Practical - 10

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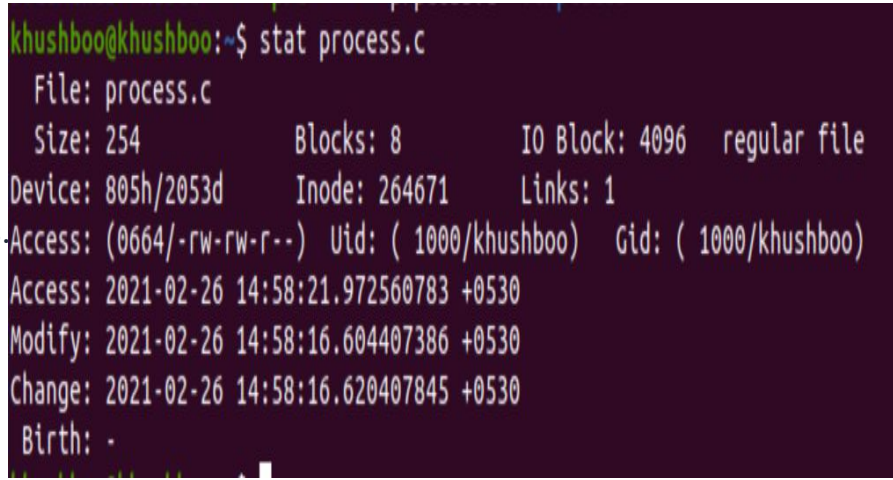
A. Create a file and check the following information for it’s inode.

Stat - Display file data information



- File - The name of the file.
- Size - The size of the file in bytes.
- Blocks - The number of allocated blocks the file takes.
- IO Block - The size in bytes of every block.
- File type - (ex. regular file, directory, symbolic link.)
- Device - Device number in hex and decimal.
- Inode - Inode number.
- Links - Number of hard links.
- Access - File permissions in the numeric and symbolic methods.
- Uid - User ID and name of the owner .
- Gid - Group ID and name of the owner.
- Context - The SELinux security context.
- Access - The last time the file was accessed.
- Modify - The last time the file's content was modified.
- Change - The last time the file's attribute or content was changed.
- Birth - File creation time (not supported in Linux)

1. **Check Inode number of that file**

1. stat --format=%i filename
2. ls -i
3. ls -li

2. Search the file using its inode number.

Find -inum inodenumber

3. Remove file using its inode number

find . -inum inodenumber -exec rm -i {} \;

4. Find the total number of inodes in the system.

1. df -i
2. sudo tune2fs -l /dev/sda5
3. Stat -f filename

5. List all the statistics about inode usage (amount available, amount used and amount free and use percentage)

df -i

For specific directory

Ls -id /path to directory

6. Check total number of free inodes. 7. Check total number of used inodes.

8. Inode usage of all the files inside directory

```
find . -printf "%h\n" | cut -d/ -f-2 | sort | uniq -c | sort -rn
```

9. Count Inode Usage with Grand Total

```
echo "Detailed Inode usage for: $(pwd)" ; for d in `find -maxdepth 1 -type d |cut -d\/ -f2
|grep -xv . |sort`; do c=$(find $d |wc -l) ; printf "$c\t\t- $d\n" ; done ; printf "Total:
\t\t$(find $(pwd) | wc -l)\n"
```

10. Does inode change when you copy and move the file?

1. Move file from one directory to another directory

ls -li

11. Can we reduce inode Usage?

The only option is to delete the unused files to reduce inode usage in Linux.

12. Does the total number of inode depend on system configuration or flavours of Linux/Unix operating system?

The total number of inodes and the space reserved for these inodes is set when the filesystem is first created. **The inode limit can't be changed dynamically** and every file system object must have an inode.

12. Specify size of inode. Does every inode have the same size? Does process have inode? It yes, then, when process is in main memory at that time, it’s inode will also be in main memory?