Name:- Vaibhav kumar gupta
Date:- 18-02-2025

Linux:-

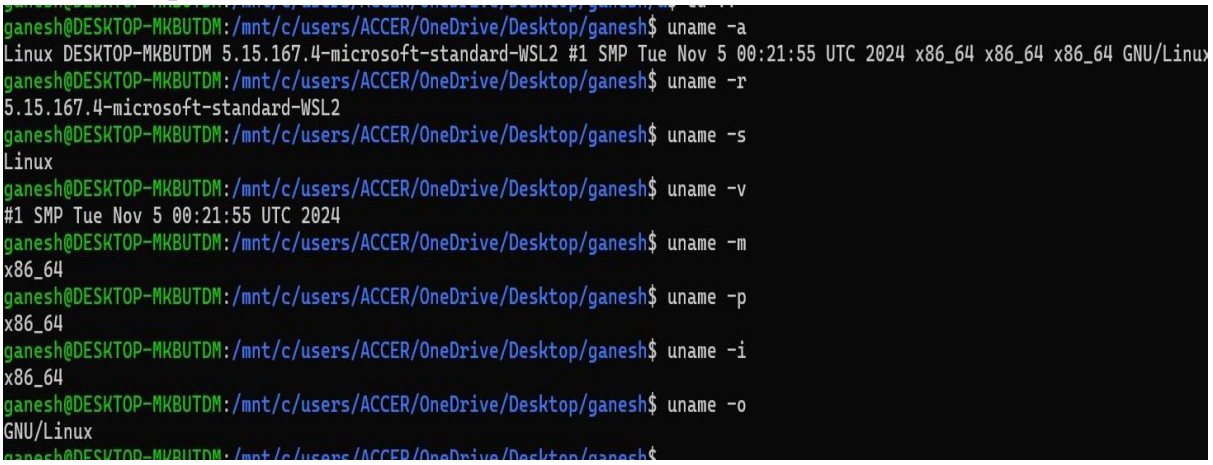
After learning a few basic commands in Linux we moved up to the file and directory creation and inserting the text or content into the file.

- If we want to remove any directory or file, we can use the below command

    rmdir -p directory_name
    rm -rf file_name

- These two commands are used to remove file and directory but “rmdir” command works fast and deletes the entire directory, if the directory is empty.
- If we are stuck anywhere by forgetting the command we can take help from documentation by using the command

    man command_ name
    Example: man rmdir



1. uname -a - Displays system information.
2. uname -r - Displays the kernel release version.
3. uname -s - Shows the kernel name.
4. uname -v - Shows the kernel version.
5. uname -m - Displays machine architecture.
6. uname -p - Shows the processor type.

-

7. uname -i - Displays the hardware platform.
8. uname -o - Shows the operating system.

We are inserting and creating the file at a time using vi.file_name.

- To print the content or text in the file we run the command cat file_name

```
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh$ vi t1.text
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh$ cat t1.text
Hi Iam SAI GANESH

ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh$
```

- We can view the programs which are running currently in the system by using the command

ps aux

```
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh/a/b/c$ ps aux
USER         PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root           1  0.0  0.3  21760 12936 ?        Ss   10:25   0:03 /sbin/init
root           2  0.0  0.0   2776  1920 ?        Sl   10:25   0:00 /init
root           7  0.0  0.0   2792   132 ?        Sl   10:25   0:00 plan9 --control-socket 7 --log-level 4 --server-fd 8 --pipe-fd 10 --log-truncate
root          55  0.0  0.4  66828 19436 ?        S<s  10:25   0:02 /usr/lib/systemd/systemd-journald
root         100  0.0  0.1  23992  6024 ?        Ss   10:25   0:03 /usr/lib/systemd/systemd-udevd
systemd+     110  0.0  0.3  21452 11936 ?        Ss   10:25   0:00 /usr/lib/systemd/systemd-resolved
systemd+     111  0.0  0.1  91020  6484 ?        Ssl  10:25   0:00 /usr/lib/systemd/systemd-timesyncd
root         165  0.0  0.0   4236  2684 ?        Ss   10:25   0:00 /usr/sbin/cron -f -P
message+     166  0.0  0.1   9660  5228 ?        Ss   10:25   0:01 @dbus-daemon --system --address=systemd: --nofork --nopidfile --systemd-activation --sysl
root         188  0.0  0.2  17976  8440 ?        Ss   10:25   0:00 /usr/lib/systemd/systemd-logind
root         198  0.0  0.5 1904456 22312 ?       Ssl  10:25   0:01 /usr/libexec/wsl-pro-service -vv
root         225  0.0  0.0   3160  1084 hvc0     Ss+  10:25   0:00 /sbin/agetty -o -p -- \u --noclear --keep-baud - 115200,38400,9600 vt220
syslog       242  0.0  0.1 222508  5368 ?        Ssl  10:25   0:00 /usr/sbin/rsyslogd -n -iNONE
root         251  0.0  0.0   3116  1104 tty1     Ss+  10:25   0:00 /sbin/agetty -o -p -- \u --noclear - linux
root         269  0.0  0.5 107016 22580 ?        Ssl  10:25   0:00 /usr/bin/python3 /usr/share/unattended-upgrades/unattended-upgrade-shutdown --wait-for-si
mysql        316  0.8 10.7 2375896 420160 ?      Ssl  10:25   3:21 /usr/sbin/mysqld
root         439  0.0  0.1   6692  4560 pts/1    Ss   10:26   0:00 /bin/login -f
ganesh       480  0.0  0.2  20260 11288 ?        Ss   10:26   0:00 /usr/lib/systemd/systemd --user
ganesh       481  0.0  0.0  21144  1724 ?        S    10:26   0:00 (sd-pam)
ganesh       492  0.0  0.1   6072  5184 pts/1    S+   10:26   0:00 -bash
root         668  0.0  0.0   2784   208 ?        Ss   10:54   0:00 /init
root         669  0.0  0.0   2784   212 ?        S    10:54   0:01 /init
ganesh       675  0.0  0.1   6176  5308 pts/0    Ss   10:54   0:01 -bash
polkitd      850  0.0  0.2 308160 10048 ?        Ssl  11:10   0:00 /usr/lib/polkit-1/polkitd --no-debug
root        1971  0.0  0.1  14312  6952 pts/0    T    16:44   0:00 sudo apt install plocate
root        1972  0.0  0.0  14312  1256 pts/2    Ss   16:44   0:00 sudo apt install plocate
root        1973  1.5  2.0  88420 78980 pts/2    T+   16:44   0:01 apt install plocate
root        2037  0.0  0.1   8592  6816 pts/3    Ss+  16:44   0:00 /usr/bin/dpkg --status-fd 39 --configure --pending
root        2038  0.0  0.0   2800  1164 pts/3    S+   16:44   0:00 /bin/sh /var/lib/dpkg/info/plocate.postinst configure
root        2052  8.3  4.2 179380 166160 pts/3   Dl+  16:44   0:06 /usr/sbin/updatedb.plocate
ganesh      2054  100  0.1   8332  4264 pts/0    R+   16:45   0:00 ps aux
```

- If the process is delayed and we want to kill the process then by executing the above command we get the process id. In simpler terms we can say that killing the process forcefully by using the command below:

kill -9 process_id

- If we want to know the user that we are working with. We can execute it by using the command

whoami

- To sort the text in file in either ascending or descending order then 1. sort -r file_name - Displays the text in Descending order.
  2. sort file_name - Displays the text in Ascending order.

```
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh$ whoami
ganesh
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh$ vi t2.text
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh$ sort -r t2.text
z
x
t
s
kshdgkas
kdhs
hg
f
e
d
ahs
ahdgkahdskjansdkl
abcdefz
a
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh$ sort t2.text
a
abcdefz
ahdgkahdskjansdkl
ahs
d
e
f
hg
kdhs
kshdgkas
s
t
x
z
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh$
```

1. wc -l file_name - Counts the lines in the file.
2. wc -w file_name - Count the words in the file.
3. wc -c file_name - Count the number of characters in the file.
4. wc * - Count the number of files in the directory.

-

```
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh$ wc -l t2.text
14 t2.text
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh$ wc -w t2.text
14 t2.text
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh$ wc -c t2.text
63 t2.text
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh$ wc * t2.text
wc: a: Is a directory
      0       0       0 a
      0       0       0 a.txt
      2      22   10240 etc.tar
wc: new: Is a directory
      0       0       0 new
      2       4      19 t1.text
     14      14      63 t2.text
     14      14      63 t2.text
     32      54   10385 total
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh$ wc *
wc: a: Is a directory
      0       0       0 a
      0       0       0 a.txt
      2      22   10240 etc.tar
wc: new: Is a directory
      0       0       0 new
      2       4      19 t1.text
     14      14      63 t2.text
     18      40   10322 total
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh$
```

To view or display the calendar in our linux system. Firstly we need to install the calendar package and we can display it.

1. sudo install ncal - Installs the calendar module.
2. cal - Displays the current month's calendar.
3. cal 2003 - Displays the mentioned year calendar.

```
ganesh@DESKTOP-MKBUTDM:~$ sudo apt install ncal
[sudo] password for ganesh:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following package was automatically installed and is no longer required:
  libllvm17t64
Use 'sudo apt autoremove' to remove it.
The following NEW packages will be installed:
  ncal
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Need to get 21.0 kB of archives.
After this operation, 59.4 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu noble/universe amd64 ncal amd64 12.1.8 [21.0 kB]
Fetched 21.0 kB in 1s (24.8 kB/s)
Selecting previously unselected package ncal.
(Reading database ... 47349 files and directories currently installed.)
Preparing to unpack .../archives/ncal_12.1.8_amd64.deb ...
Unpacking ncal (12.1.8) ...
Setting up ncal (12.1.8) ...
Processing triggers for man-db (2.12.0-4build2) ...
ganesh@DESKTOP-MKBUTDM:~$ cal
   February 2025
Su Mo Tu We Th Fr Sa
                   1
 2  3  4  5  6  7  8
 9 10 11 12 13 14 15
16 17 18 19 20 21 22
23 24 25 26 27 28
```

- history | grep text - Return where the text is in output.
- top - Return the processes which are in high.

- du -sh * - It gives the list that takes the highest size.
- alias l=”ls-lrt” - It is the command that can be executed by giving the variable instead of typing the whole command.
- sudo apt ncdu - Install the ncdu package.
- ncdu . - Displays all the files that are in the current directory.

➢ We can insert the text using echo command

echo “SAI GANESH” > file_name

-

  Next we moved to shell scripting. First create the shell file, next change the permissions and finally execute it.

  1. vi one.sh - Creates the shell file.
  2. chmod 777 one.sh - Modifies and gives all the permissions.
  3. ./one.sh - Prints the output from the file.

```
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh/a/b/c$ vi one.sh
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh/a/b/c$ chmod 777 one.sh
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh/a/b/c$ vi one.sh
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh/a/b/c$ ./one.sh
Sai ganesh
```

- The command to print the data in column wise and which is very powerful in linux is awk '{print $1}' data.txt - prints the first column of the file.

  awk '{print $2}' data.txt - prints the second column of the file.

```
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh/a/b/c$ vi data.txt
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh/a/b/c$ awk '{print $1}' data.txt
saiganesh
Kumar
Venkat
Kalyan
ahjdh
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh/a/b/c$ awk '{print $2}' data.txt
21
25
30
35
26
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh/a/b/c$ awk '{print $3}' data.txt
Trainee
Engineer
Manager
HR
IT
```

- We can print the text of two columns from the file at a time.

```
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh/a/b/c$ awk '{print "name " $1," profession " $3}' data.txt
name saiganesh  profession Trainee
name Kumar  profession Engineer
name Venkat  profession Manager
name Kalyan  profession HR
name ahjdh  profession IT
```

  We can work with shell by using codes and conditional statements and loops.

```
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh/a/b/c$ vi four.sh
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh/a/b/c$ ./four.sh
1 is Odd
2 is Even
3 is Odd
4 is Even
5 is Odd
6 is Even
7 is Odd
8 is Even
9 is Odd
10 is Even
11 is Odd
12 is Even
13 is Odd
14 is Even
15 is Odd
16 is Even
17 is Odd
18 is Even
19 is Odd
20 is Even
```

- Next we are introduced to the command tar . By using this command we can compress and decompress the files.
    1. tar -cvf practice.tar a.text b.text - compress the two files into one
    2. tar -xvf practice.tar - uncompress the two files.

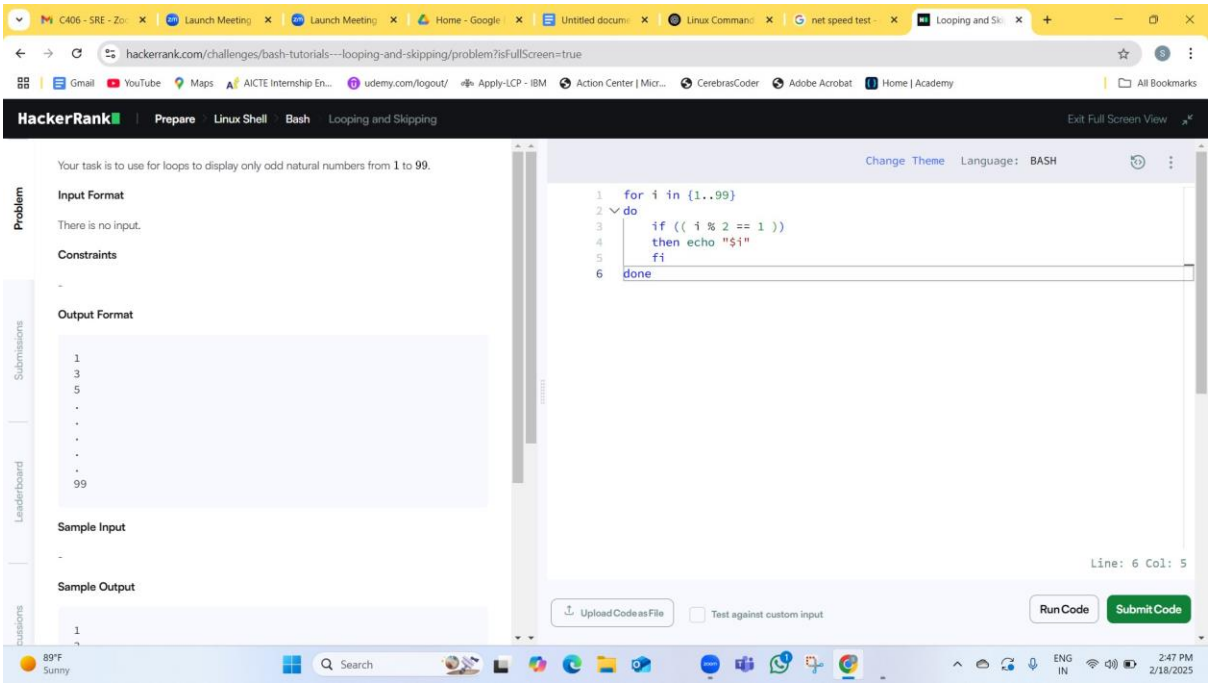
```
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh/a$ vi a.txt
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh/a$ vi b.txt
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh/a$ tar -cvf practice.tar a.text b.text
tar: a.text: Cannot stat: No such file or directory
tar: b.text: Cannot stat: No such file or directory
tar: Exiting with failure status due to previous errors
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh/a$ tar -cvf practice.tar a.txt b.txt
a.txt
b.txt
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh/a$ l
total 12
drwxrwxrwx 1 ganesh ganesh   512 Feb 18 10:50 b
-rwxrwxrwx 1 ganesh ganesh    18 Feb 18 16:19 a.txt
-rwxrwxrwx 1 ganesh ganesh    15 Feb 18 16:19 b.txt
-rwxrwxrwx 1 ganesh ganesh 10240 Feb 18 16:19 practice.tar
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh/a$ tar -xvf practice.tar
a.txt
b.txt
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh/a$ ls -lrt
total 12
drwxrwxrwx 1 ganesh ganesh   512 Feb 18 10:50 b
-rwxrwxrwx 1 ganesh ganesh    18 Feb 18 16:19 a.txt
-rwxrwxrwx 1 ganesh ganesh    15 Feb 18 16:19 b.txt
-rwxrwxrwx 1 ganesh ganesh 10240 Feb 18 16:19 practice.tar
```

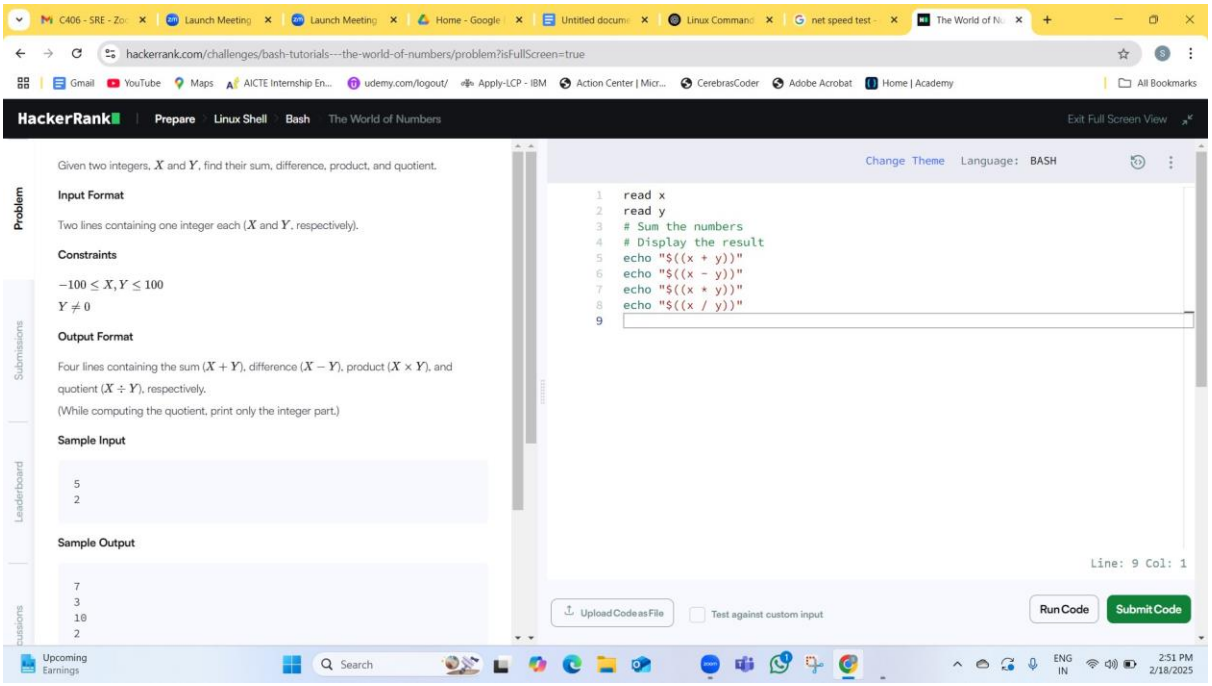
Additional Learning:

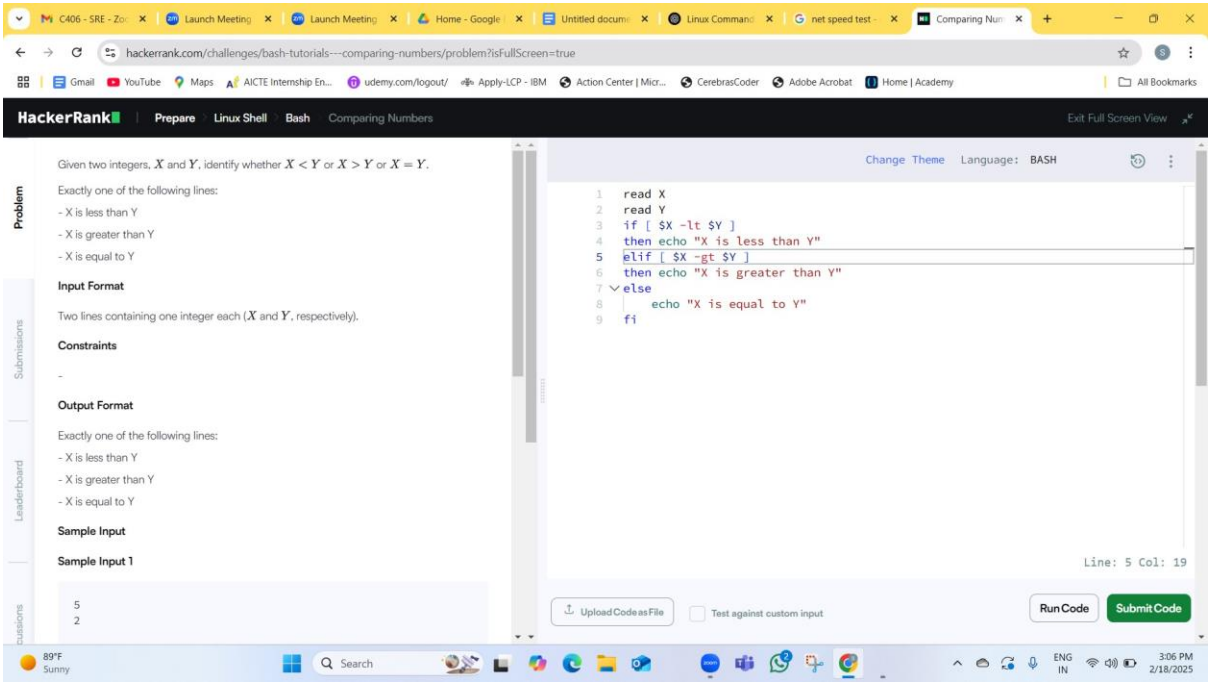
- I have worked on the command awk and conditional statements

```
ganesh@DESKTOP-MKBUTDM:/mnt/c/users/ACCER/OneDrive/Desktop/ganesh/a/b/c$ awk '{
if ($2<30) {
print $1 , "is entry level and " , $3, "is the profession";
}else {
print $1 , "is experienced and " , $3, "is the profession";
}
}' data.txt
saiganesh is entry level and  Trainee is the profession
Kumar is entry level and  Engineer is the profession
Venkat is experienced and  Manager is the profession
Kalyan is experienced and  HR is the profession
ahjdh is entry level and  IT is the profession
```

In the afternoon session, we brushed up all the topics that are discussed in the morning and discussed the doubts in the breakout rooms. We have solved few coding questions in hackerrank




HackerRank
Prepare
Linux Shell
Bash
The World of Numbers
Exit Full Screen View
Problem
Given two integers, X and Y, find their sum, difference, product, and quotient.
Input Format
Two lines containing one integer each (X and Y, respectively).
Constraints
$-100 \leq X, Y \leq 100$
$Y \neq 0$
Output Format
Four lines containing the sum ($X + Y$), difference ($X - Y$), product ($X \times Y$), and quotient ($X \div Y$), respectively.
(While computing the quotient, print only the integer part.)
Sample Input
5
2
Sample Output
7
3
10
2
Change Theme
Language: BASH
read x
read y
Sum the numbers
Display the result
echo "$((x + y))"
echo "$((x - y))"
echo "$((x * y))"
echo "$((x / y))"
Line: 9 Col: 1
Upload Code as File
Test against custom input
Run Code
Submit Code


HackerRank
Prepare
Linux Shell
Bash
Comparing Numbers
Exit Full Screen View
Problem
Given two integers, X and Y, identify whether $X < Y$ or $X > Y$ or $X = Y$.
Exactly one of the following lines:
- X is less than Y
- X is greater than Y
- X is equal to Y
Input Format
Two lines containing one integer each (X and Y, respectively).
Constraints
-
Output Format
Exactly one of the following lines:
- X is less than Y
- X is greater than Y
- X is equal to Y
Sample Input
Sample Input 1
5
2
Change Theme
Language: BASH
read X
read Y
if [$X -lt $Y]
then echo "X is less than Y"
elif [$X -gt $Y]
then echo "X is greater than Y"
else
echo "X is equal to Y"
fi
Line: 5 Col: 19
Upload Code as File
Test against custom input
Run Code
Submit Code