Conversation with:
Skyla Easlie
Linux Systems Administrator

Systems Administration Challenge Chat Transcript

Skyla sent:
Hello there, @playerone! You must be my new intern! 😳

I'm Skyla Easlie, I'm a Linux Systems Administrator here at TryCyber Credit Union.

Skyla sent:
I'm going to be showing you how to perform some core **Systems Administration** tasks. I'll be doing that by having you help me accomplish some of the simpler tasks I take care of using the **Ubuntu 22.04 Linux** server you are looking at now. ✨

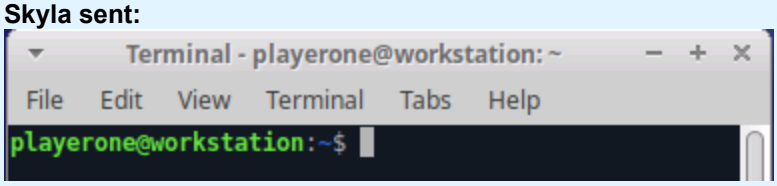
Skyla sent:
All the tasks we will be doing today will be completed using the **Terminal**. It can be intimidating if you have not used it before. So let me know if you want a brief tutorial on it.

Skyla sent:
Are you ready to get started? 😁

Participant sent:
Terminal tutorial, please!

Skyla sent:
The **Terminal** is primarily used to access an application called a shell. We interact with shells via a **command-line interface (CLI)** where we input and execute text-based commands on a system.

Skyla sent:
Let's open the Terminal on this system now and run a few basic commands so you get the hang of it. You can open the **Terminal** by double-clicking the icon on the desktop named **Terminal Emulator**. It should look like this once you have it open...

Skyla sent:


Participant sent:
I've opened the Terminal.

Skyla sent:
Great. Basically, you type commands into the shell within the Terminal and then hit `Enter` or `Return` on the keyboard to run the command.

Skyla sent:
To properly utilize any CLI command, you must understand its format, options, and other arguments. The **format** defines the structure and order of options and other arguments, the **options** define or modify behavior, and the **arguments** are command defined input types (e.g., files, directories, users, software packages, etc.).

Skyla sent:
Additionally, all CLI commands on this system are case-sensitive, so pay close attention to the capitalization of letters.

Skyla sent:
The basic command format is...

```
command [OPTIONS] [ARGUMENTS]
```

However, it varies a lot from command to command, and options and other arguments are not always required.

Skyla sent:
An example of a command that does not require any options or other arguments is `whoami`. If you type `whoami` into the shell and then hit `Enter` or `Return` on the keyboard, the `whoami` command will output the name of the user running the command into the Terminal. It should look like this if you run that command...

Skyla sent:

```
playerone@workstation:~$ whoami
playerone
```

Participant sent:
What's a more involved example?

Skyla sent:
I'll give you a more complex example using the `ls` command.

Skyla sent:
In this example, we will use the `ls` command to list detailed information about the entire contents of the `Templates` directory (i.e., folder) in your (playerone's) `home` directory. Our example `ls` command will use the following format...

```
ls [OPTIONS] [DIRECTORY]
```

Note that in this case, the command's argument requires the input to be a directory.

Skyla sent:
The actual command we want to run is...

```
ls -a -l /home/playerone/Templates
```

Skyla sent:
The `-a` and the `-l` are both options that modify the `ls` command's behavior, and `/home/playerone/Templates` is our argument which is a directory provided in the form of a **path**.

Skyla sent:
For this command's argument, we must provide the **path** to the directory from the root of the file system; otherwise, the system won't know which directory named `Templates` we are referring to.

Skyla sent:
And finally, when you run that command, the output should look like this...

Skyla sent:

```
playerone@workstation:~$ ls -a -l /home/playerone/Templates/
total 24
drwxr-xr-x  2 playerone playerone 4096 Jul 12 21:36  .
drwxr-x--- 14 playerone playerone 4096 Jul 12 21:36  ..
-rw-r--r--  1 playerone playerone 6859 Apr  9  2022 'OpenDocument Spreadsheet.ods'
-rw-r--r--  1 playerone playerone 7388 Apr  9  2022 'OpenDocument Text.odt'
-rw-r--r--  1 playerone playerone    0 Apr  9  2022 'Plain Text.txt'
```

Participant sent:
Got it. Any extra notes?

Skyla sent:
The Terminal and shells are incredibly powerful and versatile tools. Not all commands and programs follow the general structure I've provided you with here. Unfortunately, we only have time to cover the basics, but I do have a few last things I'd like to mention.

Skyla sent:
Some commands will not print visual output to the Terminal in normal operation, such as the `cp` command, which is used to copy files and directories.

Skyla sent:
Many commands can use multiple arguments, handle multiple input types for arguments (e.g., file and/or directory paths), or have options that will have their own arguments.

Skyla sent:
Some options can, or must be, written in a long-form format (e.g., `ls --all [DIRECTORY]` is the same as `ls -a [DIRECTORY]`).

Skyla sent:
Options without arguments can often be provided together and in any order (e.g., `ls -la [DIRECTORY]` is the same as `ls -a -l [DIRECTORY]`).

Skyla sent:
And last, but certainly not least, you can almost always reference a command's format, options, and other arguments using the command `man [COMMAND]` (e.g., `man cp`) to view the provided command's manual page in the Terminal.

Skyla sent:
Hopefully that was not too much information! I know it seems like a lot, but it gets easier the more you use it. For today's tasks, I'll be sure to provide you with more details for any commands and programs you'll need.

Participant sent:
Sounds good! I'm ready to get started!

Skyla sent:
Great!

Skyla sent:
It looks like you are not the only new employee we've gotten recently! The web development lead has sent me a few new employee account setup requests today.

Skyla sent:
Managing user accounts and what users are allowed to access and do on systems are common Systems Administration tasks.

Skyla sent:
The first task I want your help with today is adding one of these new employee's **user** accounts, `alaurie`, to the `webdev` **group** on the Ubuntu Linux server. They need their user account to be added to this group so they can start working.

Skyla sent:
Adding users to groups is often done for both organizational and security purposes. Generally, it is better to set access and permission controls on a group of similar users rather than setting those controls for each individual user. This can take a little more time to set up initially, but once it is done, all you need to do is add users to the right groups, which is what we are going to do now!

Skyla sent:
As a rule of thumb, users should only ever be granted the privileges they need and nothing more. This is known as the *Principle of Least Privilege*. 🌞

Participant sent:
Good to know. How do we get started?

Skyla sent:
To get started, let's make sure the `alaurie` **user** is not already in the `webdev` **group**. To see what groups the `alaurie` user is a part of, run the following command in the Terminal...

```
groups alaurie
```

Skyla sent:
When you run the command, the output should look like this...

Skyla sent:

```
playerone@workstation:~$ groups alaurie
alaurie : alaurie
```

Participant sent:
Got it.

Skyla sent:
Based on that output it looks like the `alaurie` **user** is not in the `webdev` **group** yet. Can you add the user to the group for me?

Skyla sent:
While there is more than one way to do this, I'll suggest you use the `usermod` command here. The `usermod` command format is...

```
usermod [OPTIONS] [USERNAME]
```

Skyla sent:
If you are not familiar with how to use the `usermod` command to do this, you could search something like 'usermod add user to group' using a search engine on the web (e.g., Google, Bing, DuckDuckGo) or pull up the manual page for the `usermod` command with the command `man usermod` to help you look up what to do. I have to do this all the time!

Skyla sent:
If you do need to look it up on the web, be sure to do it from your computer and not the server. This server is not connected to the internet. 🚫

Skyla sent:
Additionally, since the command involves administrative changes to the system, you must run the command as a superuser. To do that, prepend the command you want to run with the `sudo` command (i.e., `sudo usermod [OPTIONS] [USERNAME]`).

Skyla sent:
When you use the `sudo` command, you will sometimes be prompted for your password. Just enter your password into the prompt and hit `Enter` or `Return` on the keyboard when you're done. (Note: Your password can be found on the Info Tab)

Skyla sent:
Anyway, I'll leave this to you! Let me know when you are done or if you need any help.

Participant sent:
Help, please!

Skyla sent:
Sure!

Skyla sent:
The command you need to run in the Terminal to add the `alaurie` user to the `webdev` group is...

```
sudo usermod -a -G webdev alaurie
```

Skyla sent:
You must start with the `sudo` command, as normal user accounts cannot make these changes to the system at their typical permission level.

Skyla sent:
The `-G` option of the `usermod` command indicates we are providing a group, or a list of groups, for a user. Then, when used with the `-a` option, it adds the user to the provided group(s) instead of replacing the user's groups with what was provided.

Skyla sent:
Now that you know the command, let me know once you've finished this task.

Participant sent:
I'm done.

Skyla sent:
Alright, let's move on to our last task for the day. If you thought the previous task was easy, this one will be a breeze. 😀

Skyla sent:
I need you to add another **user**, `ksteph`, to the `webdev` **group** and the `sudo` **group**. You should be able to handle this with the `sudo` and `usermod` commands.

Skyla sent:
Oh! And remember, you can use the command `groups ksteph` to see what groups the ksteph user is a part of so you can check and ensure you've added it to the two groups. When you have done it correctly, it should look like this...

Skyla sent:
```
playerone@workstation:~$ groups ksteph
ksteph : ksteph sudo webdev
```

Skyla sent:
Okay! I've got to head to a meeting with another team now. So, you are on your own to get this last task done. Thanks for all your help! Good luck! 🌟

TRY CYBER