Linux-Day-6

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Permissions management on files and directories

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- Whether it is a Linux operating system or windows operating system **what kind of operations will do on files?**
  Normally we do
  - Read
  - Write
  - execute

  actions we will perform on the files is that correct or not? - **Yes it is correct**

- **What do you mean by read operation on the file?**
  Like running cat command are command on your file and just read the content that is present inside the file that is read operation.

- **What is write operation on file?**
  We open your file using vi command and we will write some content inside that file and saving that file that is an right operation and also if you open your file and delete some content on the file and saving the file that is also that correct or not? - yes correct

- **What is meant by execute action on the file?**
  In windows directory .EXE file will be there and when we double click on the .EXE file and we will install software that is an execution action.
  In the same way in Linux also there are some script files with extension .sh, to run this files we need execute privilege.

- Hope now you understand what are the actions we can do on the files.

- **Now will discuss the level of permissions on each files/folders.**
  - what do you mean by level of permissions?
    Level of permissions nothing but **who is having permissions on the files** and **what kind of permissions do they have**?

  - In Linux we can control the permissions on the files mainly on three levels
    - Owner
    - Group
    - Public

      - Here owner is nothing but creator of the file suppose if you creative file you are the owner of the file.
      - Group is the where the owner is belongs to.
      - Public nothing but all the users that have access to the Linux machine.

  - How do we see the permissions on the files or directories?
    This command already be discussed we use ls -l command which provide the longest format of the files.

    ls -l <file_name>

    -rw-r--r-- 12 linuxize users 12.0K Apr 28 10:10 file_name

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|[-][-][-]-  [------] [---]
| |  | | |     |      |
| |  | | |     |      +----------> 7. Group
| |  | | |     +-----------------> 6. Owner
| |  | | +-------------------------> 5. Alternate Access Method
| |  | +---------------------------> 4. Others Permissions
| |  +-----------------------------> 3. Group Permissions
| +-------------------------------> 2. Owner Permissions
+---------------------------------> 1. File Type
```

- **How to modify the permissions on the files?**
  There are actually 2 ways to Modify the permissions
  I am going to explain only one way here now,

  - The syntax to change permissions on files
    chmod <OCATAL-NUM> filename
    chmod 777 filename
    In this 3-digits
    - 1 digit - represent permissions related owner
    - 2 digit - group
    - 3 digit - all users

  - Each action that we perform on file will have specific value
    - r - 4
    - w - 2
    - x -1

  - The permissions of the specific user class I mean the owner/group/public is sum of values of the permissions.

  - **Let's take a file & modify the permissions**
    - Provide read, write and execute permissions level at owner level
    - Read and execute permissions for a group
    - Read permissions for all users

  - To modify the permissions first identify 3-digit value

owner	group	public

rwx	rx	r
4+2+1	4+1	4
7	5	4

chmod 754 file1.txt

- Now check the permissions
  ls -l file.txt
  Now the permissions changed as 754

- Try few use cases
  - Provide rwx permissions to owner, group & public
  - Provide rw-rw-w to user-group-public

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SOFTLINK Vs HARDLINK

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SOFTLINK

- **In windows how do we create shortcuts?**
  Here shortcut is just pointer to original file/folder & actual size of the shortcut is not same as original file/folder.

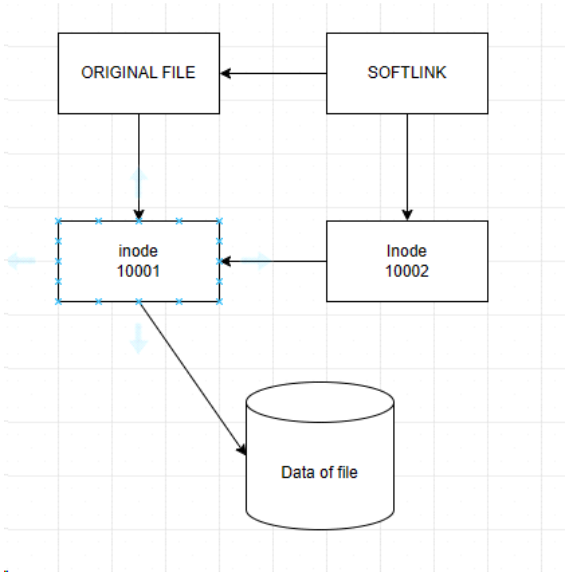
- Similarly as windows shortcuts in Linux we can us softlink to create shortcuts
  ln -s <org_file> <softlink>

- The soft link file size is not same as the Org_File & If we delete the original file soft link will not work.

- Softlink we can create on files & directories as well.

- Softlink & orginal file will have different inode.

- Inode is the address of the file where exactly its store in Harddisk



To checkInode of file/directory we can use command
ls =i file_name

Hardlink

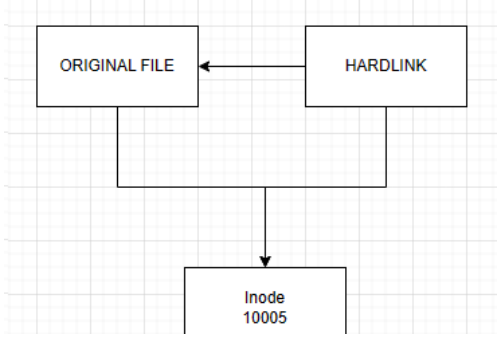
- Hardlink is mirrored copy of a file.

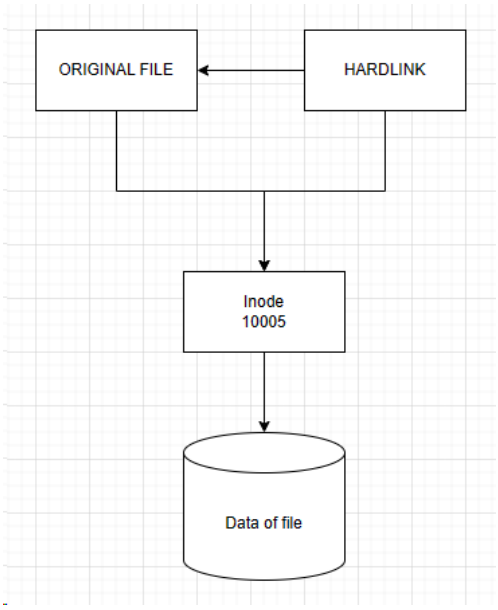
- The hardlink file size is same as the original file.

- We can create hardlink using command
  ln org_file hard_link

- If we delete the original file still we can access the hard link file.

- Hardlink & Original files will have same inode.





- We can create only hardlink for the file not the directories.