Inode is the entry in Inode table which contains “metadata” (information) about the file or dir.

Its act as a data structure

ls -i >> shows Inode number for each file or dir.

Information it consist of:

* File types ( executable, block special etc )
* Permissions ( read, write etc )
* UID ( Owner )
* GID ( Group )
* FileSize
* Time stamps including last access, last modification and last inode number change.
* File deletion time
* Number of links ( soft/hard )
* Location of ile on harddisk.
* Some other metadata about file.

Also to see what information inode contains about a file is:

Stat File\_name

An inode is an entry in inode table, containing information ( the metadata ) about a regular file and directory. An inode is a data structure on a traditional Unix-style file system such as ext3 or ext4.

**What is inode number in Linux**

Inode number also called index number, it consists following attributes.

* File types ( executable, block special etc )
* Permissions ( read, write etc )
* UID ( Owner )
* GID ( Group )
* FileSize
* Time stamps including last access, last modification and last inode number change.
* File deletion time
* Number of links ( soft/hard )
* Location of ile on harddisk.
* Some other metadata about file.

To check inode number of file use following command. The first field in output is an inode number of the file.

ls -il myfile.txt

**1150561** -rw-r--r-- 1 root root 0 Mar 10 01:06 myfile.txt

You can also search file with an inode number using find command. For example:

find /home/rahul -inum 1150561

/home/rahul/myfile.txt

**Inode Changes with Copy, Move and Delete**

What happens with inode number when copy, move or delete a file on file system.

**Copy file:** cp allocates a free inode number and placing a new entry in inode table.

ls -il myfile.txt

1150561 -rw-r--r-- 1 root root 0 Mar 10 01:06 myfile.txt

cp myfile.txt myfile\_new.txt

ls -il myfile\_new.txt

1150562 -rw-r--r-- 1 root root 0 Mar 10 01:09 myfile\_new.txt

**Move or Rename a file:** if destination is same filesystem as the source, Has no impact on inode number, it only changes the time stamps in inode table.

ls -il myfile.txt

1150561 -rw-r--r-- 1 root root 0 Mar 10 01:06 myfile.txt

mv myfile.txt /opt/

ls -il /opt/myfile.txt

1150561 -rw-r--r-- 1 root root 0 Mar 10 01:06 /opt/myfile.txt

**Delete a file:** Deleting a file in Linux decrements the link count and freeing the inode number to be reused.