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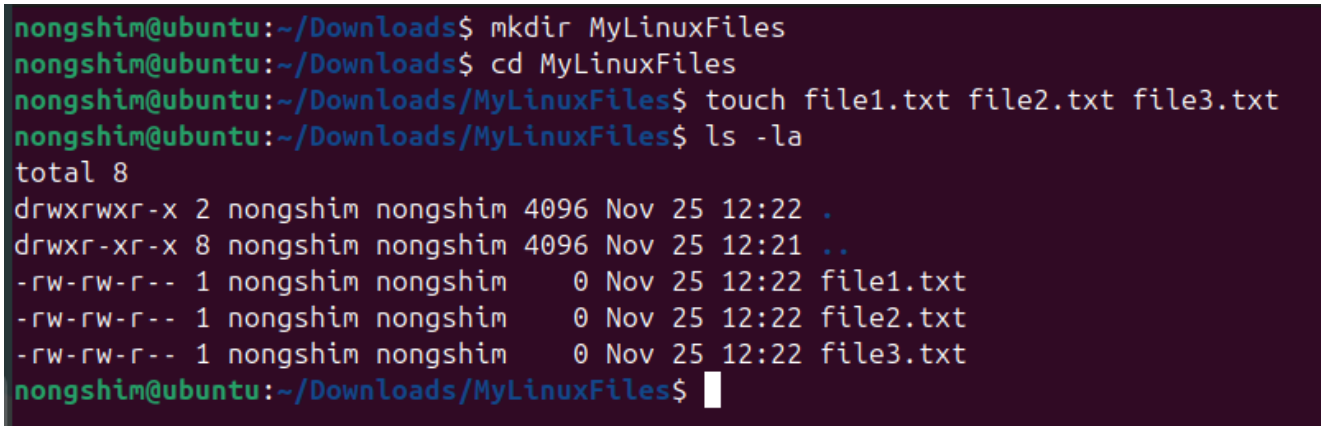
ASSIGNMENT - 1

Activity 1: *Create a directory called MyLinuxFiles in your home folder. Inside it, create three files named file1.txt, file2.txt, and file3.txt. Display the list of files with detailed information.*

Commands Used:

- ***mkdir*** – used to create a new empty directory
- ***touch*** – used to create a new file
- ***ls -la*** – used to show detailed information of a file(s)
- ***cd*** – used to navigate the file system

Screenshot :



Activity 2: *Change the permissions of file1.txt so that the owner can read and write, the group can read only, and others have no access. Verify the permissions.*

Commands Used:

- ***chmod*** *NNN filename* – used to change the permissions of a file or directory
  {N = sum of numeric values of permissions}
- ***ls -la*** *filename* – used to show detailed information of a file(s)

Screenshot :

```
nongshim@ubuntu:~/Downloads/MyLinuxFiles$ ls -la file1.txt
-rw-rw-r-- 1 nongshim nongshim 0 Nov 25 12:22 file1.txt
nongshim@ubuntu:~/Downloads/MyLinuxFiles$ chmod 640 file1.txt
nongshim@ubuntu:~/Downloads/MyLinuxFiles$ ls -la file1.txt
-rw-r----- 1 nongshim nongshim 0 Nov 25 12:22 file1.txt
nongshim@ubuntu:~/Downloads/MyLinuxFiles$
```

Activity 3: *Create a directory called MyLinuxFiles in your home folder. Inside it, create three files named file1.txt, file2.txt, and file3.txt. Display the list of files with detailed information.*

Command Used:

- ***grep*** [pattern] filename – used to search a given pattern in a file

Screenshot :

```
nongshim@ubuntu:~/Downloads/MyLinuxFiles$ touch Linux.txt
nongshim@ubuntu:~/Downloads/MyLinuxFiles$ vim Linux.txt
nongshim@ubuntu:~/Downloads/MyLinuxFiles$ grep "Linux" Linux.txt
We explore the hardware portability issues in Linux that were uncovered when porting the operating
hardware platform. The approach taken in Linux is described, with a few example architectures
nongshim@ubuntu:~/Downloads/MyLinuxFiles$
```

Activity 4: *Write a command to display the contents of file1.txt, and save the sorted output into a file named sorted.txt.*

Commands Used:

- ***cat*** filename – used to view file content
- ***sort*** filename – used to arrange lines of text in a file in alphabetical or numerical order

Screenshot :

```
nongshim@ubuntu:~/Downloads/MyLinuxFiles$ vim file1.txt
nongshim@ubuntu:~/Downloads/MyLinuxFiles$ cat file1.txt
Tiger
Lion
Elephant
Leopard
Wolf
nongshim@ubuntu:~/Downloads/MyLinuxFiles$ cat file1.txt | sort > sorted.txt
nongshim@ubuntu:~/Downloads/MyLinuxFiles$ cat sorted.txt
Elephant
Leopard
Lion
Tiger
Wolf
nongshim@ubuntu:~/Downloads/MyLinuxFiles$
```

Activity 5: *Write a shell script that takes two numbers as input from the user and prints their sum, difference, product, and quotient. Handle division by zero appropriately.*

Commands Used:

- ***vim*** – editor used to create the shell script - *{arithop.sh}*
- ***chmod*** *NNN filename* – used to change the permissions of *{arithop.sh}*
  {N = sum of numeric values of permissions}
- ***bash*** filename – used to run the shell script - *{arithop.sh}*

Screenshot :

Script >

```
#!/bin/bash

echo "Enter first number:"

read a

echo "Enter second number:"

read b

sum=$((a + b)) diff=$((a-b)) prod=$((a*b))

echo "Sum: $sum"

echo "Difference: $diff"

echo "Product: $prod"

if [ $b -eq 0 ]; then

echo "Quotient: Division by zero not allowed"

else

quot=$(( a / b ))
echo "Quotient: $quot"

fi
~
```

Terminal >

```
nongshim@ubuntu:~/Downloads/MyLinuxFiles$ vim Act5.sh
nongshim@ubuntu:~/Downloads/MyLinuxFiles$ chmod 744 Act5.sh
nongshim@ubuntu:~/Downloads/MyLinuxFiles$ ./Act5.sh
Enter first number:
55
Enter second number:
5
Sum: 60
Difference: 50
Product: 275
Quotient: 11
nongshim@ubuntu:~/Downloads/MyLinuxFiles$
```

Activity 6: *Use the find command to search for all .txt files in your home directory that were modified in the last 7 days.*

Commands Used:

- ***find*** *[path] [options] [expression]* – used to search for files in the home directory
- ***-mtime*** *-n* – used with **find** to search for files modified in the last 7 days
  {n = no. of days}

Screenshot :

```
nongshim@ubuntu:~/Downloads/MyLinuxFiles$ find ~/ -name "*.txt" -mtime -7
/home/nongshim/notes.txt
/home/nongshim/file.txt
/home/nongshim/log.txt
/home/nongshim/.cache/tracker3/files/last-crawl.txt
/home/nongshim/myfile2.txt
/home/nongshim/myfile.txt
/home/nongshim/practice_linux/files/readme.txt
/home/nongshim/practice_linux/documents/important_file.txt
/home/nongshim/practice_linux/documents/readme_backup.txt
/home/nongshim/practice_linux/documents/readme.txt
/home/nongshim/practice_linux/sample.txt
/home/nongshim/practice_linux/backup_files/readme.txt
/home/nongshim/practice_linux/test_delete.txt
/home/nongshim/Downloads/file.txt
/home/nongshim/Downloads/file1.txt
/home/nongshim/Downloads/MyLinuxFiles/file3.txt
/home/nongshim/Downloads/MyLinuxFiles/sorted.txt
/home/nongshim/Downloads/MyLinuxFiles/file1.txt
/home/nongshim/Downloads/MyLinuxFiles/Linux.txt
/home/nongshim/Downloads/MyLinuxFiles/file2.txt
/home/nongshim/Downloads/file2.txt
/home/nongshim/Downloads/dir5/fil1.txt
/home/nongshim/Downloads/dir5/file2.txt
/home/nongshim/readme.txt
nongshim@ubuntu:~/Downloads/MyLinuxFiles$
```

Explanation of the command : *find ~/ -name "*.txt" -mtime -7*

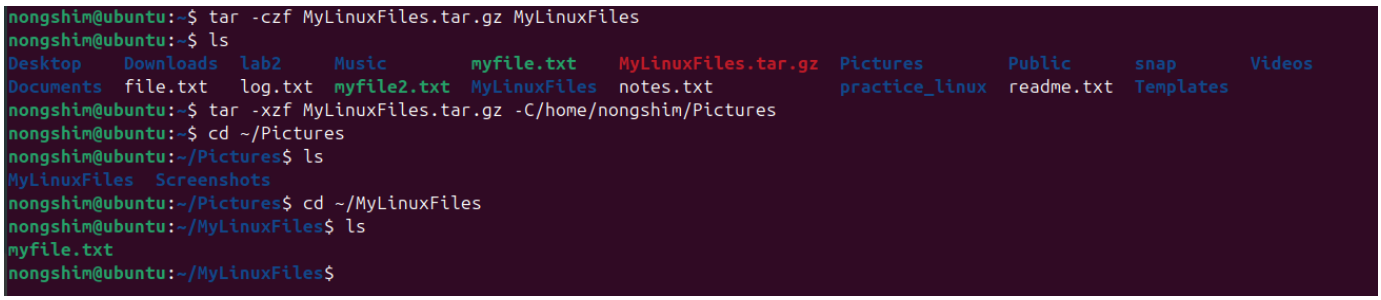
- **find** ------ command used to search for files/directories
- **~/** -------- search inside your home directory
- **-name "*.txt"** --------- look for files ending with .txt
- **-mtime -7** -------- only files modified within the last 7 days

Activity 7: *Create a compressed archive of the directory MyLinuxFiles using tar and gzip. Then extract it to verify its contents.*

Commands Used:

- ***tar*** *[options] {archive_name} [files or dir]* – used to create a compressed archive

Screenshot :



Explanation of the command : *tar -czf MyLinuxFiles.tar.gz MyLinuxFiles*

- **tar -czf** --------- create a compressed (gzip) archive file
- **MyLinuxFiles.tar.gz** ---------- the name of the archive that will be created
- **MyLinuxFiles** ---------- the directory we want to archive

Explanation of the command :

tar -xzf MyLinuxFiles.tar.gz -C /home/vivekchauhan12/Pictures

- **tar -xzf** --------- extracts a gzip-compressed .tar.gz archive
- **MyLinuxFiles.tar.gz** ---------- the archive file to extract
- **-C** ---------- change to the specified directory *before* extracting
- **/home/vivekchauhan12/Pictures** ---------- the directory where the files will be extracted

Activity 8: *Display the IP address of your system. Use ping to check connectivity to google.com .*

Commands Used:

- ***ifconfig*** – used to displays your system's **IP address**, **netmask**, **broadcast**, and **network interface status.**
- ***ping*** – tests **network connectivity** by sending packets to a host & checking if replies come back

Screenshot :

Activity 9: *Write a program to find the largest number among three numbers entered by the user.*

Commands Used:

- ***vim*** – editor used to create the shell script - *{ largestnum.sh}*
- ***chmod*** *NNN filename* – used to change the permissions of *{ largestnum.sh}*

{N = sum of numeric values of permissions}

- ***bash*** filename – used to run the shell script - *{largestnum.sh}*

Screenshot :

```
nongshim@ubuntu:~/MyLinuxFiles$ ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 10.0.2.15  netmask 255.255.255.0  broadcast 10.0.2.255
        inet6 fd17:625c:f037:2:ced6:e58f:6cf4:d0f3  prefixlen 64  scopeid 0x0<global>
        inet6 fd17:625c:f037:2:a00:27ff:fe0c:60b3  prefixlen 64  scopeid 0x0<global>
        inet6 fe80::a00:27ff:fe0c:60b3  prefixlen 64  scopeid 0x20<link>
        ether 08:00:27:0c:60:b3  txqueuelen 1000  (Ethernet)
        RX packets 11389  bytes 12720555 (12.7 MB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 4889  bytes 626456 (626.4 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0x10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 552  bytes 65005 (65.0 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 552  bytes 65005 (65.0 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

nongshim@ubuntu:~/MyLinuxFiles$ ping google.com
PING google.com (172.217.26.110) 56(84) bytes of data.
64 bytes from kix05s01-in-f110.1e100.net (172.217.26.110): icmp_seq=1 ttl=255 time=11.8 ms
64 bytes from kix05s01-in-f110.1e100.net (172.217.26.110): icmp_seq=2 ttl=255 time=11.5 ms
64 bytes from kix05s01-in-f110.1e100.net (172.217.26.110): icmp_seq=3 ttl=255 time=11.3 ms
64 bytes from kix05s01-in-f110.1e100.net (172.217.26.110): icmp_seq=4 ttl=255 time=11.8 ms
64 bytes from kix05s01-in-f110.1e100.net (172.217.26.110): icmp_seq=5 ttl=255 time=12.2 ms
64 bytes from kix05s01-in-f110.1e100.net (172.217.26.110): icmp_seq=6 ttl=255 time=12.3 ms
64 bytes from kix05s01-in-f110.1e100.net (172.217.26.110): icmp_seq=7 ttl=255 time=12.9 ms
64 bytes from kix05s01-in-f110.1e100.net (172.217.26.110): icmp_seq=8 ttl=255 time=12.0 ms
64 bytes from kix05s01-in-f110.1e100.net (172.217.26.110): icmp_seq=9 ttl=255 time=11.1 ms
64 bytes from kix05s01-in-f110.1e100.net (172.217.26.110): icmp_seq=10 ttl=255 time=11.4 ms
64 bytes from kix05s01-in-f110.1e100.net (172.217.26.110): icmp_seq=11 ttl=255 time=11.5 ms
64 bytes from kix05s01-in-f110.1e100.net (172.217.26.110): icmp_seq=12 ttl=255 time=12.7 ms
64 bytes from kix05s01-in-f110.1e100.net (172.217.26.110): icmp_seq=13 ttl=255 time=14.6 ms
64 bytes from kix05s01-in-f110.1e100.net (172.217.26.110): icmp_seq=14 ttl=255 time=10.8 ms
64 bytes from kix05s01-in-f110.1e100.net (172.217.26.110): icmp_seq=15 ttl=255 time=17.0 ms
64 bytes from kix05s01-in-f110.1e100.net (172.217.26.110): icmp_seq=16 ttl=255 time=12.2 ms
```

Script >

```
#!/bin/bash

echo "Enter three numbers:"
read a b c

if [ $a -ge $b ] && [ $a -ge $c ]; then
    echo "Largest: $a"
elif [ $b -ge $a ] && [ $b -ge $c ]; then
    echo "Largest: $b"
else
    echo "Largest: $c"
fi
~
```

Terminal >

```
nongshim@ubuntu:~/Downloads$ chmod 744 largestnum.sh
nongshim@ubuntu:~/Downloads$ source largestnum.sh
Enter three numbers:
67 85 790
Largest: 790
nongshim@ubuntu:~/Downloads$
```

Activity 10: *Write a program to find the sum of the first N natural numbers.*

Commands Used:

- ***vim*** – editor used to create the shell script - *{ sumN.sh}*
- ***chmod*** *NNN filename* – used to change the permissions of *{ sumN.sh}*
  {N = sum of numeric values of permissions}
- ***bash*** filename – used to run the shell script - *{sumN.sh}*

Screenshot :

Script >

```
#!/bin/bash

echo "Enter N"
read n

sum=0

for ((i=1; i<=n; i++))
do
    sum=$((sum + i))
done

echo "Sum of first $n natural numbers is: $sum"
~
~
```

Terminal >

```
nongshim@ubuntu:~/Downloads$ vim sum.sh
nongshim@ubuntu:~/Downloads$ chmod 744 sum.sh
nongshim@ubuntu:~/Downloads$ source sum.sh
Enter N
38
Sum of first 38 natural numbers is: 741
nongshim@ubuntu:~/Downloads$
```