desktop myfile.sh
devasc@labvm:~/Documents$ cp myfile.sh myfile_renamed.sh
devasc@labvm:~/Documents$ ls
Desktop myfile_renamed.sh myfile.sh
devasc@labvm:~/Documents$
```



Use the **rm** command to remove the **myfile_renamed_and_copied.sh** file.

```
devasc@labvm:~/Desktop$ ls
chromium_chromium.desktop  'DPI Scanling.desktop' mati
cisco-pt7.desktop          drawio_drawio.desktop pos
code.desktop                labs.desktop Teri
devasc@labvm:~/Desktop$ cd ..
devasc@labvm:~$ ls
Desktop  Documents  Downloads  labs  myfile.sh  snap
devasc@labvm:~$ cd Documents
devasc@labvm:~/Documents$ ls
Desktop  myfile.sh
devasc@labvm:~/Documents$ cp myfile.sh myfile_renamed.sh
devasc@labvm:~/Documents$ ls
Desktop  myfile_renamed.sh  myfile.sh
devasc@labvm:~/Documents$ cp myfile_renamed.sh myfile_renamed_and_copied.sh
devasc@labvm:~/Documents$ ls
Desktop  myfile_renamed_and_copied.sh  myfile_renamed.sh
devasc@labvm:~/Documents$
```

```
devasc@labvm:~/Documents$ cp myfile.sh myfile_renamed.sh
devasc@labvm:~/Documents$ ls
Desktop  myfile_renamed.sh  myfile.sh
devasc@labvm:~/Documents$ cp myfile_renamed.sh myfile_renamed_and_copied.sh
devasc@labvm:~/Documents$ ls
Desktop  myfile_renamed_and_copied.sh  myfile_renamed.sh
devasc@labvm:~/Documents$ rm myfile_renamed_and_copied.sh
devasc@labvm:~/Documents$ ls
Desktop  myfile_renamed.sh  myfile.sh
devasc@labvm:~/Documents$
```

Use the redirect (>) to place text into a new file called **linux.txt**.

```
devasc@labvm:~$  
echo "Linux is  
AWESOME!" >  
linux.txt  
devasc@labvm:~$
```

```
devasc@labvm:~/Documents$ ls  
Desktop myfile_renamed_and_copied.sh myfile_renamed.sh  
devasc@labvm:~/Documents$ rm myfile_renamed  
myfile_renamed_and_copied.sh myfile_renamed.sh  
devasc@labvm:~/Documents$ rm myfile_renamed  
myfile_renamed_and_copied.sh myfile_renamed.sh  
devasc@labvm:~/Documents$ rm myfile_renamed  
myfile_renamed_and_copied.sh myfile_renamed.sh  
devasc@labvm:~/Documents$ rm myfile_renamed_and_copied.sh  
devasc@labvm:~/Documents$ ls  
Desktop myfile_renamed.sh myfile.sh  
devasc@labvm:~/Documents$ echo "Linux is AWESOME!" > linux.txt  
devasc@labvm:~/Documents$ ls  
Desktop linux.txt myfile_renamed.sh myfile.sh  
devasc@labvm:~/Documents$ cat linux.txt  
Linux is AWESOME!  
devasc@labvm:~/Documents$
```



Use the command **cat** to redirect the contents of **linux.txt** to another file (**linux2.txt**).

```
devasc@labvm:~/Documents$ rm myfile_renamed  
myfile_renamed_and_copied.sh myfile_renamed.sh  
devasc@labvm:~/Documents$ rm myfile_renamed  
myfile_renamed_and_copied.sh myfile_renamed.sh  
devasc@labvm:~/Documents$ rm myfile_renamed_and_copied.sh  
devasc@labvm:~/Documents$ ls  
Desktop myfile_renamed.sh myfile.sh  
devasc@labvm:~/Documents$ echo "Linux is AWESOME!" > linux.txt  
devasc@labvm:~/Documents$ ls  
Desktop linux.txt myfile_renamed.sh myfile.sh  
devasc@labvm:~/Documents$ cat linux.txt  
Linux is AWESOME!  
devasc@labvm:~/Documents$ cat linux.txt > linux2.txt  
devasc@labvm:~/Documents$
```



Use the **echo** command to append text to the **linux2.txt** file.

```
devasc@labvm:~/Documents$ rm myfile_renamed  
myfile_renamed_and_copied.sh myfile_renamed.sh  
devasc@labvm:~/Documents$ rm myfile_renamed_and_copied.sh  
devasc@labvm:~/Documents$ ls  
Desktop myfile_renamed.sh myfile.sh  
devasc@labvm:~/Documents$ echo "Linux is AWESOME!" > linux.txt  
devasc@labvm:~/Documents$ ls  
Desktop linux.txt myfile_renamed.sh myfile.sh  
devasc@labvm:~/Documents$ cat linux.txt  
Linux is AWESOME!  
devasc@labvm:~/Documents$ cat linux.txt > linux2.txt  
devasc@labvm:~/Documents$ echo "Appending a new line." >> linux2.txt  
devasc@labvm:~/Documents$
```



Use the **cat** command to view the contents of the **linux2.txt** file.

```
draw/Desktop myfile_renamed.sh myfile.sh  
devasc@labvm:~/Documents$ echo "Linux is AWESOME!" > linux.txt  
devasc@labvm:~/Documents$ ls  
Desktop linux.txt myfile_renamed.sh myfile.sh  
devasc@labvm:~/Documents$ cat linux.txt  
Linux is AWESOME!  
devasc@labvm:~/Documents$ cat linux.txt > linux2.txt  
devasc@labvm:~/Documents$ echo "Appending a new line." >> linux2.txt  
devasc@labvm:~/Documents$ cat linux2.txt  
Linux is AWESOME!  
Appending a new line.  
devasc@labvm:~/Documents$
```

Use the **echo** command to overwrite the contents of the **linux.txt** file using the single angle bracket (>).

```
draw/Desktop myfile_renamed.sh myfile.sh  
devasc@labvm:~/Documents$ echo "Linux is AWESOME!" > linux.txt  
devasc@labvm:~/Documents$ ls  
Desktop linux.txt myfile_renamed.sh myfile.sh  
devasc@labvm:~/Documents$ cat linux.txt  
Linux is AWESOME!  
devasc@labvm:~/Documents$ cat linux.txt > linux2.txt  
devasc@labvm:~/Documents$ echo "Appending a new line." >> linux2.txt  
devasc@labvm:~/Documents$ cat linux2.txt  
Linux is AWESOME!  
Appending a new line.  
devasc@labvm:~/Documents$
```

Use the **cat** command to view the contents of the **linux.txt** file

```
draw/Desktop linux.txt myfile_renamed.sh myfile.sh  
devasc@labvm:~/Documents$ cat linux.txt  
Linux is AWESOME!  
devasc@labvm:~/Documents$ cat linux.txt > linux2.txt  
devasc@labvm:~/Documents$ echo "Appending a new line." >> linux2.txt  
devasc@labvm:~/Documents$ cat linux2.txt  
Linux is AWESOME!  
Appending a new line.  
devasc@labvm:~/Documents$ echo "This new text completely overwrites the original content." > linux.txt  
devasc@labvm:~/Documents$ cat linux.txt  
This new text completely overwrites the original content.  
devasc@labvm:~/Documents$
```

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.

```
devasc@labvm: ~/Documents
File Edit View Search Terminal Help
Linux is AWESOME!
Appending a new line.
I am AWESOME!
```

Review Regular Expressions

<p>Use the grep command to filter the contents of the passwd file to display the line from the passwd file containing devasc</p> <pre>devasc@labvm:~\$ grep devasc /etc/passwd devasc:x:900:900:DevNet Associate,,,:/home/devasc:/bin/bash</pre>	 <pre>devasc@labvm:~/Documents\$ vi linux2.txt devasc@labvm:~/Documents\$ devasc@labvm:~/Documents\$ devasc@labvm:~/Documents\$ vi linux3.txt devasc@labvm:~/Documents\$ cat linux3.txt cat: linux3.txt: No such file or directory devasc@labvm:~/Documents\$ grep devasc /etc/passwd devasc:x:900:900:DevNet Associate,,,:/home/devasc:/bin/bash devasc@labvm:~/Documents\$ </pre>
<p>Use the grep command to show how many times root appears in the passwd file</p>	<pre>devasc@labvm:~/Documents\$ grep -c root /etc/passwd 1 devasc@labvm:~/Documents\$ </pre> 
<p>Use the grep command with the anchor character ^ to find the word, but only at the beginning of the line.</p> <pre>devasc@labvm:~\$ grep '^root' /etc/passwd root:x:0:0:root:/root:/bin/bash devasc@labvm:~/Documents\$ </pre>	 <pre>cat: linux3.txt: No such file or directory devasc@labvm:~/Documents\$ grep devasc /etc/passwd devasc:x:900:900:DevNet Associate,,,:/home/devasc:/bin/bash devasc@labvm:~/Documents\$ grep -c root /etc/passwd 1 devasc@labvm:~/Documents\$ grep '^root' /etc/passwd root:x:0:0:root:/root:/bin/bash devasc@labvm:~/Documents\$ </pre>

<p>Use the grep command with the anchor character \$ to find a word at the end of a line.</p> <pre>devasc@labvm:~\$ grep 'false\$' /etc/passwd</pre>	<pre>devasc@labvm:~/Documents\$ devasc@labvm:~/Documents\$ devasc@labvm:~/Documents\$ grep 'false\$' /etc/passwd tss:x:109:116:TPM software stack,,,:/var/lib/tpm:/bin/false lightdm:x:110:120:Light Display Manager:/var/lib/lightdm:/bin/false whoopsie:x:116:124::/nonexistent:/bin/false speech-dispatcher:x:120:29:Speech Dispatcher,,,:/run/speech-dispatcher hplip:x:122:7:HPLIP system user,,,:/run/hplip:/bin/false vboxadd:x:998:1::/var/run/vboxadd:/bin/false devasc@labvm:~/Documents\$</pre> 
<p>Use the grep command with the anchor character . to match specific length words with different letters in them.</p> <pre>devasc@labvm:~\$ grep 'd..m' /etc/passwd</pre>	<pre>devasc@labvm:~/Documents\$ devasc@labvm:~/Documents\$ devasc@labvm:~/Documents\$ grep 'false\$' /etc/passwd tss:x:109:116:TPM software stack,,,:/var/lib/tpm:/bin/false lightdm:x:110:120:Light Display Manager:/var/lib/lightdm:/bin/false whoopsie:x:116:124::/nonexistent:/bin/false speech-dispatcher:x:120:29:Speech Dispatcher,,,:/run/speech-dispatcher hplip:x:122:7:HPLIP system user,,,:/run/hplip:/bin/false vboxadd:x:998:1::/var/run/vboxadd:/bin/false devasc@labvm:~/Documents\$ grep 'd..m' /etc/passwd daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin dnsmasq:x:112:65534:dnsmasq,,,:/var/lib/misc:/usr/sbin/nologin avahi-autoipd:x:113:123:Avahi autoip daemon,,,:/var/lib/avahi-daemon nologin usbmux:x:114:46:usbmux daemon,,,:/var/lib/usbmux:/usr/sbin/nologin avahi:x:117:125:Avahi mDNS daemon,,,:/var/run/avahi-daemon:/usr/sbin/avahi-daemon colord:x:123:129:colord colour management daemon,,,:/var/lib/colord/nologin pulse:x:124:130:PulseAudio daemon,,,:/var/run/pulse:/usr/sbin/pulse devasc@labvm:~/Documents\$</pre> 

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
```

```
log in...  
pulse:x:124:130:PulseAudio daemon,,,:/var/run/pulse:/usr/sbin/nologin  
devasc@labvm:~/Documents$ grep '[8-9]' /etc/passwd  
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin  
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin  
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin  
irc:x:39:39:ircd:/var/run/ircd:/usr/sbin/nologin  
sshd:x:108:65534::/run/sshd:/usr/sbin/nologin  
devasc:x:900:900:DevNet Associate,,,:/home/devasc:/bin/bash  
systemd-coredump:x:999:999:systemd Core Dumper:/:/usr/sbin/nologin  
tss:x:109:116:TPM software stack,,,:/var/lib/tpm:/bin/false  
cups-pk-helper:x:118:114:user for cups-pk-helper service,,,:/usr/sbin/nologin  
speech-dispatcher:x:120:29:Speech Dispatcher,,,:/run/speech-dispatcher  
saned:x:121:128::/var/lib/saned:/usr/sbin/nologin  
colord:x:123:129:colord colour management daemon,,,:/var/lib/colord/nologin  
stunnel4:x:119:126::/var/run/stunnel4:/usr/sbin/nologin  
vboxadd:x:998:1::/var/run/vboxadd:/bin/false  
devasc@labvm:~/Documents$ █
```

Use the grep command to find literal characters. Notice that only the lines containing a comma are returned.

```
devasc@labvm:~$  
grep '[,]'  
/etc/passwd
```

```
devasc@labvm:~/Documents$ grep '[,]' /etc/passwd  
systemd-network:x:100:102:systemd Network Management,,,:/run/nologin  
systemd-resolve:x:101:103:systemd Resolver,,,:/run/systemd/resolve  
systemd-timesync:x:102:104:systemd Time Synchronization,,,:/nologin  
devasc:x:900:900:DevNet Associate,,,:/home/devasc:/bin/bash  
tss:x:109:116:TPM software stack,,,:/var/lib/tpm:/bin/false  
rtkit:x:111:122:RealtimeKit,,,:/proc:/usr/sbin/nologin  
dnsmasq:x:112:65534:dnsmasq,,,:/var/lib/misc:/usr/sbin/nologin  
avahi-autoipd:x:113:123:Avahi autoip daemon,,,:/var/lib/avahi/nologin  
usbmux:x:114:46:usbmux daemon,,,:/var/lib/usbmux:/usr/sbin/nologin  
kernoops:x:115:65534:Kernel Oops Tracking Daemon,,,:/:/usr/sbin/nologin  
avahi:x:117:125:Avahi mDNS daemon,,,:/var/run/avahi-daemon:/nologin  
cups-pk-helper:x:118:114:user for cups-pk-helper service,,,:/usr/sbin/nologin  
speech-dispatcher:x:120:29:Speech Dispatcher,,,:/run/speech-dispatcher  
hplip:x:122:7:HPLIP system user,,,:/run/hplip:/bin/false  
colord:x:123:129:colord colour management daemon,,,:/var/lib/colord/nologin  
pulse:x:124:130:PulseAudio daemon,,,:/var/run/pulse:/usr/sbin/nologin  
devasc@labvm:~/Documents$ █
```

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
```

```
pulse:x:124:130:PulseAudio daemon,,,:/var/run/pulse:/usr/sbin
devasc@labvm:~/Documents$ grep 'new*' /etc/passwd
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
systemd-network:x:100:102:systemd Network Management,,,:/run
nologin
messagebus:x:103:106::/nonexistent:/usr/sbin/nologin
_apt:x:105:65534::/nonexistent:/usr/sbin/nologin
tcpdump:x:107:112::/nonexistent:/usr/sbin/nologin
kernoops:x:115:65534:Kernel Oops Tracking Daemon,,,:/usr/s
whoopsie:x:116:124::/nonexistent:/bin/false
saned:x:121:128::/var/lib/saned:/usr/sbin/nologin
stunnel4:x:119:126::/var/run/stunnel4:/usr/sbin/nologin
devasc@labvm:~/Documents$
```

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.

```
stunnel4:x:119:126::/var/run/stunnel4:/usr/sbin/nologin
devasc@labvm:~/Documents$
```

```
devasc@labvm:~/Documents$ date
Sat 18 Oct 2025 09:37:57 AM UTC
devasc@labvm:~/Documents$
```

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.

```
devasc@labvm:~/Documents$ date
Sat 18 Oct 2025 09:37:57 AM UTC
devasc@labvm:~/Documents$ shutdown +1 "Come back soon!"
Shutdown scheduled for Sat 2025-10-18 09:39:23 UTC, use 'shutdown -c' to cancel.
devasc@labvm:~/Documents$
```

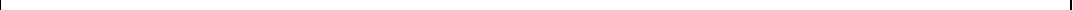
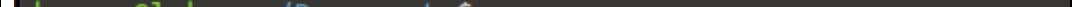
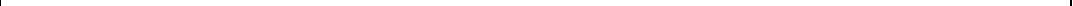
Use the **ip address** command to display the network configuration

```
devasc@labvm: ~/Documents
File Edit View Search Terminal Help
      valid_lft forever preferred_lft forever
2: ens32: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc f
up default qlen 1000
    link/ether 00:0c:29:1b:4c:c5 brd ff:ff:ff:ff:ff:ff
    inet 172.16.10.184/24 brd 172.16.10.255 scope global dyn
        valid_lft 4003sec preferred_lft 4003sec
    inet6 fe80::20c:29ff:fe1b:4cc5/64 scope link
        valid_lft forever preferred_lft forever
3: dummy0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc
N group default qlen 1000
    link/ether 5e:07:cf:b0:68:01 brd ff:ff:ff:ff:ff:ff
    inet 192.0.2.1/32 scope global dummy0
        valid_lft forever preferred_lft forever
    inet 192.0.2.2/32 scope global dummy0
        valid_lft forever preferred_lft forever
    inet 192.0.2.3/32 scope global dummy0
        valid_lft forever preferred_lft forever
    inet 192.0.2.4/32 scope global dummy0
        valid_lft forever preferred_lft forever
    inet 192.0.2.5/32 scope global dummy0
        valid_lft forever preferred_lft forever
    inet6 fe80::5c07:cff:feb0:6801/64 scope link
        valid_lft forever preferred_lft forever
devasc@labvm:~/Documents$
```

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.

```
PING 172.16.10.172 (172.16.10.172) 56(84) bytes of data.
^C
--- 172.16.10.172 ping statistics ---
3 packets transmitted, 0 received, 100% packet loss, time
devasc@labvm:~/Documents$ ping -c 4 172.16.10.175
PING 172.16.10.175 (172.16.10.175) 56(84) bytes of data.
64 bytes from 172.16.10.175: icmp_seq=1 ttl=128 time=0.572
64 bytes from 172.16.10.175: icmp_seq=2 ttl=128 time=0.421
64 bytes from 172.16.10.175: icmp_seq=3 ttl=128 time=0.225
64 bytes from 172.16.10.175: icmp_seq=4 ttl=128 time=0.446

--- 172.16.10.175 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 30
rtt min/avg/max/mdev = 0.225/0.416/0.572/0.124 ms
devasc@labvm:~/Documents$
```

<p>You can also ping a name and Domain Name System (DNS) will resolve the name to an IP address.</p>	<pre>devasc@labvm:~/Documents\$ ping google.com ping: google.com: Temporary failure in name resolution devasc@labvm:~/Documents\$ ping 8.8.8.8 PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data. 64 bytes from 8.8.8.8: icmp_seq=1 ttl=117 time=32.1 ms 64 bytes from 8.8.8.8: icmp_seq=2 ttl=117 time=34.0 ms 64 bytes from 8.8.8.8: icmp_seq=3 ttl=117 time=32.5 ms 64 bytes from 8.8.8.8: icmp_seq=4 ttl=117 time=33.0 ms 64 bytes from 8.8.8.8: icmp_seq=5 ttl=117 time=32.1 ms</pre> 
<p>Use the ps command to display the processes that are running in the current terminal.</p>	<pre>14 packets transmitted, 10 received, 28.5/14% packet loss rtt min/avg/max/mdev = 31.339/32.660/34.038/0.804 devasc@labvm:~/Documents\$ ps devasc@labvm:~/Documents\$ ps devasc@labvm:~/Documents\$ ps PID TTY TIME CMD 2556 pts/0 00:00:00 bash 2941 pts/0 00:00:00 ps devasc@labvm:~/Documents\$</pre> 
<p>Use the ps with the -e option to display all the processes that are running on the computer.</p>	<pre>devasc@labvm:~/Documents\$ ps -e devasc@labvm:~/Documents\$ ps -e PID TTY TIME CMD 1 ? 00:00:01 systemd 2 ? 00:00:00 kthreadd 3 ? 00:00:00 rcu_gp 4 ? 00:00:00 rcu_par_gp 6 ? 00:00:00 kworker/0:0H-kblockd 9 ? 00:00:00 mm_percpu_wq 10 ? 00:00:00 ksoftirqd/0 11 ? 00:00:02 rcu_sched 12 ? 00:00:00 migration/0 13 ? 00:00:00 idle_inject/0 14 ? 00:00:00 cpuhp/0 15 ? 00:00:00 cpuhp/1 16 ? 00:00:00 idle_inject/1 17 ? 00:00:00 migration/1 18 ? 00:00:00 ksoftirqd/1 20 ? 00:00:00 kworker/1:0H-kblockd</pre> 

You can pipe any command output to one screen at a time by adding | **more**

```
devasc@labvm: ~/Documents
File Edit View Search Terminal Help
PID TTY          TIME CMD
 1 ?          00:00:01 systemd
 2 ?          00:00:00 kthreadd
 3 ?          00:00:00 rcu_gp
 4 ?          00:00:00 rcu_par_gp
 6 ?          00:00:00 kworker/0:0H-kblockd
 9 ?          00:00:00 mm_percpu_wq
10 ?          00:00:00 ksoftirqd/0
11 ?          00:00:02 rcu_sched
12 ?          00:00:00 migration/0
13 ?          00:00:00 idle_inject/0
14 ?          00:00:00 cpuhp/0
15 ?          00:00:00 cpuhp/1
16 ?          00:00:00 idle_inject/1
17 ?          00:00:00 migration/1
18 ?          00:00:00 ksoftirqd/1
20 ?          00:00:00 kworker/1:0H-kblockd
21 ?          00:00:00 kdevtmpfs
22 ?          00:00:00 netns
23 ?          00:00:00 rcu_tasks_kthre
24 ?          00:00:00 kauditd
26 ?          00:00:00 khungtaskd
27 ?          00:00:00 oom_reaper
--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.

```
2295 ?          00:00:02 mate-menu
2296 ?          00:00:15 mate-multiload-
2297 ?          00:00:00 gvfs-udisks2-vo
2309 ?          00:00:00 mate-power-mana
devasc@labvm:~/Documents$ devasc@labvm:~/Documents$ devasc@labvm:~/Documents$ devasc@labvm:~/Documents$ sudo apt-get update
0% [Working]
```

Use the command **apt-cache search** to find a specific package.

```
devasc@labvm: ~/Documents
File Edit View Search Terminal Help
Get:36 http://archive.ubuntu.com/ubuntu focal-updates/multiv
adata [688 B]
Get:37 http://archive.ubuntu.com/ubuntu focal-backports/main
[kB]
Get:38 http://archive.ubuntu.com/ubuntu focal-backports/main
7 kB]
Get:39 http://archive.ubuntu.com/ubuntu focal-backports/main
3 kB]
Get:40 http://archive.ubuntu.com/ubuntu focal-backports/main
a [1,420 B]
Get:41 http://archive.ubuntu.com/ubuntu focal-backports/univ
13.8 kB]
Get:42 http://archive.ubuntu.com/ubuntu focal-backports/univ
[25.0 kB]
Get:43 http://archive.ubuntu.com/ubuntu focal-backports/univ
[16.3 kB]
Get:44 http://archive.ubuntu.com/ubuntu focal-backports/univ
adata [880 B]
Fetched 24.5 MB in 21s (1,187 kB/s)
Reading package lists... Done
devasc@labvm:~/Documents$ apt-cache search
E: You must give at least one search pattern
devasc@labvm:~/Documents$
```

```
devasc@labvm:~/Documents$ apt-get install
E: Could not open lock file /var/lib/dpkg/lock-frontend - open
enied)
E: Unable to acquire the dpkg frontend lock (/var/lib/dpkg/lo
ou root?
devasc@labvm:~/Documents$ apt-cache search speedtest-cli
speedtest-cli - Command line interface for testing internet b
dtest.net
devasc@labvm:~/Documents$
```

Use the command **apt-get install** to install a package (speedtest-cli).

```
E: Unable to acquire the dpkg frontend lock (/var/lib/dpkg/lock)  
    ou root?  
devasc@labvm:~/Documents$ apt-cache search speedtest-cli  
speedtest-cli - Command line interface for testing internet b  
dtest.net  
devasc@labvm:~/Documents$ sudo apt-get install speedtest-cli  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
The following NEW packages will be installed:  
  speedtest-cli  
0 upgraded, 1 newly installed, 0 to remove and 675 not upgrad  
Need to get 24.0 kB of archives.  
After this operation, 106 kB of additional disk space will be  
0% [Working]
```



Now you can use the **speedtest-cli** command to test your current Internet connection speed.

```
devasc@labvm:~/Documents$  
devasc@labvm:~/Documents$  
devasc@labvm:~/Documents$  
devasc@labvm:~/Documents$ speedtest-cli  
  
Command 'speedtest-cli' not found, but can be installed wi  
s  
  
sudo snap install speedtest-cli  # version 2.1.3+pkg-d3a7,  
sudo apt  install speedtest-cli  # version 2.1.2-2ubuntu0.  
  
See 'snap info speedtest-cli' for additional versions.
```



Use the command **apt-get upgrade** to update all packages and dependencies on the computer.

```
python3-jwt python3-ldb python3-lib2to3 python3-louis python3-netaddr
python3-pil python3-pip python3-pkg-resources python3-problem-report
python3-renderpm python3-reportlab python3-reportlab-accel python3-reques
python3-samba python3-setuptools python3-talloc python3-tdb python3-tk
python3-urllib3 python3-virtualenv python3-wheel python3-yaml python3-zip
python3.8 python3.8-dev python3.8-minimal python3.8-venv
qt5-gtk-platformtheme rfkill rsync rsyslog runc samba-common
samba-common-bin samba-dsdb-modules samba-libs sane-utils sbsigntool
smbclient snapd spice-vdagent squashfs-tools stunnel4 sudo
system-config-printer system-config-printer-common
system-config-printer-udev systemd systemd-sysv systemd-timesyncd tar
tcpdump tzdata ubuntu-fan ubuntu-keyring ubuntu-minimal
ubuntu-release-upgrader-core ubuntu-report ubuntu-standard udev udisks2 u
unattended-upgrades unzip update-notifier-common util-linux uuid-runtime
vala-panel-appmenu-common vim vim-common vim-runtime vim-tiny wget whoops
wireless-regdb wpasupplicant xdg-utils xserver-common xserver-xorg-core
xserver-xorg-legacy xserver-xorg-video-amdgpu xterm xxd xz-utils
yaru-theme-sound yelp yelp-xsl zlib1g zlib1g-dev
648 upgraded, 0 newly installed, 0 to remove and 27 not upgraded.
Need to get 737 MB of archives.
After this operation, 276 MB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 libc6-dev a
2.31-0ubuntu9.18 [2,520 kB]
0% [Working]
```



Use the command **apt-get purge** to completely remove a package (speedtest-cli) from the computer.

```
Get:623 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 python3-j
th all 0.9.4-2ubuntu1 [21.5 kB]
Get:624 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 python3-j
l 1.7.1-2ubuntu2.1 [18.0 kB]
Get:625 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 python3-r
r all 0.7.19-3ubuntu1 [236 kB]
Get:626 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 python3-r
pm amd64 3.5.34-1ubuntu1.1 [60.6 kB]
95% [Working] 621 kB/s 1mi
Get:627 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 python3-t
64 3.8.10-0ubuntu1~20.04 [104 kB]
Get:628 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 python3-z
ll 1.0.0-1ubuntu0.1 [6,172 B]
Get:629 http://archive.ubuntu.com/ubuntu focal-updates/universe amd64 qt5-g
atformtheme amd64 5.12.8+dfsg-0ubuntu2.1 [124 kB]
Get:630 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 rfkill am
.34-0.1ubuntu9.6 [22.9 kB]
Get:631 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 sbsigntoc
64 0.9.2-2ubuntu1.1 [63.8 kB]
Get:632 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 squashfs-
amd64 1:4.4-1ubuntu0.3 [117 kB]
Get:633 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 snapd amd
67.1+20.04 [26.1 MB]
98% [633 snapd 24.8 MB/26.1 MB 95%]
```

```
Preparing to unpack .../111-libedata-book-1.2-26_3.36.5-0ubuntu1_amd64.deb ...
Unpacking libedata-book-1.2-26:amd64 (3.36.5-0ubuntu1) over (3.36.2-0ubuntu1) ...
.
Preparing to unpack .../112-libebackend-1.2-10_3.36.5-0ubuntu1_amd64.deb ...
Unpacking libebackend-1.2-10:amd64 (3.36.5-0ubuntu1) over (3.36.2-0ubuntu1) ...
Preparing to unpack .../113-libebook-1.2-20_3.36.5-0ubuntu1_amd64.deb ...
Unpacking libebook-1.2-20:amd64 (3.36.5-0ubuntu1) over (3.36.2-0ubuntu1) ...
Preparing to unpack .../114-libedataserverui-1.2-2_3.36.5-0ubuntu1_amd64.deb ...
Unpacking libedataserverui-1.2-2:amd64 (3.36.5-0ubuntu1) over (3.36.2-0ubuntu1) ...
...
Preparing to unpack .../115-libgoa-1.0-common_3.36.1-0ubuntu1_all.deb ...
Unpacking libgoa-1.0-common (3.36.1-0ubuntu1) over (3.36.0-1ubuntu1) ...
Preparing to unpack .../116-libgoa-1.0-0b_3.36.1-0ubuntu1_amd64.deb ...
Unpacking libgoa-1.0-0b:amd64 (3.36.1-0ubuntu1) over (3.36.0-1ubuntu1) ...
Preparing to unpack .../117-libgweather-common_3.36.1-1~ubuntu20.04.1_all.deb ...
.
Unpacking libgweather-common (3.36.1-1~ubuntu20.04.1) over (3.36.0-1) ...
Preparing to unpack .../118-libgweather-3-16_3.36.1-1~ubuntu20.04.1_amd64.deb ...
.
Unpacking libgweather-3-16:amd64 (3.36.1-1~ubuntu20.04.1) over (3.36.0-1) ...
Preparing to unpack .../119-firefox_136.0+build3-0ubuntu0.20.04.1_amd64.deb ...
Unpacking firefox (136.0+build3-0ubuntu0.20.04.1) over (77.0.1+build1-0ubuntu0.20.04.1) ...
```

```
Setting up libntfs-3g883 (1:2017.3.23AR.3-3ubuntu1.3) ...
Setting up krb5-locales (1.17-6ubuntu4.11) ...
Setting up libwhoopsie0:amd64 (0.2.69ubuntu0.3) ...
Setting up samba-common (2:4.15.13+dfsg-0ubuntu0.20.04.8) ...
Setting up python3-zipp (1.0.0-1ubuntu0.1) ...
Setting up libgomp1:amd64 (10.5.0-1ubuntu1~20.04) ...
Setting up lshw (02.18.85-0.3ubuntu2.20.04.1) ...
Setting up amd64-microcode (3.20191218.1ubuntu1.3) ...
update-initramfs: deferring update (trigger activated)
amd64-microcode: microcode will be updated at next boot
Setting up locales (2.31-0ubuntu9.18) ...
Generating locales (this might take a while)...
    en_AG.UTF-8... done
    en_AU.UTF-8... done
    en_BW.UTF-8... done
    en_CA.UTF-8... done
    en_DK.UTF-8... done
    en_GB.UTF-8... done
    en_HK.UTF-8... done
    en_IE.UTF-8... done
    en_IL.UTF-8... done
    en_IN.UTF-8... done
    en_NG.UTF-8... done
    en_NZ.UTF-8... done
```

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.

```
devasc@labvm:~/Documents$ 
devasc@labvm:~/Documents$ passwd
Changing password for devasc.
Current password:
passwd: Authentication token manipulation error
passwd: password unchanged
devasc@labvm:~/Documents$
```

Use the command **passwd** with the option **-S** to view the status of your password.

```

File Edit View Search Terminal Help
passwd: invalid option -- 's'
Usage: passwd [options] [LOGIN]

Options:
-a, --all          report password status on all accounts
-d, --delete       delete the password for the named account
-e, --expire       force expire the password for the named account
-h, --help         display this help message and exit
-k, --keep-tokens change password only if expired
-i, --inactive INACTIVE set password inactive after expiration to INACTIVE
-l, --lock          lock the password of the named account
-n, --mindays MIN_DAYS set minimum number of days before password change to MIN_DAYS
-q, --quiet         quiet mode
-r, --repository REPOSITORY change password in REPOSITORY repository
-R, --root CHROOT_DIR directory to chroot into
-S, --status        report password status on the named account
-u, --unlock       unlock the password of the named account
-w, --warndays WARN_DAYS set expiration warning days to WARN_DAYS
-x, --maxdays MAX_DAYS set maximum number of days before password change to MAX_DAYS

devasc@labvm:~/Documents$
```

Use the manual pages for the **passwd** command (**man passwd**) to research the **-S** option and find the answer the following questions.

PASSWD(1)	User Commands	PASSWD(1)
NAME	passwd - change user password	
SYNOPSIS	passwd [<u>options</u>] [<u>LOGIN</u>]	
DESCRIPTION	<p>The passwd command changes passwords for user accounts. A normal user may only change the password for their own account, while the superuser may change the password for any account. passwd also changes the account or associated password validity period.</p> <p>Password Changes</p> <p>The user is first prompted for their old password, if one is present. This password is then encrypted and compared against the stored password. The user has only one chance to enter the correct password. The superuser is permitted to bypass this step so that forgotten passwords may be changed.</p> <p>After the password has been entered, password aging information is checked to see if the user is permitted to change the password at this</p>	
Manual page passwd(1) line 1 (press h for help or q to quit)		

What is the current status of the password?	P — Password is active
What is the minimum number of days that must pass before the	0 days

password can be changed?	
What is the number of days after password expiration that the account remains active?	-1

LAB 1.3

```
n 5 and earlier *** Educational Purposes ***
*** Only in Networking Academies ***
***
**
*
CSR1kv>
CSR1kv>
CSR1kv>
CSR1kv>
CSR1kv>en
CSR1kv#_
```

click inside or press Ctrl+G.

What is the number of	-1
-----------------------	----

```
!rile ** **
* *
CSR1kv>
CSR1kv>
CSR1kv>
CSR1kv>
CSR1kv>
CSR1kv>en
CSR1kv#show ip int brief
Interface          IP-Address      OK? Method Status          Protocol
GigabitEthernet1   172.16.10.189  YES  DHCP    up
CSR1kv#
```

le or press Ctrl+G.

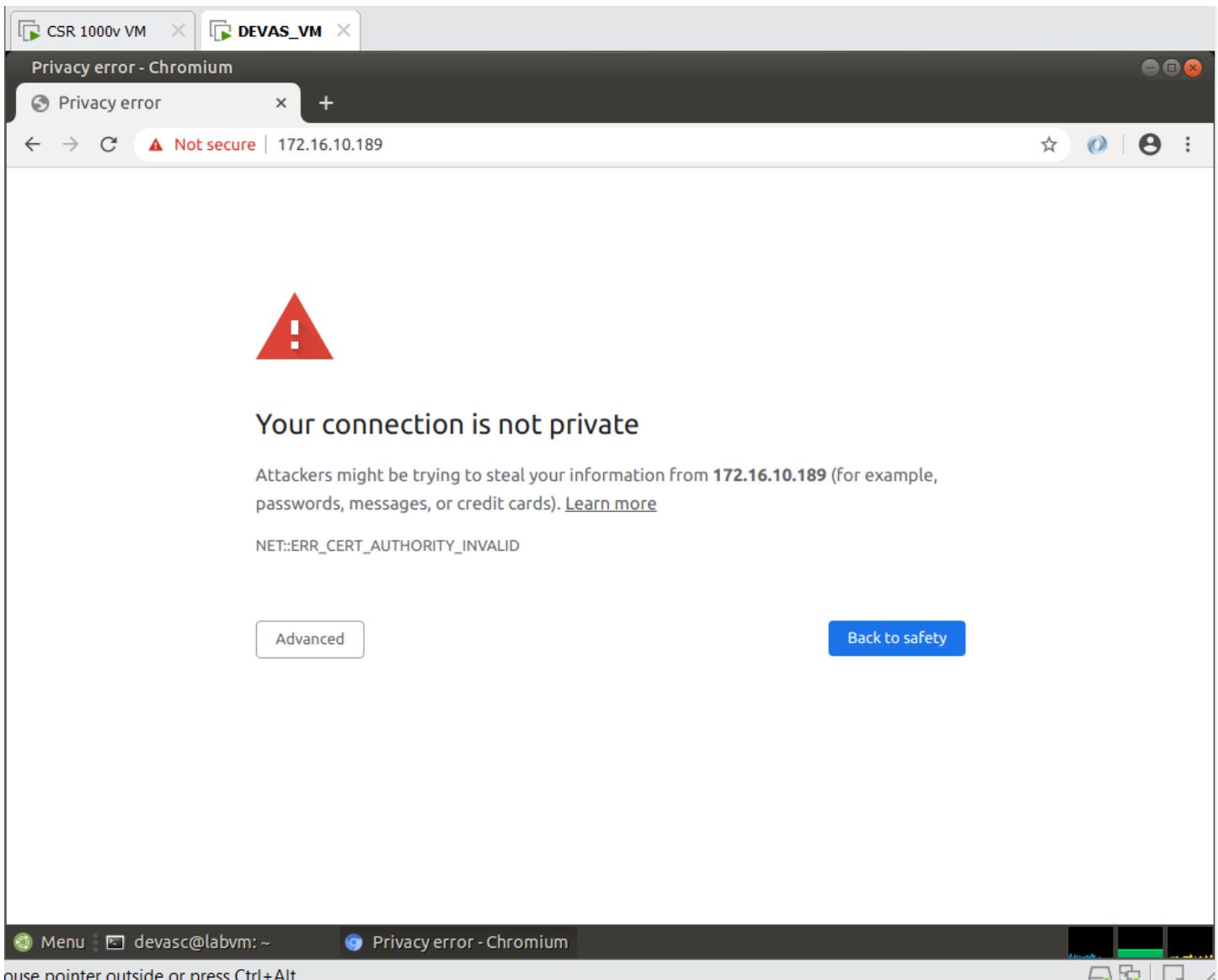
```
CSR1kv#  
CSR1kv#  
CSR1kv#ping 172.16.10.113  
Type escape sequence to abort.  
Sending 5, 100-byte ICMP Echos to 172.16.10.113, timeout is 2 seconds:  
!!!!!  
Success rate is 80 percent (4/5), round-trip min/avg/max = 10/14/20 ms  
CSR1kv#ping 172.16.10.113  
Type escape sequence to abort.  
Sending 5, 100-byte ICMP Echos to 172.16.10.113, timeout is 2 seconds:  
!!!!!  
Success rate is 100 percent (5/5), round-trip min/avg/max = 8/13/16 ms  
CSR1kv#
```

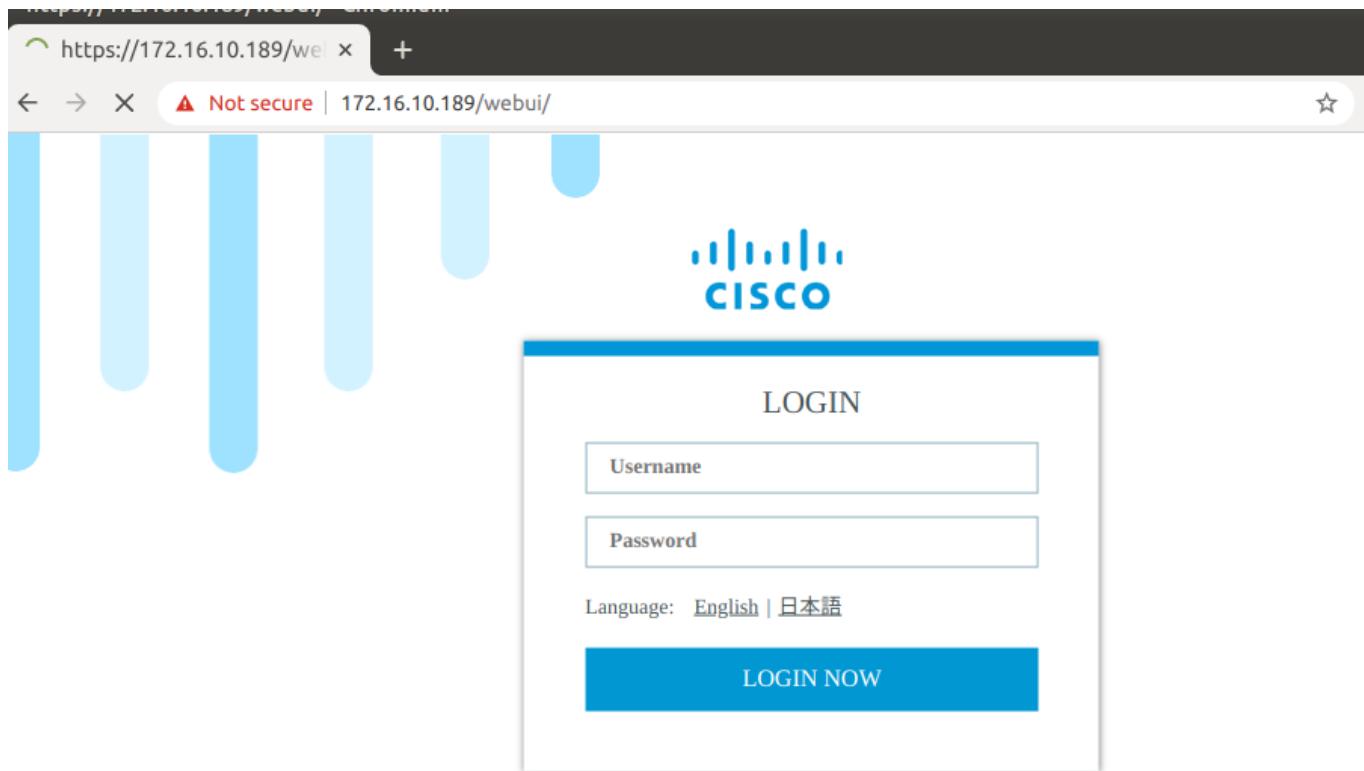
or press Ctrl+G.



```
devasc@labvm:~$  
devasc@labvm:~$ ping 172.16.10.189  
PING 172.16.10.189 (172.16.10.189) 56(84) bytes of data.  
64 bytes from 172.16.10.189: icmp_seq=6 ttl=255 time=3.51 ms  
64 bytes from 172.16.10.189: icmp_seq=7 ttl=255 time=14.1 ms  
64 bytes from 172.16.10.189: icmp_seq=8 ttl=255 time=26.1 ms  
^C  
--- 172.16.10.189 ping statistics ---  
8 packets transmitted, 3 received, 62.5% packet loss, time 7119ms  
rtt min/avg/max/mdev = 3.506/14.575/26.102/9.230 ms  
devasc@labvm:~$  
devasc@labvm:~$  
devasc@labvm:~$
```

```
tracer password:  
cisco@172.16.10.189's password:  
Connection closed by 172.16.10.189 port 22  
devasc@labvm:~$  
devasc@labvm:~$ ssh cisco@172.16.10.189  
Password:  
  
* * * * *  
*** Cisco Networking Academy ***  
*** This software is provided for ***  
*** Educational Purposes ***  
*** Only in Networking Academies ***  
*** ***  
** **  
* *  
  
CSR1kv#  
CSR1kv#  
dio CodCSR1kv#  
  
devasc@labvm:~$  
devasc@labvm:~$ ssh cisco@172.16.10.189  
The authenticity of host '172.16.10.189 (172.16.10.189)' can't be established.  
RSA key fingerprint is SHA256:9fmHlBpiEpvSWgmVkvngxUBTg9U2ZViUEjLPRefKSzk.  
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes  
Warning: Permanently added '172.16.10.189' (RSA) to the list of known hosts.  
Password:  
Password:  
Password:  
cisco@172.16.10.189's password:  
Connection closed by 172.16.10.189 port 22  
devasc@labvm:~$
```





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User : cisco

Pass : cisco123!

The screenshot shows the Cisco CSR1000V Dashboard interface. The left sidebar includes links for Dashboard, Monitoring, Configuration, Administration, and Troubleshooting. The main area displays several monitoring panels:

- CPU & Memory Pressure Graph**: Shows CPU Utilization and Memory Utilization. CPU Utilization details: Slot RPO, CPU 0, User 4.89%, System 1.08%, Idle 93.82%. Memory Utilization details: Total 398497 KB, Used 263325 KB, Free 135172 KB, Committed 397800 KB.
- FlashMemory**: Last Updated: 10/18/2025, 3:20:29 AM. Status: 10.81% Free, 89.19% Used.
- System Information**: Last Updated: 10/18/2025, 3:20:29 AM. Hostname: CSR1kv, Device Uptime: 0 days, 0 hours, 0 minutes, 0 seconds.

The bottom status bar shows the user is at devasc@labvm:~ and provides keyboard shortcuts for pointer control.

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