File System Basics

Diptesh Kanojia
IITB-Monash Research Academy

e-Yantra Team
ERTS Lab, IIT Bombay

IIT Bombay
March 29, 2021

Agenda for Discussion

1. File System
   - Files
   - File Listing
   - File Permissions
2. Basic Commands and Navigation
   - File Creation
   - Navigating Through Folders
   - Exploring the 'navigation'

What do Files represent?

All data in Linux is organized into files and all files are organized into directories. These directories are further organized into a tree-like structure called the filesystem. There are three basic file types of Linux.

What do Files represent?

All data in Linux is organized into files and all files are organized into directories. These directories are further organized into a tree-like structure called the filesystem. There are three basic file types of Linux.

- Files (-): Regular files which store information or data on your storage device.

What do Files represent?

All data in Linux is organized into files and all files are organized into directories. These directories are further organized into a tree-like structure called the filesystem. There are three basic file types of Linux.

- Files (-): Regular files which store information or data on your storage device.
- Directories (d): These are folders which can be used to group files.

What do Files represent?

All data in Linux is organized into files and all files are organized into directories. These directories are further organized into a tree-like structure called the filesystem. There are three basic file types of Linux.

- Files (-): Regular files which store information or data on your storage device.
- Directories (d): These are folders which can be used to group files.
- Special Files: These are files which can provide access to your USB drives, system device, and can also act as links to other folders.

Listing the files and folders

Do you want to check what files and folders exist in the current folder?

Listing the files and folders

Do you want to check what files and folders exist in the current folder?

To check the files and folders list, type 'ls' and press enter

```
$ ls
```

It should list files and folders in the current directory for you.

Listing the files and folders

Do you want to check what files and folders exist in the current folder?

To check the files and folders list, type 'ls' and press enter

```
$ ls
```

It should list files and folders in the current directory for you.
A more informative view can be obtained using the command

List files in the long listing format using the command,

```
$ ls -l
```

Do you own it?

Files which belong to your user in the systems are 'owned' by you, *i.e.*, you can read them, edit them, delete them, or execute them.

Do you own it?

Files which belong to your user in the systems are 'owned' by you, *i.e.*, you can read them, edit them, delete them, or execute them.

When you executed 'ls -l', did you see something like this?

Do you own it?

Files which belong to your user in the systems are 'owned' by you, *i.e.*, you can read them, edit them, delete them, or execute them.

When you executed 'ls -l', did you see something like this?
drwxrwxr-x 2 diptesh diptesh 4096 April 21 09:59 ZZZ

Do you own it?

Files which belong to your user in the systems are 'owned' by you, *i.e.*, you can read them, edit them, delete them, or execute them.

When you executed 'ls -l', did you see something like this?
drwxrwxr-x 2 diptesh diptesh 4096 April 21 09:59 ZZZ

- The first column represents the permissions associated with that file or folder.

Do you own it?

Files which belong to your user in the systems are 'owned' by you, *i.e.*, you can read them, edit them, delete them, or execute them.

When you executed 'ls -l', did you see something like this?
drwxrwxr-x 2 diptesh diptesh 4096 April 21 09:59 ZZZ

- The first column represents the permissions associated with that file or folder.
- The first letter in the first column represents its type (d means folder).

Do you own it?

Files which belong to your user in the systems are 'owned' by you, *i.e.*, you can read them, edit them, delete them, or execute them.

When you executed 'ls -l', did you see something like this?
drwxrwxr-x 2 diptesh diptesh 4096 April 21 09:59 ZZZ

- The first column represents the permissions associated with that file or folder.
- The first letter in the first column represents its type (d means folder).
- The rest of the letters can be divided into blocks of 3 representing permissions for the file owner, group, and others like this - "rwx rwx r-x"

File Genesis

On the command prompt, type the following and execute to create an empty file named 'diary.txt'.

File Genesis

On the command prompt, type the following and execute to create an empty file named 'diary.txt'.

First file creation

```
$ touch diary.txt
```

Also, try using the 'ls -l' command to check if it exists, and who is the owner.

File Genesis

On the command prompt, type the following and execute to create an empty file named 'diary.txt'.

First file creation

```
$ touch diary.txt
```

Also, try using the 'ls -l' command to check if it exists, and who is the owner. *Similarly, to create a folder named 'myFiles'*

First folder creation

```
$ mkdir myFiles
```

Hop in! Hop out!

- When you log in to your system, and open terminal, you are, generally, located in the 'home' folder.
- This is where you can create your files, folder, sub-folders, and different workspaces for projects.
- To change your location and go inside a folder, type and execute the following.

Hop In!

```
$ cd myFiles
```

- You can further go inside sub-folders using the same command.

Hop in! Hop out!

- Now, that you are inside the folder, you might also want to get out.
- To change your location and move back one step, type and execute the following.

Hop Out!

```
$ cd ..
```

- You can navigate directly to 'home' by using the following command.

Hop Out!

```
$ cd ~
```

A Manual for 'ls'

Please type this command on your Terminal and check the output

```
$ man ls
```

The output should look something like

You should see a description of the 'ls' command with all the options. Read away!

HINT: Before attempting the quiz, try to find out:
How to list hidden files and Practice all the problems!

References

- TLDP: File System Overview
- TLDP: Basic Commands
- e-Yantra Homepage

Thank You!

Author: Diptesh Kanojia
Contributor: Prashant Sharma

Post your queries at: resources@e-yantra.org