**Requirements for completion:**

* You’ll be asked for answers and/or screenshots.
* The word document will be uploaded to Canvas.

**Begin this lab**

1. Click the Lab Environment tab

Graphical user interface, text

Description automatically generated with medium confidence

1. Click ‘Watch tutorial’ and learn about this environment a little more

A picture containing graphical user interface

Description automatically generated

1. (If necessary) Click Create to Create the VMs
2. Notice that you have access to 6 VMs in the cloud
3. Keep an eye on this time. Increment it if necessary.



1. Click the Start button to start this lab (so that the status of the VMs will = active)
2. Click Open Console next to the VM named Workstation



1. Click on ‘Student User’

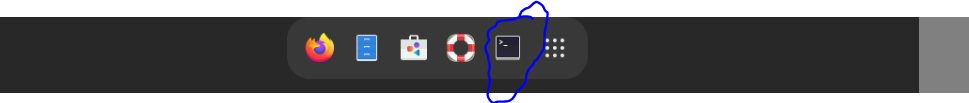
Shape, rectangle

Description automatically generated

1. Enter the password of **student** (all lower case)
2. Click on this toggle button to hide that annoying dot that will follow your cursor



1. Click – to open the terminal



1. Remember: Your username is **student** (whose password happens to also be **student**)
2. Run **pwd** to verify that your working directory is /home/’your user name’
3. Create a directory named Desktop by running the command **mkdir Desktop**
4. Change to the desktop directory with **cd Desktop**
5. Run **pwd** to verify that your working directory is now the Desktop
6. Create a file named file1 with the touch command with **touch file1**
7. Create a file named file2 with the cat command as follows:
   1. **cat > file2**
   2. Type some text, like This is a file created with cat
   3. Ctrl+C to exit and save file
8. Add information to file1 using the cat command as follows
   1. **cat >> file1**
   2. Type this is line one
   3. Press Enter
   4. Type this is line two
   5. Press Enter
   6. Ctrl+C
9. Append another line to file2 using the cat command as follows
   1. **cat >> file2**
   2. Type this is the last line
   3. Ctrl+C
10. View the contents of both files by running:
    1. **cat file1**
    2. **cat file2**
11. Create several 0-byte files with the touch command as follows:
    1. **touch “guest list” reports taxes expenses “error reports”**
12. View the list of all files and folders by running **ls**
13. View the long list by running **ls -l**
14. View the list of all files and folders, including hidden, with **ls -a**
15. View all files that start with lower-cased f by running **ls f\***
16. View all files whose name is 5 characters and ends with an s by running:
    1. **ls ????s**
17. Make a single directory as follows: **mkdir Lab1Dir**
18. Verify with **ls**
19. Create multiple directories as follows: **mkdir adir bdir**
20. Verify with **ls**
21. You want to create a nested directory – run **mkdir one/two**
    1. See that you can’t do it this way, the directory one doesn’t exist
    2. Do it this way instead: **mkdir -p one/two**
    3. See the tree (recurse) structure by running **ls -R one**
22. Run **pwd** again to verify what your working directory is. It is assumed that you are in the Desktop directory
23. Change the path of your working directory with cd. Run **cd one/two**
24. Run **pwd** to see where you are. You should be in the two directory
25. Move back to the parent by running **cd ..**
26. Move back 2 directories by running **cd ../..**
27. You should be in your home directory now.
28. Move to the root by running **cd /** (the absolute path)
29. Run **pwd** to verify that your working directory is /
30. Finally, use a relative path to move back to your home directory by running **cd ~**
31. Run **pwd** to verify that you are in the student’s home
32. Run **history**
33. **Screenshot as many of the most current history commands as possible (the larger the number, the more recent). Paste to a Word document and label ‘first history’**

Text

Description automatically generated

1. Now we’ll look at the commands that remove. Run **cd ~/Desktop** to move to the Desktop.
2. Run **ls** to remind yourself of which files and folders you have in Desktop
3. The rm directory removes files. Remove the file named taxes by running **rm taxes**
4. Verify that the directory Lab1Dir is empty by running **ls Lab1Dir/** see that it is empty
5. Since Lab1Dir is empty, remove it by running the rmdir command **rmdir Lab1Dir**
6. Now remove a directory that is not empty. Run **rmdir one**
7. You can’t remove it because it is not empty. Forcefully remove it, recursively, by running **rm -rf one**
8. Run **ls** to verify that taxes, Lab1Dir, and one are removed
9. Verify that you are still in the Desktop directory with **pwd**. cd into it if you are not.
10. To copy data from one file or another, you’ll use cp (the copy command). Its syntax is cp source dest.
11. Run **cat file1** to verify that you have this file and that there is some data in it
12. Run **ls adir/** to verify that you have the adir directory (and it should be empty)
13. Create a copy of file1 in the existing directory adir by running **cp file1 adir**
14. Rerun **ls adir/** to verify that it contains a copy of file1
15. Create a copy of file1, giving it a different name by running **cp file1 newfile1**
16. Since there isn’t an existing directory named newfile1 to put it in, a file is created with the name file1. Verify by running **ls** to see the addition of newfile1
17. To copy a folder and its contents, use the recursive switch (-r). You’ll also want to copy the permissions of the contents (-p). And use verbose (-v). Copy adir to a new folder by running **cp -rvp adir newadir**
18. Verify by running **ls newadir/**
19. Rename a file or directory by moving it and giving it a different name. Verify that you have the directory bdir by running **ls bdir/**
20. Note that it is empty but it exists. Rename it by running **mv bdir mybdir** verify with **ls**
21. Now, use the file command to determine the type of file a file is. Run the following commands:
    1. **file adir**
    2. **file file1**
    3. **file /dev/core**
22. **Screenshot as many of the most current history commands as possible (the larger the number, the more recent). Paste to the Word document and label ‘second history’**
23. Text

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24. Now let’s do a quick introduction of using vim commands to create and edit it file:
25. Verify that you are in the Desktop directory, and cd into it if you are not.
26. Create a file named mytestfile by running **vi mytestfile**
27. Start typing - notice that you cannot because you aren’t in insert mode
28. Type **:q** Make sure you see this at the bottom left. . Press Enter to quit.
29. Run **ls** and notice that mytestfile does not exist. You only quit – you didn’t create the file.
30. Rerun **vi mytestfile**
31. Type **:wq** and then Enter
32. Run **ls -l** to verify that mytestfile was written to the disk and that it is 0 bytes. Also notice that student is the owner
33. Rerun **vi mytestfile**
34. Type **i** Notice at the bottom left that you are in insert mode. 
35. While in insert mode type This is line one and then press Enter
36. Notice that you are inserting text into the file
37. While still in insert mode, type **:wq**
38. Notice that, since you are still in insert mode, you’re actually inserting text instead of issuing a command.
39. You’ll need to change to command mode to issue this command. Press Esc
40. You will no longer see INSERT at the bottom left because you are in command mode
41. Now type **:wq** and press Enter
42. Run **ls -l** again to verify that mytestfile was written to the disk and that it is more than 0 bytes.
43. Rerun **vi mytestfile**
44. Type **i** to get back into insert mode
45. Delete what is there (you can use backspace and delete)
46. Add the following 7 lines:

Text

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1. Remember, you’re still in insert mode. Change to command mode by pressing Esc
2. Type **:set nu** and press Enter
3. You should see the command you issued at the bottom left, and line numbers displayed (but not a part of the file data)
4. You’re still in command mode. Type **:wq** and press Entervi
5. View the contents of mytestfile by running **cat mytestfile**
6. **Screenshot the output of cat mytestfile. Paste to a Word document and label ‘mytestfile’**
7. Graphical user interface, text

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8. **Screenshot as many of the most current history commands as possible (the larger the number, the more recent). Paste to a Word document and label ‘first history’**

Text

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Finishing:

* Run the **exit** command to close the terminal
* Close the Console tab that was created so that you see the list of VMs again.
* Click the Stop button. Also click the Delete button if are finished with the lab environment for awhile.

**Upload the Word document to Canvas**