The Linux File System

Spoken Tutorial Project
National Mission on Education through ICT
http://spoken-tutorial.org

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Pre-requisites :

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- **You should know how to get started with the Linux OS.**

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- I am using Linux OS.
- You should know how to get started with the Linux OS.
- If not, please refer to the relevant Linux spoken tutorial on http://spoken-tutorial.org

About the Linux commands

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- **All the commands shown are in lowercase, unless mentioned otherwise.**

File

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- **In real life, a file is where we store our documents and papers.**
- **Similarly, in Linux, a file is a container for storing information.**

Directory

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- **Helps in:**

  a **Organising files in a systematic manner.**

  b **Allows different users to have their own directories.**

  c **Other users cannot access these files.**

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- **These definitions may not be entirely accurate.**

File Inode

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- **For eg:**
  - files creation/modification date
  - and its permissions

File Inode

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- **The properties are stored in the files inode, a special block of data in the file system.**
- **It contains the length of the file and where on the disk it is stored.**

File Inode

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File Inode

- The system uses the number of the file's inode.
- The directory structure names the files instead of the inode numbers, for our benefit.

Directories

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- **Directories do not store other files.**
- **The directory is itself a file, that holds the inode numbers and names of other files.**

Types of Files

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In Linux, there are three kinds of files:

1. **Regular Files or Ordinary files: contain only data, as a stream of characters.**
2. **Directories: as explained previously.**
3. **Device Files: all hardware devices and peripherals are represented as files.**

Device Files

- **Devices like CD, hard-disk, USB stick, etc.**

Device Files

- **Devices like CD, hard-disk, USB stick, etc.**
- **Helps to read and write these devices, just like ordinary files.**

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- A directory containing files and subdirectories, have a parent-child relationship with each other.
- Linux File System Tree.
- At the top is the root (denoted by a frontslash /).
- Helps in easy navigation from one file or directory to other, by moving along this tree.

Bharat Operating System Solutions

Home directory and Current directory

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Home directory and Current directory

- When we login into the Linux system, we are by default in the home directory.
- We can move around from one directory to other.
- But at any time, we can be in only one directory - current or working directory.
- The pwd command helps us to see the current directory.

Change Directory(cd)

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Change Directory(cd)

- **We can move from one directory to other.**
- **The cd command is used for this.**

Absolute & Relative pathnames

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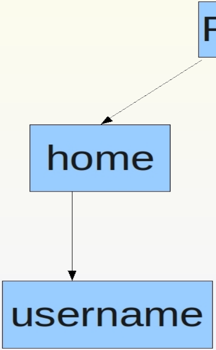
Absolute & Relative pathnames

- **Absolute pathnames are long, starting from the root directory.**
- **Relative pathnames begin from the current directory.**
- **. [dot] represents current directory.**
- **.. [dot dot] represents the parent of the current directory.**

File System heirarchy



The mkdir command

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- Is used to create a directory.
- Type mkdir <name of new directory> to create a new directory under the current directory.
  Eg: `mkdir testdir`

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- No explicit message indicates successful directory creation.
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- Create a directory anywhere provided:
    1. You have the permission to do so.
    2. And a directory by that name, does not exist.
- Create multiple directories or heirarchy of directories.

The rmdir command

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The rmdir command

- Used for removing a directory or directories.
- A directory can be removed only if:
  1. we are its owner
  2. our current directory is hierarchically above the directory to be removed
  3. the directory is empty

Summary

In this tutorial, we learnt

- **About Linux files and directories.**
- **How to work with Linux directories:**
  - See them,
  - Move between them,
  - Make them,
  - Remove them.

Acknowledgement

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