

Coursera:

Operating systems and you: Becoming a Power user :

Week 5: Maintaining efficient process utilization on Linux :

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# Maintain Efficient Process Utilization on Linux

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## Introduction

In this lab, you'll use the new commands you learned to do some process maintenance on a Linux virtual machine.

**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.

### 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:

```
student@064a6934570a1:~$
```

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## Terminating a specific process

The `ps -aux` command allows you to list all currently running processes on a Linux machine. However, the list of processes is often super long, which makes finding a specific process pretty tough. To filter the processes you're interested in, you can pipe the output of `ps` through `grep`.

There are two "malicious" processes currently running on your machine, called "totally\_not\_malicious". You can run `ps` and `grep` to find them, using this command:

```
ps -aux | grep "totally_not_malicious"
```

You should see output similar to this. The top two lines are the two processes, while the last line is the `grep` process you just used to search for them. Check out the four-digit numbers on the left of each of the rows; these are the process IDs.

```
student@7e05ff40f1b1:~$ ps -aux | grep "totally_not_malicious"
root      299  0.0  0.3   512  352 ?        S    11:46   0:00 sudo ncduhp bash /home/totally_not_malicious
root      300  0.0  0.4  2432  2432 ?        S    11:46   0:00 bash /home/totally_not_malicious
student@7e05ff40f1b1:~$ ps -aux | grep "totally_not_malicious"
student@7e05ff40f1b1:~$
```

To stop a process, you can use the `kill` command. You need to use `sudo` to have permission to stop them. You also need to specify the ID of the process, which will likely be different on your machine than what's shown above (the ID is outlined in light blue):

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```
sudo kill [PROCESS ID]
```

After killing the processes, you can verify that they're no longer running by running the original command again:

```
ps -aux | grep "totally_not_malicious"
```

```
student@7e05ff40f1b1:~$ ps -aux | grep "totally_not_malicious"
student  300  0.0  0.3  3084  308 psw/o    S+   11:50   0:00 grep totally_not_malicious
student@7e05ff40f1b1:~$
```

Click Check my progress to verify the objective.



Stop the malicious processes

Check my progress

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## Terminating multiple processes

There are also multiple processes running on your computer containing the word "razzle". You can find them in the same way that you found the previous process using `ps`. Because `grep` doesn't look for full matches, it can be used to find any process that contains a specific substring:

```
ps -aux | grep "razzle"
```

The below shows all six processes that contain the word "razzle". (Again, you can ignore the last process because it's the process running `grep`.)

```
student@7e05ff40f1b1:~$ ps -aux | grep "razzle"
root      300  0.0  0.5  7572  3556 ?        S    11:46   0:00 sudo ncduhp bash /home/razzle_dazzle
root      301  0.0  0.5  7572  3556 ?        S    11:46   0:00 sudo ncduhp bash /home/razzle_dazzle
root      302  0.0  0.6  7572  3596 ?        S    11:46   0:00 sudo ncduhp bash /home/razzle
root      303  0.0  0.4  3652  2428 ?        S    11:46   0:00 bash /home/razzle
root      304  0.0  0.4  3652  2576 ?        S    11:46   0:00 bash /home/razzle
root      305  0.0  0.4  3652  2756 ?        S    11:46   0:00 bash /home/razzle_dazzle
student  306  0.0  0.2  3088  652 pts/0    S+   11:52   0:00 grep razzle
```

To kill each of the processes, you can use the same `kill` command as before, substituting in each process ID:

```
sudo kill [PROCESS ID]
```

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To verify that the processes were successfully stopped, you can use the same command you used to find them in the first place:

```
ps -aux | grep "razzle"
```

You should only see the process for the grep command, indicating that the other processes are no longer running:

```
student@7e605ff40f1b1:~$ ps -aux | grep "razzle"
student 1199 0.0 0.1 3084 884 pts/0 S+ 11:54 0:00 grep razzle
student@7e605ff40f1b1:~$
```

Click Check my progress to verify the objective.



Stop the razzle processes

Check my progress

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## Conclusion

Wohoo! You've successfully used `ps` to find processes on Linux, and used `kill` to end them. These are common Linux commands, so we recommend you practice until you feel comfortable using them.

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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

```
student@89a5bfc79da5:~$ ps -aux | grep "totally_not_malicious"
root      311  0.0  0.5  7572  3548 ?        S   19:04   0:00 sudo nohup bash /home/totally_not_malicious
root      318  0.0  0.4  3648  2728 ?        S   19:04   0:00 bash /home/totally_not_malicious
student   3346 0.0  0.1  3080   880 pts/0    S+  19:29   0:00 grep totally_not_malicious
student@89a5bfc79da5:~$ sudo kill 311
student@89a5bfc79da5:~$ ps -aux | grep "totally_not_malicious"
student   3380 0.0  0.1  3080   888 pts/0    S+  19:29   0:00 grep totally_not_malicious
student@89a5bfc79da5:~$ ps -aux | grep "razzle"
root      312  0.0  0.5  7572  3532 ?        S   19:04   0:00 sudo nohup bash /home/razzle_dazzle
root      313  0.0  0.6  7572  3596 ?        S   19:04   0:00 sudo nohup bash /home/my_cat_razzle
root      314  0.0  0.5  7572  3560 ?        S   19:04   0:00 sudo nohup bash /home/razzles
root      315  0.0  0.4  3648  2672 ?        S   19:04   0:00 bash /home/my_cat_razzle
root      316  0.0  0.4  3648  2624 ?        S   19:04   0:00 bash /home/razzles
root      317  0.0  0.4  3648  2664 ?        S   19:04   0:00 bash /home/razzle_dazzle
student   3432 0.0  0.1  3080   888 pts/0    S+  19:30   0:00 grep razzle
student@89a5bfc79da5:~$ sudo kill 312
student@89a5bfc79da5:~$ sudo kill 313
student@89a5bfc79da5:~$ sudo kill 314
student@89a5bfc79da5:~$ ps -aux | grep "razzle"
student   3461 0.0  0.1  3080   876 pts/0    S+  19:30   0:00 grep razzle
student@89a5bfc79da5:~$
```