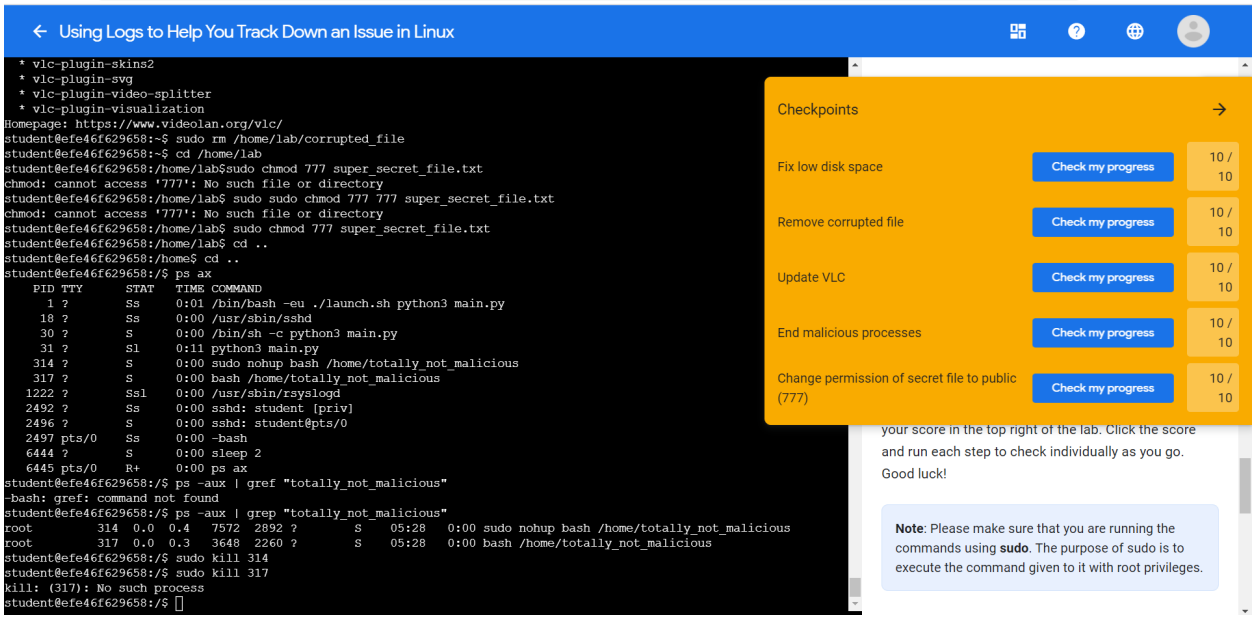
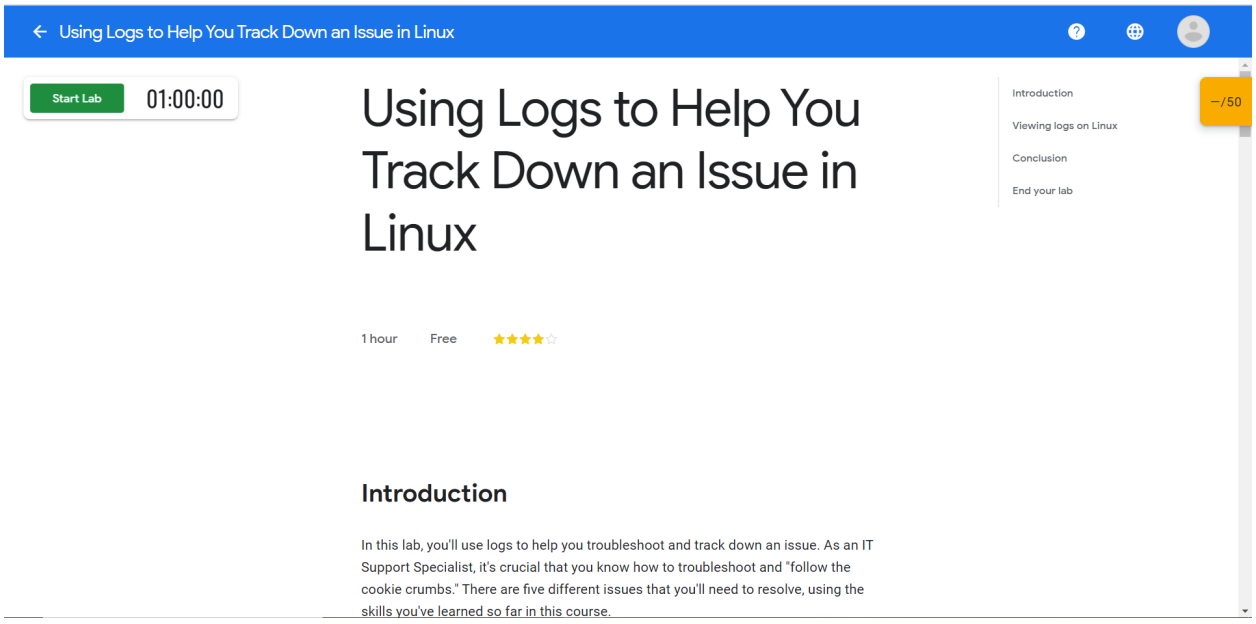
Coursera:
Operating systems and you: Becoming a Power user :
Week 6: Using Logs to help you track down an issue in Linux :





Start Lab 01:00:00

Head's up: You'll experience a delay as the labs initially load (particularly for Windows labs). So, please **wait a couple of minutes for the labs to load**. The grade is calculated when the lab is complete, so be sure to hit "**End Lab**" when you're done!

You'll have 60 minutes to complete this lab.

What you'll do

- Familiarize yourself with the process of changing permissions within a file and folder in Linux
- Change the ownership of a specific file and folder

Start the lab

You'll need to start the lab before you can access the materials. To do this, click the green "Start Lab" button at the top of the screen.

Start Lab

After you click the "Start Lab" button, you will see a shell, where you will be performing further steps in the lab. You should have a shell that looks like this:

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Introduction
Viewing logs on Linux
Conclusion
End your lab
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The scenario

Your computer is having some issues, and you can't seem to figure out what's wrong. Argh! Dig through the logs to figure out how to fix these issues.

You'll use logs to identify issues on a Linux VM, which you'll then fix using the knowledge you've gained from the other labs that you've completed.

What you should already know

This lab focuses on looking at logs that indicate issues that need to be fixed. These issues can be resolved using the skills you've gained in previous labs, so detailed instructions won't be included here. You're on your own...but you've got this!

Here are the concepts you need to be familiar with before taking this lab:

- Updating software that's out-of-date

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- Finding and deleting files
- Modifying file permissions
- Finding and terminating specific processes

Viewing logs on Linux

On Linux machines, logs are stored in the **/var/log** directory. There are lots of log files in this directory, and you can view them with this command:

```
ls /var/log
```

```
student@b65cac3ba917:~$ ls /var/log
alternatives.log  apt  auth.log  btmp  dpkg.log  exim4  faillog  fontconfig.log  lastlog  messages  syslog  user.log  wtmp
student@b65cac3ba917:~$
```

We're interested in syslog for the moment. The logs on Linux can be viewed like any text file; you can use the command below to view the contents of syslog:

```
sudo cat /var/log/syslog
```


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The log contents are super long, so you'll have to scroll through the logs to look for the five entries that are relevant to this lab. The logs are entered chronologically, and the logs that you'll need to fix should be timestamped around the time that the lab started. For convenience, all of the log entries you need to fix contain the phrase "Qwiklab Error". Knowing this, you could also filter out the relevant labs using the grep command.

We'll walk through addressing one of the log's issues, then the other four will be up to you!

Low disk space!

Here's the log entry we will be dealing with first:

```
Aug  5 09:35:49 b65cac3ba917 root: Qwiklab Error: Disk space is super low, fix it!
```


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This error indicates that your computer is running out of memory due to a super large file. Unfortunately, it doesn't indicate which file is causing the problem, so you'll need to find it. Luckily, Linux has an easy way to find the largest files on your file system. The **du** command can be used to list all files in a directory (recursively through subdirectories, too), which you can sort by size to find the largest files. By piping the output of du (using the "|" symbol) to the **sort** command, you can sort the output by file size. The "-n" and "-r" flags tell sort to treat the string output on each line as a number (the file size), and to sort in reverse order so that the largest files are listed first. By piping the output of this into the **head** command, you can print out only the top few results (you can specify how many to output by adding "-n [NUMBER]" to the end of the command).

The command below uses **du**, **sort**, and **head** to show the top five largest files, starting from your /home directory:

```
sudo du -a /home | sort -n -r | head -n 5
```

```
student@b65cac3ba917:~$ sudo du -a /home | sort -n -r | head -n 5
3147112 /home
3147076 /home/lab
3145736 /home/lab/storage
3145732 /home/lab/storage/ultra_mega_large.txt
1328    /home/lab/downloads
```

You can see that the largest file in your home directory is /home/lab/storage/ultra_mega_large.txt, at about 5GB. This isn't an important file, but it's taking up a lot of space, so you can delete it to fix the disk space error:

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```
sudo rm /home/lab/storage/ultra_mega_large.txt
```

Now that the large file is gone, this log's issue has been dealt with. You can see that the log entry is still present in the log file; logs aren't deleted once the errors that caused them are resolved.

The remaining log entries

The rest of the logs involve issues that you have already successfully fixed in earlier labs in this course. Refer back to those lessons and labs to refresh yourself on the required steps, if you're stuck:

- Updating software that's out-of-date (Week 3 Labs)
- Finding and deleting files (Week 1 Labs)
- Modifying file permissions (Week 2 Labs)
- Finding and terminating specific processes (Week 5 Labs)

If you'd like to check your steps along the way, refer to your score in the top right of the lab. Click the score and run each step to check individually as you go. Good luck!

Note: Please make sure that you are running the commands using **sudo**. The purpose of sudo is to execute the command given to it with root privileges.

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Conclusion

Excellent job! You've successfully used logs to track down and fix issues on a Linux machine.

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End your lab

When you have completed your lab, click **End Lab**. Qwiklabs removes the resources you've used and cleans the account for you.

You will be given an opportunity to rate the lab experience. Select the applicable number of stars, type a comment, and then click **Submit**.

The number of stars indicates the following:

- 1 star = Very dissatisfied
- 2 stars = Dissatisfied
- 3 stars = Neutral
- 4 stars = Satisfied
- 5 stars = Very satisfied

You can close the dialog box if you don't want to provide feedback.

For feedback, suggestions, or corrections, please use the **Support** tab.

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