**Muskan Malhotra: Unix Assignment-1**

**Q1. Create a file using touch command:-**

**~$ touch DATA**

**Q2.Understand the inode, access time & modification time of a file using stat:-**

**~$ stat Linux.term**

File: Linux.term

Size: 0 Blocks: 1 IO Block: 131072

regular empty file

Device: 10001eh/1048606d Inode: 386 Links: 1

Access: (0644/-rw-r--r--) Uid: ( 2001/ user) Gid: ( 2001/ user)

Access: 2022-10-12 16:07:26.524342393 +0000

Modify: 2022-10-12 16:07:26.524342393 +0000

Change: 2022-10-12 16:07:26.524342393 +0000

**Q3.Using date command:-**

**~$ date**

Wed Oct 12 16:08:05 UTC 2022

**~$ date -u**

Wed Oct 12 16:09:21 UTC 2022

**~$ date --date="yesterday"**

Tue Oct 11 16:10:25 UTC 2022

**Q4.Create two or more files and understand inode:-**

**~$ touch f1**

**~$ touch f2**

**~$ stat f1**

File: f1

Size: 0 Blocks: 1 IO Block: 131072 regular empty file

Device: 10001eh/1048606d Inode: 388 Links: 1

Access: (0644/-rw-r--r--) Uid: ( 2001/ user) Gid: ( 2001/ user)

Access: 2022-10-12 16:10:44.400194214 +0000

Modify: 2022-10-12 16:10:44.400194214 +0000

Change: 2022-10-12 16:10:44.400194214 +0000

~$ stat f2

File: f2

Size: 0 Blocks: 1 IO Block: 131072 regular empty file

Device: 10001eh/1048606d Inode: 262 Links: 1

Access: (0644/-rw-r--r--) Uid: ( 2001/ user) Gid: ( 2001/ user)

Access: 2022-10-12 16:10:48.572612810 +0000

Modify: 2022-10-12 16:10:48.572612810 +0000

Change: 2022-10-12 16:10:48.572612810 +0000

**Q5.Add contents to the file using cat command**

**~$ cat>Data**

Hi my team members

**~$ cat>f1**

This is f1 file.

**Q6.Understand the inode, block, access time & modification time of a file using gh:-**

**~$ stat f1**

  File: f1

  Size: 18              Blocks: 8          IO Block: 4096   regular file

Device: eh/14d  Inode: 68707       Links: 1

Access: (0644/-rw-r--r--)  Uid: (    0/    root)   Gid: (    0/    root)

Access: 2022-10-12 16:48:40.000000000

Modify: 2022-10-12 16:48:40.000000000

Change: 2022-10-12 16:48:33.000000000

**Q7.List the files in current directory using ls command:-**

**~$ ls**

a.txt  b.txt  f

**Q8.Copy the content of file1 to another file using cp:-**

**~$ cp a.txt f**

**~$ cat f**

This is A file data.

Q**9.Understand the difference between cp & mv:-**

**~$ cp a.txt f**

**~$ cat f**

This is A file data.

**~$ mv a.txt f**

**~$ cat f**

This is A file data.

**~$ ls**

b.txt  f

**Q10.Delete the copy of the file using rm:-**

**~$ rm b.txt**

**~$ ls**

f

**Q11.Create hard link & soft link for a file using ln command:-**

**a.Create a file "data.txt" with content "data.txt"**

**~$ cat > data.txt**

data.txt

**~$**

**~$ cat data.txt**

data.txt

**b.Create a hard link for "data.txt" & name it as "dataLink.txt"**

**~$ ln data.txt dataLink.txt**

**~$ ls**

a             data.txt      hello.txt

d             dataLink.txt  s

**c.Understand the inode of the links created**

**~$ stat dataLink.txt**

  File: dataLink.txt

  Size: 9               Blocks: 8          IO Block: 4096   regular file

Device: eh/14d  Inode: 68702       Links: 2

Access: (0644/-rw-r--r--)  Uid: (    0/    root)   Gid: (    0/    root)

Access: 2022-10-12 17:15:15.000000000

Modify: 2022-10-12 17:15:15.000000000

Change: 2022-10-12 17:15:11.000000000

**d.Change the content of "dataLink.txt" to "dataLink.txt"**

**~$ cat > dataLink.txt**

datalink.txt

**~$ cat dataLink.txt**

datalink.txt

**e.Understand the inode of the links created**

**~$ stat dataLink.txt**

  File: dataLink.txt

  Size: 13              Blocks: 8          IO Block: 4096   regular file

Device: eh/14d  Inode: 68703       Links: 1

Access: (0644/-rw-r--r--)  Uid: (    0/    root)   Gid: (    0/    root)

Access: 2022-10-12 17:19:57.000000000

Modify: 2022-10-12 17:19:57.000000000

Change: 2022-10-12 17:19:44.000000000

**f.Check the content of "data.txt" & "dataLink.txt"**

**~$ cat data.txt**

data.txt

DataLink.txt

**~$ cat dataLink.txt**

data.txt

DataLink.txt

**g.Delete "data.txt" & check the content of "dataLink.txt**

**~$ rm data.txt**

**~$ cat dataLink.txt**

data.txt

DataLink.txt

**h.Create a soft link for "dataLink.txt" & name it as "dataSoft.txt"**

**~$ ln -s dataLink.txt dataSoft.txt**

**~$ ls**

bench.py      dataSoft.txt  hello.js      ws

dataLink.txt  hello.c       readme.txt

**i.Understand the inode of the links created**

**~$ stat dataLink.txt**

  File: dataLink.txt

  Size: 22              Blocks: 8          IO Block: 4096   regular file

Device: eh/14d  Inode: 68704       Links: 1

Access: (0644/-rw-r--r--)  Uid: (    0/    root)   Gid: (    0/    root)

Access: 2022-10-12 17:23:40.000000000

Modify: 2022-10-12 17:23:40.000000000

Change: 2022-10-12 17:22:31.000000000

**~$ stat dataSoft.txt**

  File: 'dataSoft.txt' -> 'dataLink.txt'

  Size: 12              Blocks: 8          IO Block: 4096   symbolic link

Device: eh/14d  Inode: 68705       Links: 1

Access: (0777/lrwxrwxrwx)  Uid: (    0/    root)   Gid: (    0/    root)

Access: 2022-10-12 17:26:14.000000000

Modify: 2022-10-12 17:26:14.000000000

Change: 2022-10-12 17:26:14.000000000

**j.Change the content of "dataSoft.txt" to "dataSoft.txt"**

**~$ cat >> dataSoft.txt**

dataSoft.txt

**~$ cat dataSoft.txt**

data.txt

DataLink.txt

dataSoft.txt

**k.Understand the inode of the links created**

**~$ stat dataLink.txt**

  File: dataLink.txt

  Size: 35              Blocks: 8          IO Block: 4096   regular file

Device: eh/14d  Inode: 68704       Links: 1

Access: (0644/-rw-r--r--)  Uid: (    0/    root)   Gid: (    0/    root)

Access: 2022-10-12 17:27:30.000000000

Modify: 2022-10-12 17:27:30.000000000

Change: 2022-10-12 17:22:31.000000000

**~$ stat dataSoft.txt**

  File: 'dataSoft.txt' -> 'dataLink.txt'

  Size: 12              Blocks: 8          IO Block: 4096   symbolic link

Device: eh/14d  Inode: 68705       Links: 1

Access: (0777/lrwxrwxrwx)  Uid: (    0/    root)   Gid: (    0/    root)

Access: 2022-10-12 17:26:14.000000000

Modify: 2022-10-12 17:26:14.000000000

Change: 2022-10-12 17:26:14.000000000

**l.Check the content of "data.txt" & "dataLink.txt"**

**~$ cat dataLink.txt**

data.txt

DataLink.txt

dataSoft.txt

**~$ cat dataSoft.txt**

data.txt

DataLink.txt

dataSoft.txt

**m.Delete "dataLink.txt" & check the content of "dataSoft.txt"**

**~$ rm dataLink.txt**

**~$ cat dataSoft.txt**

cat: can't open 'dataSoft.txt': No such file or directory

**Q12.Create a directory Day01 & Day02 using mkdir:-**

**~$ mkdir Day01 Day02**

**~$ ls**

Day01  Day02  f

**Q13.Moving file1 to Day01 directory using mv:-**

**~$ mv f Day01**

**~$ ls**

Day01  Day02

**~$ ls**

f

**Q14.Copy file1 from Day01 to Day02:-**

**~$ cp Day01 Day02**

**~$ ls**

f

**Q15.Remove directory Day02 using rmdir & rm:-**

**~$ rm f**

**~$ rmdir Day02**

**~$ ls**

Day01

**Q16.Understanding the directory structure using cd & pwd:-**

**~$ pwd**

/home/user/Day01

**Q17.Understanding . & ..:-**

**~$ cd .**

**~$ cd ..**

**Q18.Add contents to the file using vim editor:-**

**vi hello.txt**

**Q19.Display the contents of a file using cat command:-**

**~$ cat hello.txt**

This is VI Editor

**Q20.Statistics on the content of the file using wc command:-**

**A.Get number of characters stored in a file**

**~$ wc -c hello.txt**

1. ello.txt

**B.Get number of lines stored in a file**

**~$ wc -l hello.txt**

1. hello.txt

**C.Get number of words stored in a file**

**~$ wc -w hello.txt**

hello.txt

**Q21.Understanding df and du & difference between size of a file and size on disk:-**

**~$ df -h**

Filesystem Size Used Avail Use% Mounted on

overlay 120G 12G 108G 10% /

tmpfs 64M 0 64M 0% /dev

tmpfs 16G 0 16G 0% /sys/fs/cgroup

10.105.159.225:/ubuntu-2004\_2022-10-13-p1/linux/Ubuntu-20.04/lib32 1.6T 1.3T 324G 80% /lib32

tmpfs

**~$ du -h**

1.5K ./.ssh

512 ./muskan

1.5K ./.snapshots/2022-10-14-045730/.ssh

512 ./.snapshots/2022-10-14-045730/muskan

512 ./.snapshots/2022-10-14-045730/.snapshots

512 ./.snapshots/2022-10-14-045730/EmployeeManagement

40K ./.snapshots/2022-10-14-045730

1.5K ./.snapshots/2022-10-15-130600/.ssh

512 ./.snapshots/2022-10-15-130600/muskan

512 ./.snapshots/2022-10-15-130600/EmployeeManagement

61K ./.snapshots/2022-10-15-130600

1.5K ./.snapshots/2022-10-13-083809/.ssh

512 ./.snapshots/2022-10-13-083809/muskan

512 ./.snapshots/2022-10-13-083809/.snapshots

512 ./.snapshots/2022-10-13-083809/EmployeeManagement

38K ./.snapshots/2022-10-13-083809

1.5K ./.snapshots/2022-10-12-104118/.ssh

512 ./.snapshots/2022-10-12-104118/muskan

16K ./.snapshots/2022-10-12-104118

1.5K ./.snapshots/2022-10-12-165147/.ssh

512 ./.snapshots/2022-10-12-165147/muskan

29K ./.snapshots/2022-10-12-165147

1.5K ./.snapshots/2022-10-13-062612/.ssh

512 ./.snapshots/2022-10-13-062612/muskan

512 ./.snapshots/2022-10-13-094640/muskan

512 ./.snapshots/2022-10-13-094640/EmployeeManagement

38K ./.snapshots/2022-10-13-094640

1.5K ./.snapshots/2022-10-14-161247/.ssh

512 ./.snapshots/2022-10-14-161247/muskan

512 ./.snapshots/2022-10-14-161247/EmployeeManagement

57K ./.snapshots/2022-10-14-161247

1.5K ./.snapshots/2022-10-14-053358/.ssh

512 ./.snapshots/2022-10-14-053358/muskan

512 ./.snapshots/2022-10-14-053358/EmployeeManagement

42K ./.snapshots/2022-10-14-053358

1.5K ./.snapshots/2022-10-14-085034/.ssh

512 ./.snapshots/2022-10-14-085034/muskan

512 ./.snapshots/2022-10-14-085034/EmployeeManagement

53K ./.snapshots/2022-10-14-085034

1.5K ./.snapshots/2022-10-13-065915/.ssh

512 ./.snapshots/2022-10-13-065915/muskan

512 ./.snapshots/2022-10-13-065915/.snapshots

512 ./.snapshots/2022-10-13-065915/EmployeeManagement

33K ./.snapshots/2022-10-13-065915

1.5K ./.snapshots/2022-10-14-060836/.ssh

512 ./.snapshots/2022-10-14-060836/muskan

512 ./.snapshots/2022-10-14-060836/EmployeeManagement

42K ./.snapshots/2022-10-14-060836

1.5K ./.snapshots/2022-10-14-152929/.ssh

512 ./.snapshots/2022-10-14-152929/muskan

512 ./.snapshots/2022-10-14-152929/.snapshots

512 ./.snapshots/2022-10-14-152929/EmployeeManagement

54K ./.snapshots/2022-10-14-152929

1.5K ./.snapshots/2022-10-13-080531/.ssh

512 ./.snapshots/2022-10-13-080531/muskan

512 ./.snapshots/2022-10-13-080531/EmployeeManagement

36K ./.snapshots/2022-10-13-080531

1.5K ./.snapshots/2022-10-12-161644/.ssh

512 ./.snapshots/2022-10-12-161644/muskan

512 ./.snapshots/2022-10-12-161644/.snapshots

23K ./.snapshots/2022-10-12-161644

1.5K ./.snapshots/2022-10-12-142212/.ssh

512 ./.snapshots/2022-10-12-142212/muskan

17K ./.snapshots/2022-10-12-142212

1.5K ./.snapshots/2022-10-14-042111/.ssh

512 ./.snapshots/2022-10-14-042111/muskan

512 ./.snapshots/2022-10-14-042111/.snapshots

512 ./.snapshots/2022-10-14-042111/EmployeeManagement

39K ./.snapshots/2022-10-14-042111

1.5K ./.snapshots/2022-10-15-125345/.ssh

512 ./.snapshots/2022-10-15-125345/muskan

512 ./.snapshots/2022-10-15-125345/.snapshots

512 ./.snapshots/2022-10-15-125345/EmployeeManagement

61K ./.snapshots/2022-10-15-125345

1.5K ./.snapshots/2022-10-14-065701/.ssh

512 ./.snapshots/2022-10-14-065701/muskan

512 ./.snapshots/2022-10-14-065701/EmployeeManagement

46K ./.snapshots/2022-10-14-065701

1.5K ./.snapshots/2022-10-12-100925/.ssh

512 ./.snapshots/2022-10-12-100925/muskan

512 ./.snapshots/2022-10-12-100925/.snapshots

13K ./.snapshots/2022-10-12-100925

1.5K ./.snapshots/2022-10-14-075125/.ssh

512 ./.snapshots/2022-10-14-075125/muskan

512 ./.snapshots/2022-10-14-075125/EmployeeManagement

52K ./.snapshots/2022-10-14-075125

815K ./.snapshots

512 ./EmployeeManagement

878K .

**Q22.Understanding lsof command:-**

**~$ lsof**

COMMAND PID TID TASKCMD USER FD TYPE DEVICE SIZE/OFF NODE NAME

tini 1 user cwd DIR 0,447 4096 5678348 /

tini 1 user rtd DIR 0,447 4096 5678348 /

tini 1 user txt REG 0,200 24064 1078 /cocalc/bin/tini (10.105.159.225:/project/2022-08-19-182453-hsy-detection-bugfix)

tini 1 user mem REG 0,200 2029592 41899982 /lib/x86\_64-linux-gnu/libc-2.31.so (10.105.159.225:/ubuntu-2004\_2022-10-13-p1/linux/Ubuntu-20.04/lib)

tini 1 user mem REG 0,200 191504 41899976 /lib/x86\_64-linux-gnu/ld-2.31.so (10.105.159.225:/ubuntu-2004\_2022-10-13-p1/linux/Ubuntu-20.04/lib)

tini 1 user 0u CHR 1,3 0t0 6 /dev/null

tini 1 user 1w FIFO 0,13 0t0 16666935 pipe

tini 1 user 2w FIFO 0,13 0t0 16666936 pipe

sh 6 user cwd DIR 0,447 4096 5678348 /

sh 6 user rtd DIR 0,447 4096 5678348 /

sh 6 user txt REG 0,200 129816 26480183 /usr/bin/dash (10.105.159.225:/ubuntu-2004\_2022-10-13-p1/linux/Ubuntu-20.04/usr)

sh 6 user mem REG 0,200 2029592 41899982 /lib/x86\_64-linux-gnu/libc-2.31.so (10.105.159.225:/ubuntu-2004\_2022-10-13-p1/linux/Ubuntu-20.04/lib)

sh 6 user mem REG 0,200 191504 41899976 /lib/x86\_64-linux-gnu/ld-2.31.so (10.105.159.225:/ubuntu-2004\_2022-10-13-p1/linux/Ubuntu-20.04/lib)

sh 6 user 0u CHR 1,3 0t0 6 /dev/null

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