Linux Essentials Workshop-2

Clarusway

Subject: Linux Basic Shell Commands

Learning Goals

- Practice using the linux basic shell commands.

Introduction

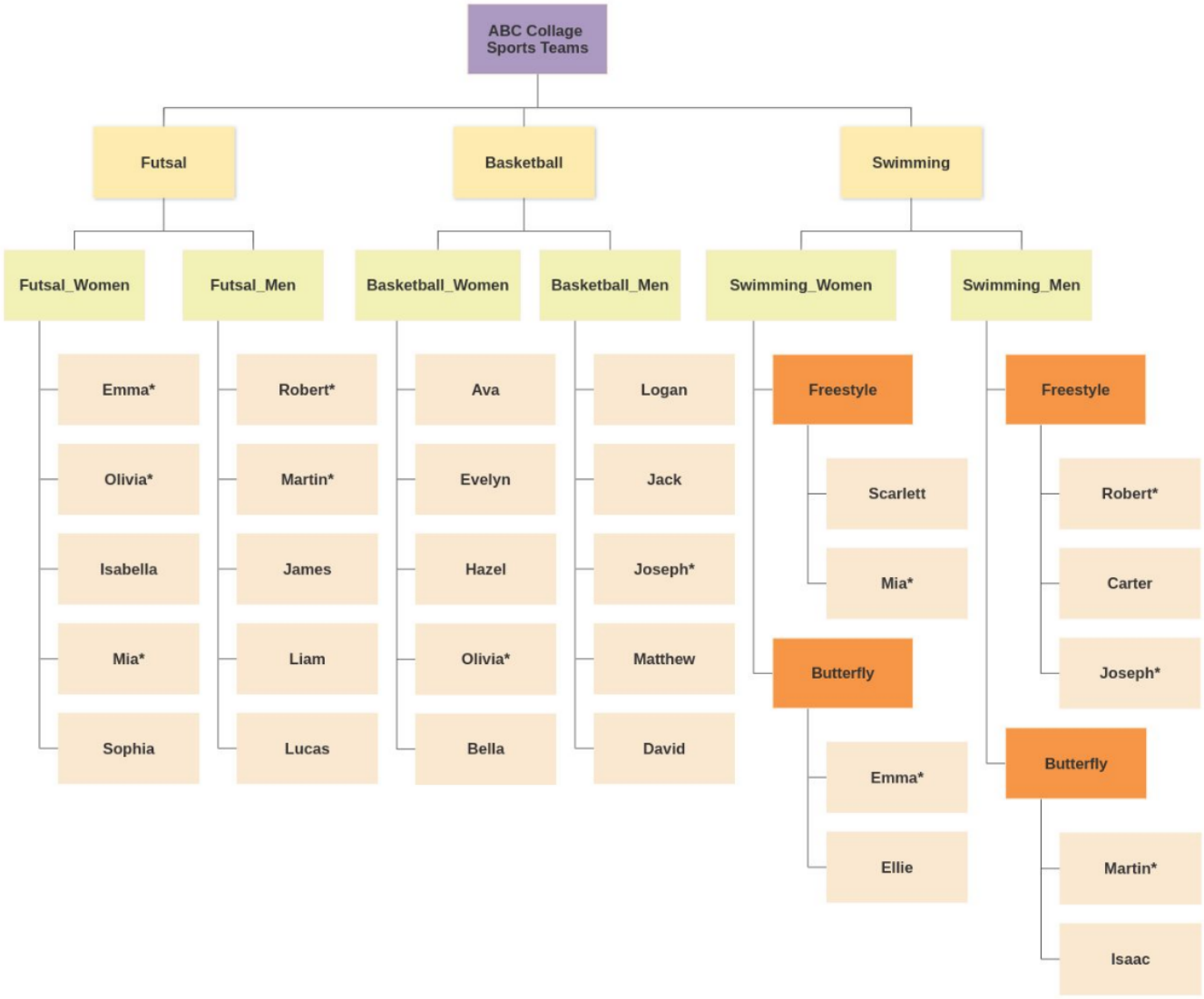
We've covered a lot of Linux concepts, but now it's time to put the concepts in to practice. We'll start with basic shell commands.

Practice Using the `Bash Shell` in Lesson

You might notice a few new things in this lesson that you haven't encountered before. We'll walk you through them.

Coding Challenge's Story

A college named ABC in the USA has sport teams. The college administrators want to arrange their students who do sports in teams in a file hierarchy. The administration couldn't solve this problem and they came to you because you are an IT specialist. The college has three sport teams. Each team is divided into men and women. However, they want only administrators to have access to some students' private information.



Code Along

Part 1 - Basic Commands 1/2

1. Open the terminal

- When you first open the terminal, you are in the home directory of your user.

```
open the terminal (Ubuntu/WSL/Try it/Git Bash/VS Code or whatever)
```

2. To know which directory you are in, you can use the “pwd” command.

- It gives us the absolute path, which means the path that starts from the root. The root is the base of the Linux file system. It is denoted by a forward slash(/).
- The user directory is usually something like "/home/username".

```
pwd
/home/username

ls
```

3. Create a directory named "ABC_College" in user's home directory.

- mkdir ABC_College
- Use the mkdir command when you need to create a folder or a directory. For example, if you want to make a directory called “DIY”, then you can type “mkdir DIY”. Remember, as told before, if you want to create a directory named “DIY Hacking”, then you can type “mkdir DIY\ Hacking”.

```
 mkdir ABC_College
```

4. Go into "ABC_College" directory.

- cd ABC_College
- Use the "cd" command to go to a directory. For example, if you are in the home folder, and you want to go to the downloads folder, then you can type in “cd Downloads”.
- Remember, this command is case sensitive, and you have to type in the name of the folder exactly as it is.
- But there is a problem with these commands. Imagine you have a folder named “Raspberry Pi”. In this case, when you type in “cd Raspberry Pi”, the shell will take the second argument of the command as a different one, so you will get an error saying that the directory does not exist. Here, you can use a backward slash. That is, you can use “cd Raspberry\ Pi” in this case.
- Spaces are denoted like this: If you just type “cd” and press enter, it takes you to the home directory.
- To go upper folder before that, you can type “cd ..” . The two dots represent one folder up.

```
cd ABC_College
```

5. List all the files/folders with details in ABC_College directory.

- ls -al
- "ls" command is used to know what files/folders are in the directory you are in. You can see all the hidden files/folders by using the command “ls -a”.
- As we created the folder yet, there is no files in it.

```
ls –al
ls –a
```

6. Create folders named "Futsal", "Basketball" and "Swimming".

```
mkdir Futsal Basketball Swimming
```

or

```
mkdir Futsal
mkdir Basketball
mkdir Swimming
```

7. Go into "Futsal" directory and list content of the directory with details and hidden files.

```
cd Futsal
ls -al
```

8. Create folders named "Futsal_Women" and "Futsal_Men after that list the content of "Futsal".

```
mkdir Futsal_Women Futsal_Men
ls
```

or

```
mkdir Futsal_Women
mkdir Futsal_Men
ls
```

9. Go into "Basketball" directory from inside "Futsal" directory and list content of "Basketball" directory with details and hidden files.

```
cd ../Basketball
ls -al
```

10. Create folders named "Basketball_Women" and "Basketball_Men after that list the content of "Basketball".

```
mkdir Basketball_Women Basketball_Men
ls
```

or

```
mkdir Basketball_Women
mkdir Basketball_Men
ls
```

11. Go into "Swimming" directory from inside "Basketball" directory and list content of "Swimming" directory with details and hidden files.

```
cd ../Swimming
ls -al
```

12. Create folders named "Swimming_Women" and "Swimming_Men after that list the content of "Swimming".

```
mkdir Swimming_Women Swimming_Men
ls
```

13. Print and check the path of the directory you are in.

```
pwd
```

14. Go into "Swimming_Women" directory.

```
cd Swimming_Women
```

15. Create folders named "Freestyle" and "Butterfly" in "Swimming_Women".

```
mkdir Freestyle Butterfly
```

16. Go into "Swimming_Men" directory from inside "Swimming_Women" directory.

```
cd ../Swimming_Men
```

17. Create folders named "Freestyle" and "Butterfly" in "Swimming_Men".

```
mkdir Freestyle Butterfly
```

18. Go into "Futsal_Women" directory again from inside "Swimming_Men" directory and list the content of "Futsal_Women".

```
cd ../../Futsal/Futsal_Women
ls
```

19. Create 5 files named "Emma", "Olivia", "Isabella", "Mia", "Sophia" inside "Futsal_Women".

```
touch Emma Olivia Isabella Mia Sophia
```

20. Write the students' informations using "echo" command into the files according to the table given below

Student Name	Information
Emma	Futsal_Goalkeeper
Olivia	Futsal_Defender
Isabella	Futsal_Winger
Mia	Futsal_Winger
Sophia	Futsal_Pivot

```
echo "Futsal_Goalkeeper" > Emma
echo "Futsal_Defender" > Olivia
echo "Futsal_Winger" > Isabella
echo "Futsal_Winger" > Mia
echo "Futsal_Pivot" > Sophia
```

21. Isabella's information is read and write (rw-) only the user and user's group (not the others).

```
chmod a-rwx Isabella
chmod ug=rw Isabella
```

or

```
chmod 660 Isabella
```

22. Go into "Futsal_Men" directory and list the content of it.

```
cd ../Futsal_Men
ls
```

23. Create 5 files named "Robert", "Martin", "James", "Liam", "Lucas" inside "Futsal_Men".

```
touch Robert Martin James Liam Lucas
```

24. Write the students' informations using "echo" command into the files according to the table given below

Student Name	Information
Robert	Futsal_Goalkeeper
Martin	Futsal_Defender
James	Futsal_Winger
Liam	Futsal_Winger
Lucas	Futsal_Pivot

```
echo "Futsal_Goalkeeper" > Robert
echo "Futsal_Defender" > Martin
echo "Futsal_Winger" > James
echo "Futsal_Winger" > Liam
echo "Futsal_Pivot" > Lucas
```

25. Martin's information is read and write (rw-) only the user (not the groups and the others).

```
chmod a-rwx Martin
chmod u=rw Martin
```

or

```
chmod 600 Martin
```

26. Go into "Basketball_Women" directory again from inside "Futsal_Men" directory and list the content of "Basketball_Women".

```
cd ../../Basketball/Basketball_Women
ls
```

27. Create 4 files named "Ava", "Evelyn", "Hazel", "Bella" inside "Basketball_Women".

```
touch Ava Evelyn Hazel Bella
```

28. Write the students' informations using "echo" command into the files according to the table given below

Student Name	Information
Ava	Basketball_Point-Guard
Evelyn	Basketball_Shooting-Guard
Hazel	Basketball_Center
Bella	Basketball_Small-Forward

```
echo "Basketball_Point-Guard" > Ava
echo "Basketball_Shooting-Guard" > Evelyn
echo "Basketball_Center" > Hazel
echo "Basketball_Small-Forward" > Bella
```

29. Olivia plays in two teams Futsall and Basketball. Append "Basketball_Power-Forward" line into Olivia's information file inside "Futsal_Women" without overwrite using echo command and absolute path.

```

```

```
echo "Basketball_Power-Forward" >>
/home/$USER/ABC_College/Futsal/Futsal_Women/Olivia
```

30. Get Olivia's information file from inside "Futsal_Women" directory using "cp" command and relative path.

```
cp ../../Futsal/Futsal_Women/Olivia .
```

31. List the content of current directory with details and hidden files.

```
ls -al
```

32. Go into "Basketball_Men" directory using "~" (tilde).

```
cd ~/ABC_College/Basketball/Basketball_Men
```

33. Create 5 files named "Logan", "Jack", "Joseph", "Matthew", "David" inside "Basketball_Men".

```
touch Logan Jack Joseph Matthew David
```

34. Write the students' informations using "echo" command into the files according to the table given below

Student Name	Information
Logan	Basketball_Point-Guard
Jack	Basketball_Shooting-Guard
Joseph	Basketball_Center
Matthew	Basketball_Power-Forward
David	Basketball_Small-Forward

```
echo "Basketball_Point-Guard" > Logan
echo "Basketball_Shooting-Guard" > Jack
echo "Basketball_Center" > Joseph
```

```
echo "Basketball_Power-Forward" > Matthew
echo "Basketball_Small-Forward" > David
```

35. List the content of current directory with details and hidden files.

```
ls -al
```

36. David's information is read-only (r--) for everyone.

```
chmod a-wx David
chmod a=r David
```

or

```
chmod 444 David
```

37. Go into "Swimming_Women/Freestyle" directory using relative path.

```
cd ../../Swimming/Swimming_Women/Freestyle
```

38. Create a file named "Scarlett" and write "Swimming_Freestyle" into the file.

```
touch Scarlett
echo "Swimming_Freestyle" > Scarlett
```

39. Mia plays in two teams Futsall and Swimming. Append "Swimming_Freestyle" line into Mia's information file inside "Futsal_Women" without overwrite using echo command and absolute path.

```
echo "Swimming_Freestyle" >>
/home/$USER/ABC_College/Futsal/Futsal_Women/Mia
```

40. Get Mia's information file from inside "Futsal_Women" directory using "cp" command and absolute

path.

```
cp /home/$USER/ABC_College/Futsal/Futsal_Women/Mia .
```

41. Go into "Butterfly" directory.

```
cd ../Butterfly
```

42. Create a file named "Ellie" and write "Swimming_Butterfly" into the file.

```
touch Ellie
echo "Swimming_Butterfly" > Ellie
```

43. Emma plays in two teams Futsall and Swimming. Append "Swimming_Butterfly" line into Emma's information file inside "Futsal_Women" without overwrite using echo command and absolute path.

```
echo "Swimming_Butterfly" >>
/home/$USER/ABC_College/Futsal/Futsal_Women/Emma
```

44. Get Emma's information file from inside "Futsal_Women" directory using "cp" command and absolute path.

```
cp /home/$USER/ABC_College/Futsal/Futsal_Women/Emma .
```

45. Go into "Swimmming_Men/Freestyle" directory using relative path.

```
cd ../../Swimming_Men/Freestyle
```

46. Create a file named "Carter" using only "echo" command and write into the file "Swimming_Freestyle".

```
echo "Swimming_Freestyle" > Carter
```

47. Robert in Futsal and Joseph in Basketball play in Swimming Team also. Append "Swimming_Freestyle" line into the information files inside "Futsal_Men" and "Basketball_Men" without overwrite using echo command and absolute path.

```
echo "Swimming_Freestyle" >>
/home/$USER/ABC_College/Futsal/Futsal_Men/Robert
echo "Swimming_Freestyle" >>
/home/$USER/ABC_College/Basketball/Basketball_Men/Joseph
```

48. Get Robert and Joseph's information file from inside "Futsal_Men" and "Basketball_Men" directories using "cp" command and absolute path.

```
cp /home/$USER/ABC_College/Futsal/Futsal_Men/Robert .
cp /home/$USER/ABC_College/Basketball/Basketball_Men/Joseph .
```

49. Go into "Swimmming_Men/Butterfly" directory using relative path.

```
cd ../../Swimming_Men/Butterfly
```

50. Create a file named "Isaac" using echo command and write into the file "Swimming_Butterfly".

```
echo "Swimming_Butterfly" > Isaac
```

51. Isaac's information is read, write and executable (rwx) for only the group.

```
chmod a-rwx Isaac
chmod g=rwx Isaac
```

or

```
chmod 070 Isaac
```

52. Martin plays in two teams Futsall and Swimming. Append "Swimming_Butterfly" line into Martin's

information file inside "Futsal_Men" without overwrite using echo command and absolute path.

```
echo "Swimming_Butterfly" >>
/home/$USER/ABC_College/Futsal/Futsal_Men/Martin
```

53. Get Martin's information file from inside "Futsal_Men" directory using "cp" command and relative path.

```
cp ../../../Futsal/Futsal_Men/Martin .
```

54. Go into ABC_College directory.

```
cd ~/ABC_College
```

55. Install "tree" command via packet manager. Reqired code is below.

For Ubuntu:

```
sudo apt update
sudo apt install tree -y
```

For centOS:

```
sudo yum update
sudo yum install tree -y
```

56. Run the command below.

```
tree
```

Part 2 - Basic Commands 2/2

1. The administration reported that Sophia in Futsal Women's Team left from the team. Go into the "Futsal_Women" directory and remove Sofia from there.

```
cd ~/ABC_College/Futsal/Futsal_Women
rm Sophia
```

2. The administration reported that Mia in Futsal Women's Team left from the team and she joined Basketball Women's team. Move Mia's file into "Basketball_Women" directory.

```
mv Mia ../../Basketball/Basketball_Women/
```

3. Go into Basketball_Women directory and list content of it with details and hidden files.

```
cd ../../Basketball/Basketball_Women/
ls -al
```

4. Change the content of Mia's file by adding "Basketball_Small-Forward" and removing "Futsal_Winger" using vi editor.

```
vi Mia
```

5. Print working directory.

```
pwd
```

6. Move Ellie from Swimming Team to Futsal Women team as Futsal Winger without left current directory and use absolute paths.

```
mv /home/$USER/ABC_College/Swimming/Swimming_Women/Butterfly/Ellie
/home/$USER/ABC_College/Futsal_Women/
```

7. Go into "Futsal_Women" directory using relative path.

```
cd ../../Futsal/Futsal_Women
```

8. Change the content of Ellie's file by adding "Futsal_Winger" and removing "Swimming_Butterfly" using nano editor.

```
nano Ellie
```

9. Scarlett in Swimming Team wants to play Futsal as a Pivot also. You append "Futsal_Pivot" into Scarlett's file using echo command.

```
echo "Futsal_Pivot" ~/ABC_College/Swimming/Freestyle/Scarlett
```

10. Copy Scarlett's file into "Futsal_Women" directory.

```
cp ~/ABC_College/Swimming/Freestyle/Scarlett .
```

11. Reach Martin's file in Futsal_Men and read it.

cat ../Futsal_Men/Martin

12. Go into Futsal_Men directory.

```
cd ../Futsal_Men
```

13. Print working directory.

```
pwd
```

14. List students in Futsal Men Team whose names begin with the letter "L".

```
ls L*
```

15. List students in Futsal Men Team who have the letter "m" in their name.

```
ls *[Mm]*
```

16. Go into "Basketball_Women" directory using ~ (tilde).

```
cd ~/ABC_College/Basketball/Basketball_Women
```

16. You noticed that you wrote the name of Eve in the basketball team as Ava. Correct the name of Eve.

```
mv Ava Eve
```

17. List the content of current directory with details and hidden files.

```
ls -al
```

18. Use tree command in ABC_College directory.

```
tree ~/ABC_College
```

19. Attention please! Finally, remove ABC_College directory.

```
rm -r ~/ABC_College
```

20. Exit from the terminal

- Tips and Tricks for Using Linux Command Line

- You can use the clear command to clear the terminal if it gets filled up with too many commands.
- TAB can be used to fill up in terminal. For example, You just need to type “cd Doc” and then TAB and the terminal fills the rest up and makes it “cd Documents”.
- Ctrl+C can be used to stop any command in terminal safely. If it doesn't stop with that, then Ctrl+Z can be used to force stop it.

```

```

```
exit
```

☺ **Thanks for Attending** ✍

Clarusway