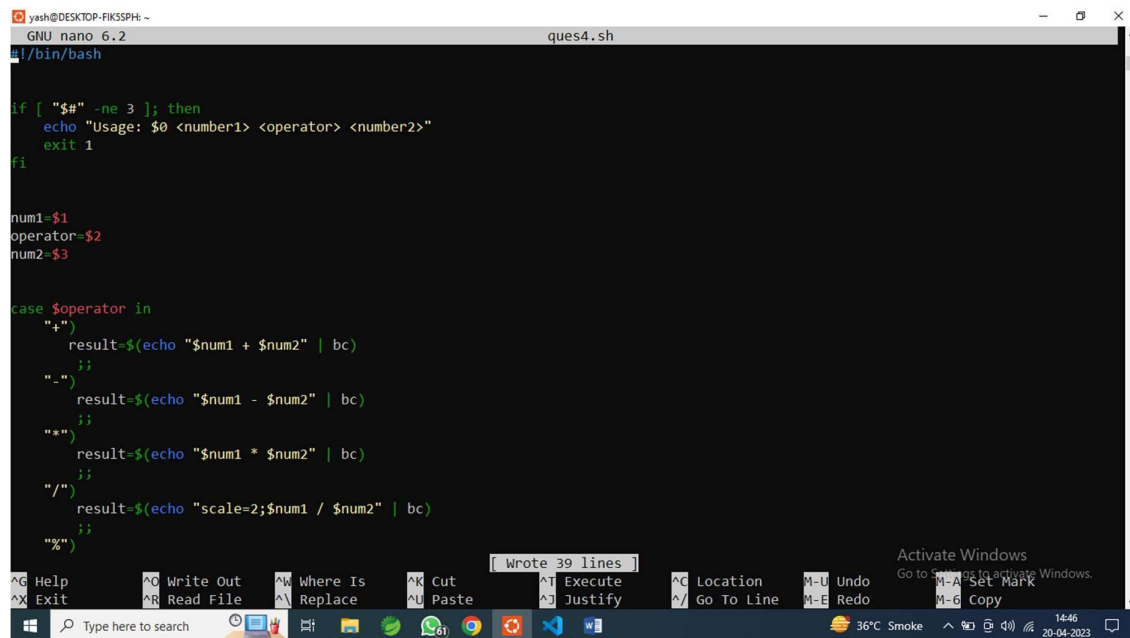**Assignment: 3**
Name :Yashwant Singh
Topic : Shell Scripting
Date : 20 April 2023

Ques 4

```
Description- Script for arithmetic calculator using
command linearguments
Input- bash 04_calculator.sh 1.2 + 2.6
Output- The sum of 1.2 and 2.6 is
3.8Comment
```
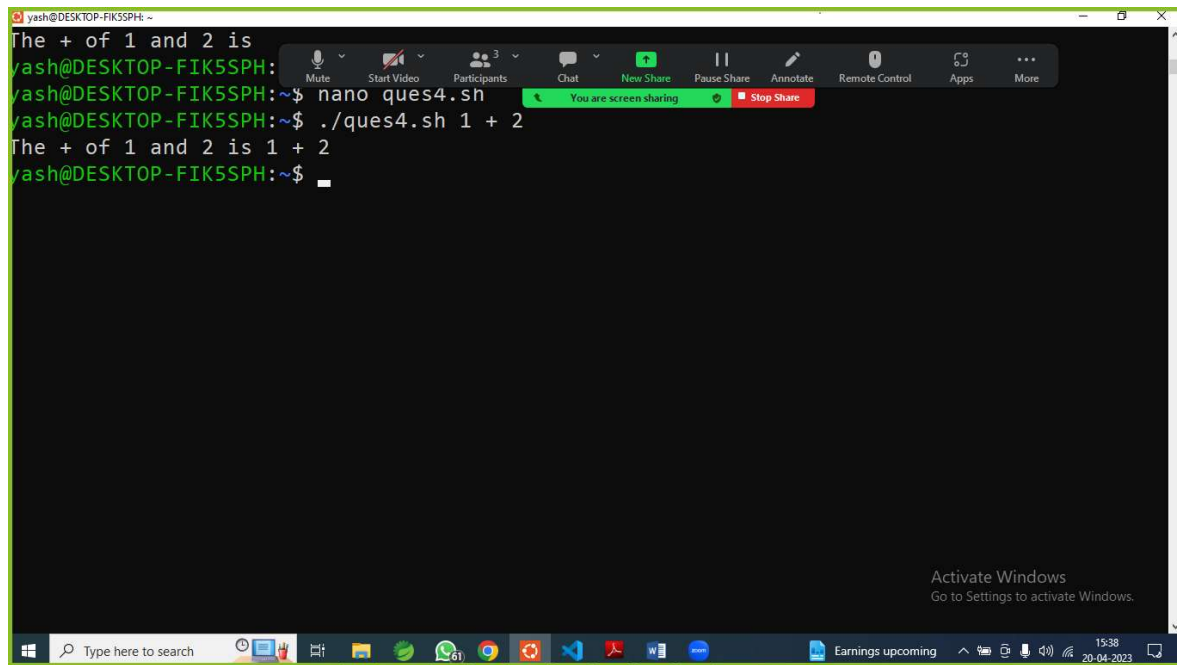

Output

Ques 5
Description- Script to compare larger integer values from a 'n' numberof arguments using command line arguments
Input- bash 05_largest.sh 1 3 8 6
5 7 9 2Output- The largest value
is 9
Comment

```bash
GNU nano 6.2                                              q5.sh
#!/bin/bash


if [ "$#" -lt 1 ]; then
    echo "Usage: $0 <number1> [<number2> <number3> ...]"
    exit 1
fi

largest=$1


for num in "${@:2}"
do
    if [ "$num" -gt "$largest" ]; then
        largest=$num
    fi
done


echo "The largest value is $largest"
```

```
^G Help      ^O Write Out   ^W Where Is   ^K Cut      ^T Execute    ^C Location   M-U Undo    M-A Set Mark
^X Exit      ^R Read File   ^\ Replace    ^U Paste    ^J Justify    ^/ Go To Line M-E Redo    M-6 Copy
```

[Wrote 21 lines]

Output

```
yash@DESKTOP-FIK5SPH:~$ chmod u+x q5.sh
yash@DESKTOP-FIK5SPH:~$ ./q5.sh
The largest value is 9
yash@DESKTOP-FIK5SPH:~$
```

Ques 6
Description- Script to print a given number in reverse order. Input- bash 06_reverse.sh 639872
Output- The reversed number of entered number is 278936 comment

```bash
#!/bin/bash


if [ "$#" -ne 1 ]; then
    echo "Usage: $0 <number>"
    exit 1
fi


num=$1


reversed=$(echo $num | rev)

echo "The reversed number of entered number is $reversed"
```

Output


```
yash@DESKTOP-FIK5SPH:~$ nano ques4.sh
yash@DESKTOP-FIK5SPH:~$ nano ques4.sh
yash@DESKTOP-FIK5SPH:~$ ./ques4.sh 1 + 2
The + of 1 and 2 is 1 + 2
yash@DESKTOP-FIK5SPH:~$ ./q6.sh 4544564
-bash: ./q6.sh: Permission denied
yash@DESKTOP-FIK5SPH:~$ chmod u+x q6.sh
yash@DESKTOP-FIK5SPH:~$ ./q6.sh 4544564
The reversed number of entered number is 4654454
yash@DESKTOP-FIK5SPH:~$
```

Ques 7
Description- Script to delete empty lines
from a file Input- bash
07_delete_empty_lines.sh file.txt
Output- All empty lines of the file file.txt will
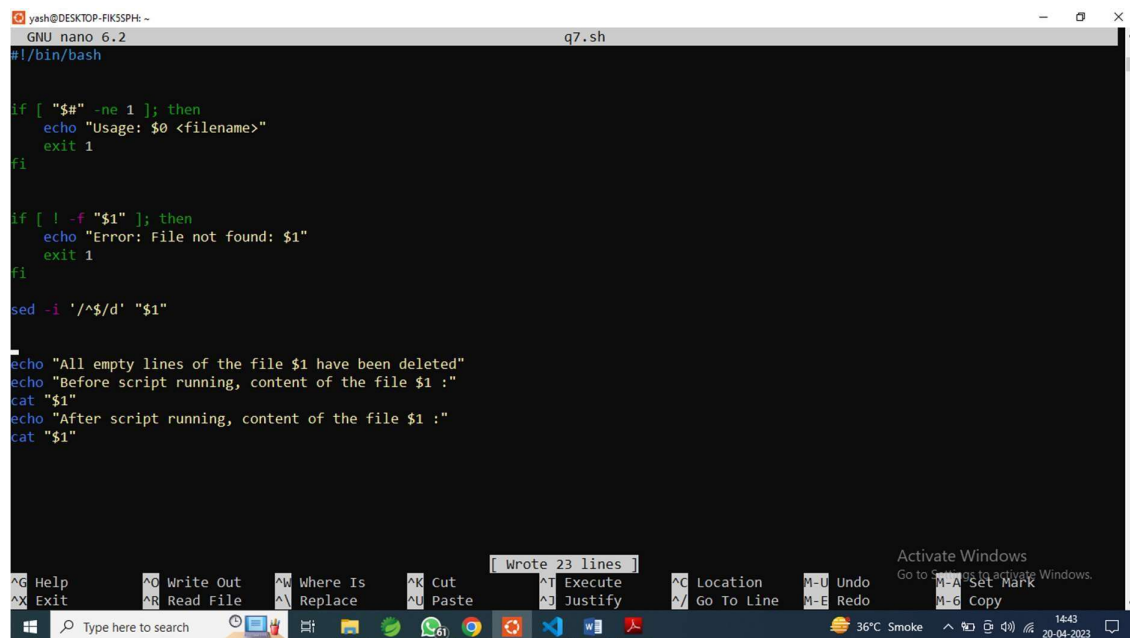**be deleted Before script running, content of**
the file file.txt :

Hello, I am

Siddaling.I am

from Belgaum.

I studied B-Tech in ECE.
After script running, content of the file
commen   file.txt :Hello, I am Siddaling.
t   I am from Belgaum.
                I studied B-Tech in ECE.

```
GNU nano 6.2                              q7.sh
#!/bin/bash

if [ "$#" -ne 1 ]; then
    echo "Usage: $0 <filename>"
    exit 1
fi

if [ ! -f "$1" ]; then
    echo "Error: File not found: $1"
    exit 1
fi

sed -i '/^$/d' "$1"


echo "All empty lines of the file $1 have been deleted"
echo "Before script running, content of the file $1 :"
cat "$1"
echo "After script running, content of the file $1 :"
cat "$1"
```

[Wrote 23 lines]

^G Help   ^O Write Out ^W Where Is   ^K Cut   ^T Execute   ^C Location   M-U Undo   M-A Set Mark
^X Exit   ^R Read File   ^\ Replace   ^U Paste   ^J Justify   ^/ Go To Line M-E Redo   M-6 Copy

Ques 8
Description- Script to perform arithmetic operation on digits of agiven number depending upon the operator.
Input- bash 08_operator_dependent.sh 12354+
Output- The sum
is 15comment

```bash
#!/bin/bash

if [ "$#" -ne 1 ]; then
    echo "Usage: $0 <number><operator>"
    exit 1
fi

num="$1"
operator="${num: -1}"  # Get the last character of the string

num="${num%?}"

case "$operator" in
    '+')
        result=$(echo $num | sed 's/./&+/g; s/.$//' | bc)
        ;;
    '-')
        result=$(echo $num | sed 's/./&-/g; s/.$//' | bc)
        ;;
    '*')
        result=$(echo $num | sed 's/./&*/g; s/.$//' | bc)
        ;;
    '/')
```

Ques 9

Description- script to read 'n' and generate Fibonacci numbers <= nInput- bash 09_fibonacci.sh
       Enter limit for fibonacci
series: 13Output- The expected
fibonacci series is:
       0, 1, 1, 2, 3, 5, 8, 13,
comment

```bash
#!/bin/bash

read -n "Enter limit for Fibonacci series: " limit

a=0
b=1

echo -n "$a, $b, "

while [ "$b" -le "$limit" ]; do

    c=$((a + b))

    if [ "$c" -gt "$limit" ]; then
        break
    fi

    echo -n "$c, "
    a="$b"
    b="$c"
```

Output

```
yash@DESKTOP-FIK5SPH:~$ chmod u+x q6.sh
yash@DESKTOP-FIK5SPH:~$ ./q6.sh 4544564
The reversed number of entered number is 4654454
yash@DESKTOP-FIK5SPH:~$ chmod u+x q8.sh
yash@DESKTOP-FIK5SPH:~$ ./q8.sh 12354+
./q8.sh: line 18: bc: command not found
The + is
yash@DESKTOP-FIK5SPH:~$ ./q8.sh 12354
Error: Invalid operator '4'
yash@DESKTOP-FIK5SPH:~$ ./q8.sh 1235
Error: Invalid operator '5'
yash@DESKTOP-FIK5SPH:~$ chmod u+x q9.sh
yash@DESKTOP-FIK5SPH:~$ ./q9.sh
Enter limit for Fibonacci series: 5
0, 1, 1, 2, 3, 5,
yash@DESKTOP-FIK5SPH:~$
```

Activate Windows
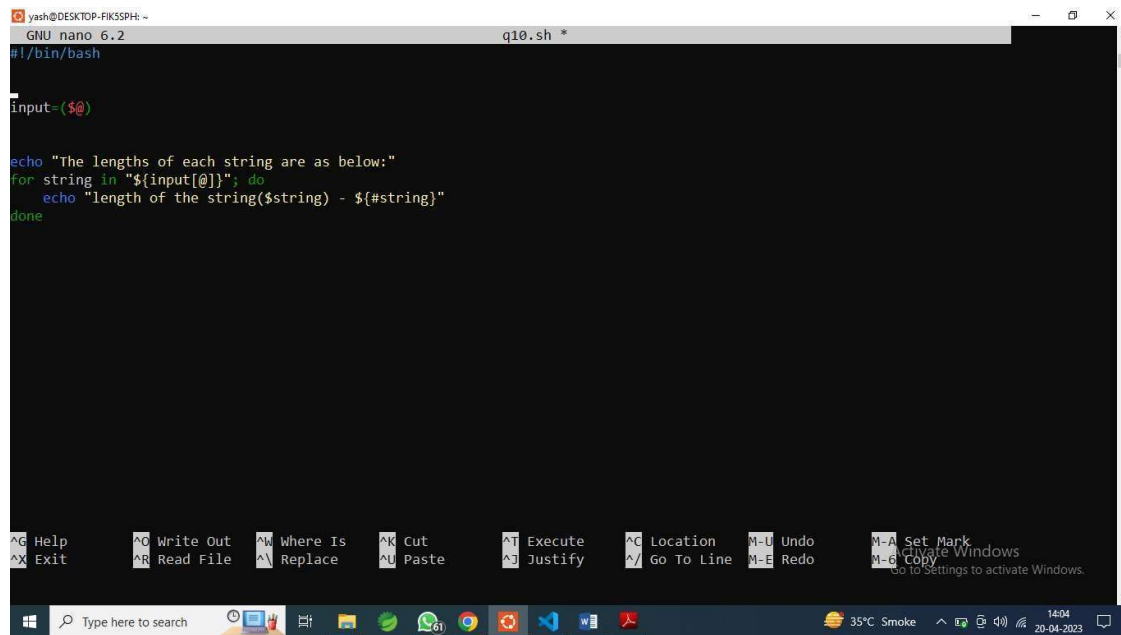Go to Settings to activate Windows.

Ques 10
Description- Script to print the length of each and every string usingarrays
Input- bash 10_string_length.sh hello, I am SiddalingOutput-   The lengths of each string are as below:
          length of the string(hello,) -6length of the string(I)   -1

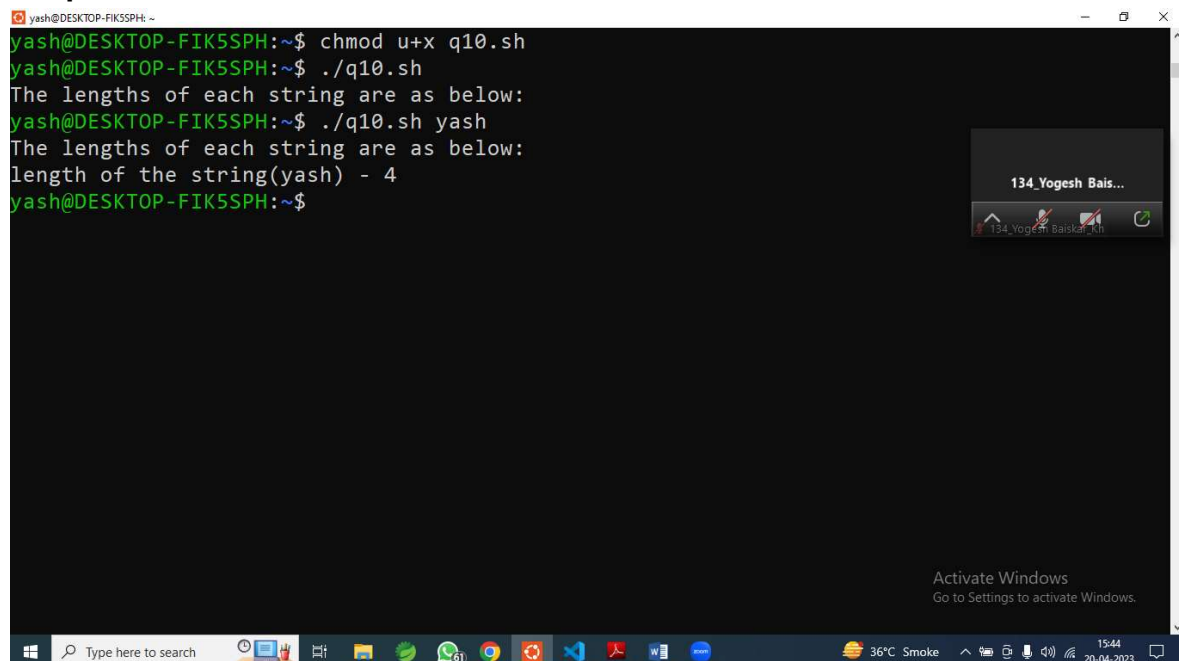|	
comment	length of the string(am) -2 length of the string(Siddaling) -9


```
GNU nano 6.2                                    q10.sh *
#!/bin/bash


input=($@)

echo "The lengths of each string are as below:"
for string in "${input[@]}"; do
    echo "length of the string($string) - ${#string}"
done
```

```
^G Help      ^O Write Out   ^W Where Is   ^K Cut      ^T Execute   ^C Location   M-U Undo   M-A Set Mark
^X Exit      ^R Read File   ^\ Replace    ^U Paste    ^J Justify   ^/ Go To Line M-E Redo   M-6 Copy
```

Output


```
yash@DESKTOP-FIK5SPH:~$ chmod u+x q10.sh
yash@DESKTOP-FIK5SPH:~$ ./q10.sh
The lengths of each string are as below:
yash@DESKTOP-FIK5SPH:~$ ./q10.sh yash
The lengths of each string are as below:
length of the string(yash) - 4
yash@DESKTOP-FIK5SPH:~$
```

Ques 11
Description- script to print chess board , black as 1 , white as 0 Input- bash 11_chess_board.sh
Output- [Chess board] comment

```
GNU nano 6.2                                    q11.sh
#!/bin/bash

size=8


for ((row=0; row<size; row++)); do

    for ((col=0; col<size; col++)); do

        if (( (row+col) % 2 == 0 )); then
            square=0
        else
            square=1
        fi

        echo -n "$square "
    done

    echo
done
```
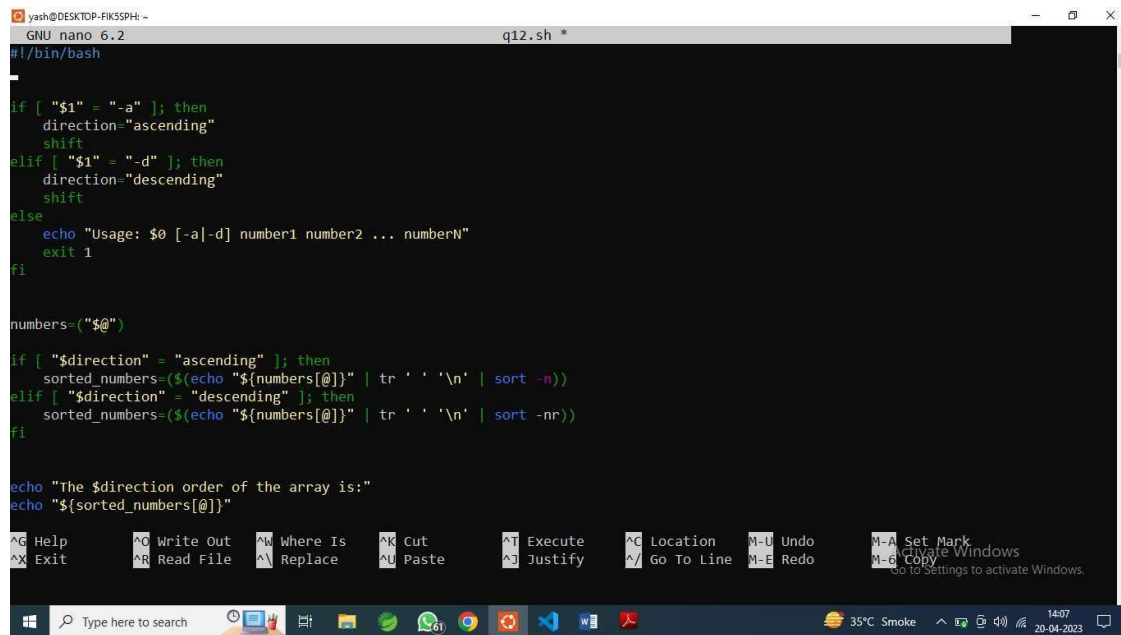
```
                              [ Read 21 lines ]
^G Help        ^O Write Out    ^W Where Is    ^K Cut        ^T Execute     ^C Location    M-U Undo    M-A Set Mark
^X Exit        ^R Read File    ^\ Replace     ^U Paste      ^J Justify     ^/ Go To Line  M-E Redo    M-6 Copy
```

Output

```
The lengths of each string are as below:
length of the string(yash) - 4
yash@DESKTOP-FIK5SPH:~$ chmod u+x q11.sh
yash@DESKTOP-FIK5SPH:~$ ./q11.sh
0 1 0 1 0 1 0 1
1 0 1 0 1 0 1 0
0 1 0 1 0 1 0 1
1 0 1 0 1 0 1 0
0 1 0 1 0 1 0 1
1 0 1 0 1 0 1 0
0 1 0 1 0 1 0 1
1 0 1 0 1 0 1 0
yash@DESKTOP-FIK5SPH:~$
```

Ques 12
Description- Script to sort a given number in ascending or descendingorder.
Input- bash 12_sorting.sh -a 96 12 85 36 25 1 9 14 14 11

Output- The ascending order of the
       array is:1 9 11 12 14 14 25 36
       85 96
comment

Output

Ques 13
Description- Script to print the following:
- Currently logged users
- Your shell directory
- Home directory
- OS name & version
- Current working directory
- Number of users logged in
- Show all available shells in your system
- Hard disk information
- CPU information.

- Memory information.
- File system information.
- Currently running

process Input- bash

13_system_info.sh

1. Currently logged users
2. Your shell directory
3. Home directory
4. OS name & version
5. Current working directory
6. Number of users logged in
7. Show all available shells in your system
8. Hard disk information
9. CPU information.
10. Memory information.
11. File system
information.
12. Currently running
process. Enter the
option: 3

Output- Your home directory is
/home/siddaling comment

GNU nano 6.2   q13.sh

```
#!/bin/bash


echo "Currently logged users:"
who


echo "Your shell directory:"
echo $SHELL


echo "Home directory:"
echo $HOME


echo "OS name and version:"
cat /etc/*-release


echo "Current working directory:"
pwd


echo "Number of users logged in:"
who | wc -l


echo "Available shells in the system:"
```

[Wrote 50 lines]

Activate Windows
Go to Settings to activate Windows.

^G Help   ^O Write Out   ^W Where Is   ^K Cut   ^T Execute   ^C Location   M-U Undo   M-A Set Mark
^X Exit   ^R Read File   ^\ Replace   ^U Paste   ^J Justify   ^/ Go To Line M-E Redo   M-6 Copy

Output

```
1 9 11 12 14 14 25 36 85 96
yash@DESKTOP-FIK5SPH:~$ chmod u+x q13.sh
yash@DESKTOP-FIK5SPH:~$ ./q13.sh
Currently logged users:
Your shell directory:
/bin/bash
Home directory:
/home/yash
OS name and version:
DISTRIB_ID=Ubuntu
DISTRIB_RELEASE=22.04
DISTRIB_CODENAME=jammy
DISTRIB_DESCRIPTION="Ubuntu 22.04.1 LTS"
PRETTY_NAME="Ubuntu 22.04.1 LTS"
NAME="Ubuntu"
VERSION_ID="22.04"
VERSION="22.04.1 LTS (Jammy Jellyfish)"
VERSION_CODENAME=jammy
ID=ubuntu
ID_LIKE=debian
HOME_URL="https://www.ubuntu.com/"
SUPPORT_URL="https://help.ubuntu.com/"
```

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Activate Windows
Go to Settings to activate Windows.

Ques 14

Description- Script to rename a file/directory replaced by lower/uppercase letters.

Input- bash

14_file_upper_lower.sh

Output-Before running the script

```
        ls
        File.txt MyScript.SH MyFile007.txt dir/ Assign1/
newfolder/
     After running the script
        $ ls
        file.txt myfile007.txt myscript.sh DIR/ ASSIGN1/
NEWFOLDER/
comment
```

Output

Ques 15

Description- Script to rename current working
directory with given name.
Input- bash 15_rename_cur_dir.sh
siddaling Output- Before running the
script:
            Name of current directory-
        siddaling1 After running the script:
            Name of current directory- siddaling
comment
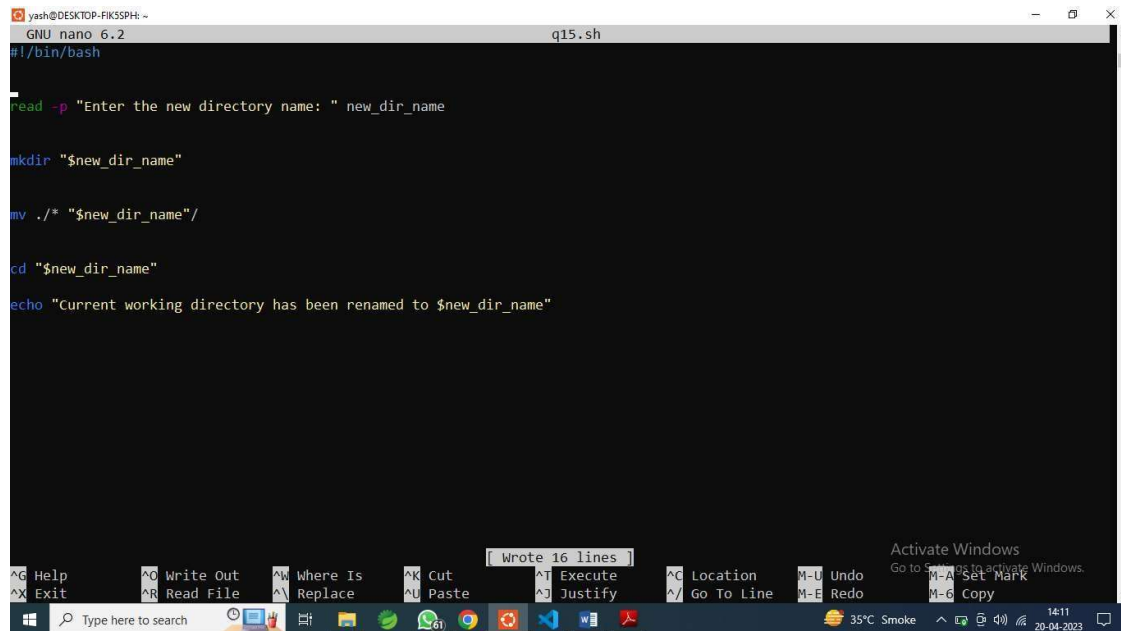
Output

Ques 16
Description- Script to rename all .jpg files by replacing
prefix which is given by user
Input- bash

```
16_rename_album.sh myday
Output-Before running the
script
            ls
            16_rename_album.sh  DSN001.jpg  DSN002.jpg
DSN003.jpgDSN004.jpg  DSN005.jpg  DSN006.jpg  DSN007.jpg
      After running the script
            $ ls
            16_rename_album.sh  myday_001.jpg
myday_002.jpgmyday_003.jpg myday_004.jpg
myday_005.jpg myday_006.jpg myday_007.jpg
comment
```

```
GNU nano 6.2                                           q16.sh
#!/bin/bash


echo "Enter the new prefix for the JPG files: "
read prefix


for file in *.jpg; do
    mv "$file" "${prefix}_${file#*_}"
done


echo "JPG files have been renamed with the prefix '$prefix'"




                                    [ Wrote 14 lines ]
^G Help      ^O Write Out   ^W Where Is   ^K Cut      ^T Execute    ^C Location   M-U Undo     M-A Set Mark
^X Exit      ^R Read File   ^\ Replace    ^U Paste    ^J Justify    ^/ Go To Line M-E Redo     M-6 Copy
```

Output

```
yash@DESKTOP-FIK5SPH:~/yrr$ ls
A4.SH           INFOBELL   Q14.SH   Q19.SH   Q24.SH   Q29.SH   Q34.SH   Q9.SH      TODAY.TXT
A5.SH           Q10.SH     Q15.SH   Q20.SH   Q25.SH   Q30.SH   Q5.SH    QUES1.SH   YASH1
ASSIGNMENT2.SH  Q11.SH     Q16.SH   Q21.SH   Q26.SH   Q31.SH   Q6.SH    QUES2.SH   YASHWANT
CHETAN2.TXT     Q12.SH     Q17.SH   Q22.SH   Q27.SH   Q32.SH   Q7.SH    QUES3.SH
HARRY.TXT       Q13.SH     Q18.SH   Q23.SH   Q28.SH   Q33.SH   Q8.SH    QUES4.SH
yash@DESKTOP-FIK5SPH:~/yrr$ chmod u+x Q16.SH
yash@DESKTOP-FIK5SPH:~/yrr$ ./Q16.SH
Enter the new prefix for the JPG files:
rr
mv: cannot stat '*.jpg': No such file or directory
JPG files have been renamed with the prefix 'rr'
yash@DESKTOP-FIK5SPH:~/yrr$
```

Ques 17
**Description- Script to print contents of file from given
line number tonext given number of lines.
Input- bash 17_print_lines.sh 5 4
Output- line 5
        line 6
        line 7
        line 8
comment**
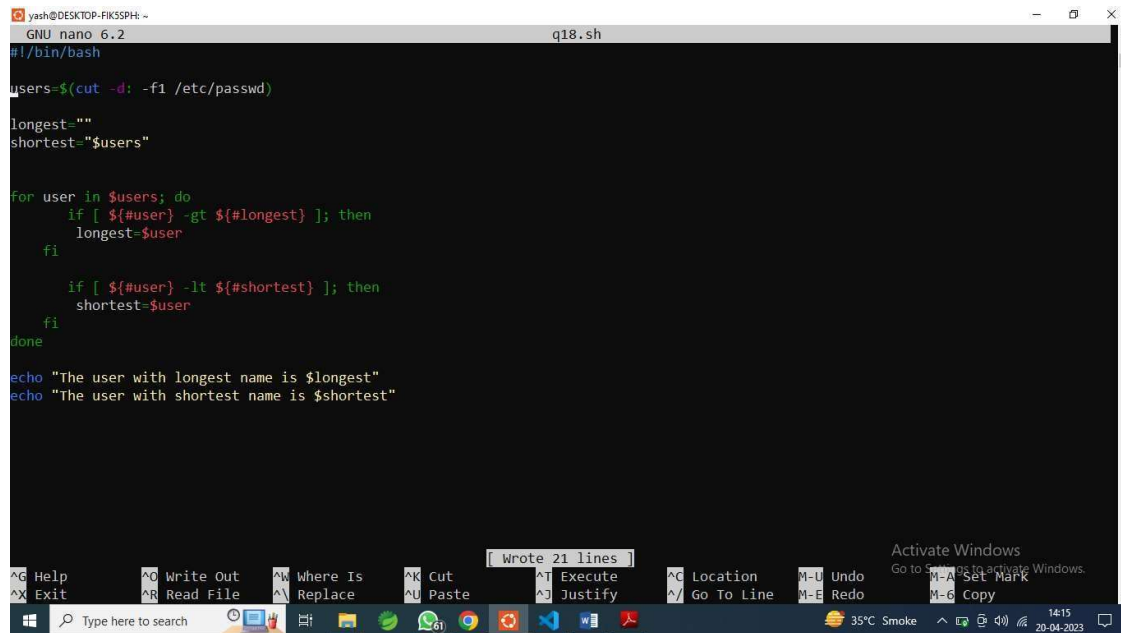
Output

Ques 18
Description- Script to display the longest and shortest user-names on the system.
Input- bash 18_largest_username.sh
Output- The user with longest name is gnome-initial-setup
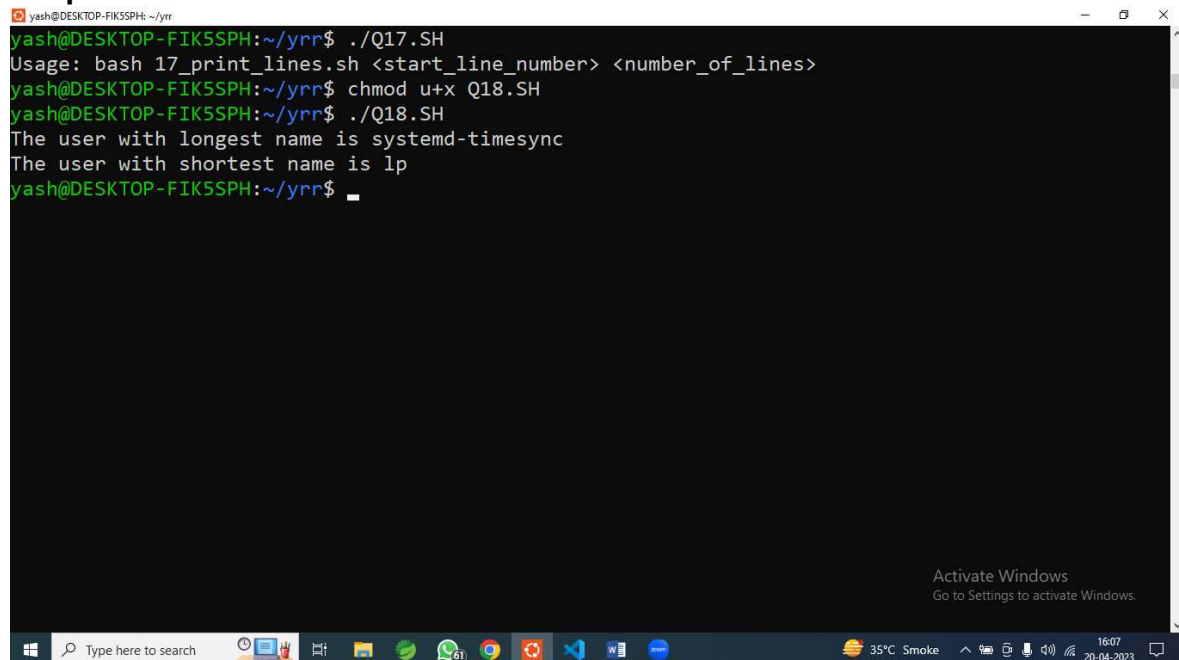
```
        The user with shortest name is lp
comment
```


GNU nano 6.2   q18.sh
```
#!/bin/bash

users=$(cut -d: -f1 /etc/passwd)

longest=""
shortest="$users"


for user in $users; do
    if [ ${#user} -gt ${#longest} ]; then
      longest=$user
    fi

    if [ ${#user} -lt ${#shortest} ]; then
      shortest=$user
    fi
done

echo "The user with longest name is $longest"
echo "The user with shortest name is $shortest"
```

[Wrote 21 lines]

^G Help   ^O Write Out   ^W Where Is   ^K Cut   ^T Execute   ^C Location   M-U Undo   M-A Set Mark
^X Exit   ^R Read File   ^\ Replace   ^U Paste   ^J Justify   ^/ Go To Line M-E Redo   M-6 Copy

Output


```
yash@DESKTOP-FIK5SPH:~/yrr$ ./Q17.SH
Usage: bash 17_print_lines.sh <start_line_number> <number_of_lines>
yash@DESKTOP-FIK5SPH:~/yrr$ chmod u+x Q18.SH
yash@DESKTOP-FIK5SPH:~/yrr$ ./Q18.SH
The user with longest name is systemd-timesync
The user with shortest name is lp
yash@DESKTOP-FIK5SPH:~/yrr$
```

Ques 19
Description- Script to delete all the .swp files found in your systemor directory.
Input- bash 19_delete_display_swp.sh
Output- swp files found:
```
        ./b.swp
        ./siddaling/b.swp
        ./siddaling/c.swp
        ./siddaling/test/b.swp
        ./siddaling/test/c.swp
        ./siddaling/test/d.swp
```

```
./siddaling/test/a.swp
./siddaling/test/e.swp
./siddaling/d.swp
./siddaling/a.swp
./a.swp
```

comment

GNU nano 6.2   q19.sh
#!/bin/bash

swp_files=$(find . -name "*.swp")

if [-z "$swp_files"]; then
    echo "No .swp files found"
else
    echo "swp files found:"
    echo "$swp_files"
    read -p "Do you want to delete all .swp files found? (y/n) " choice
    case "$choice" in
      y|Y)
        # delete the .swp files
        echo "Deleting all .swp files found..."
        rm $swp_files
        echo "Done."
        ;;
      n|N)
        echo "No files were deleted."
        ;;
      *)
        echo "Invalid choice. No files were deleted."
        ;;
    esac
fi

Output


```
yash@DESKTOP-FIK5SPH:~/yrr$ ./Q17.SH
Usage: bash 17_print_lines.sh <start_line_number> <number_of_lines>
yash@DESKTOP-FIK5SPH:~/yrr$ chmod u+x Q18.SH
yash@DESKTOP-FIK5SPH:~/yrr$ ./Q18.SH
The user with longest name is systemd-timesync
The user with shortest name is lp
yash@DESKTOP-FIK5SPH:~/yrr$ chmod u+x Q19.SH
yash@DESKTOP-FIK5SPH:~/yrr$ ./Q19.SH
No .swp files found
yash@DESKTOP-FIK5SPH:~/yrr$
```

Ques 20
Description- script for generating random 8-character passwords including alpha numeric characters.
Input- bash 20_random_password.sh
Output- The generated 8 random
passwords are: J,kwAc{O
Pft4Get*
\2('pKlr
!,[(VwY%
^X|Z+}
u8
y]\(2P
|R

```
B#6'V=
#D
8\Lrz{bc
```
comment
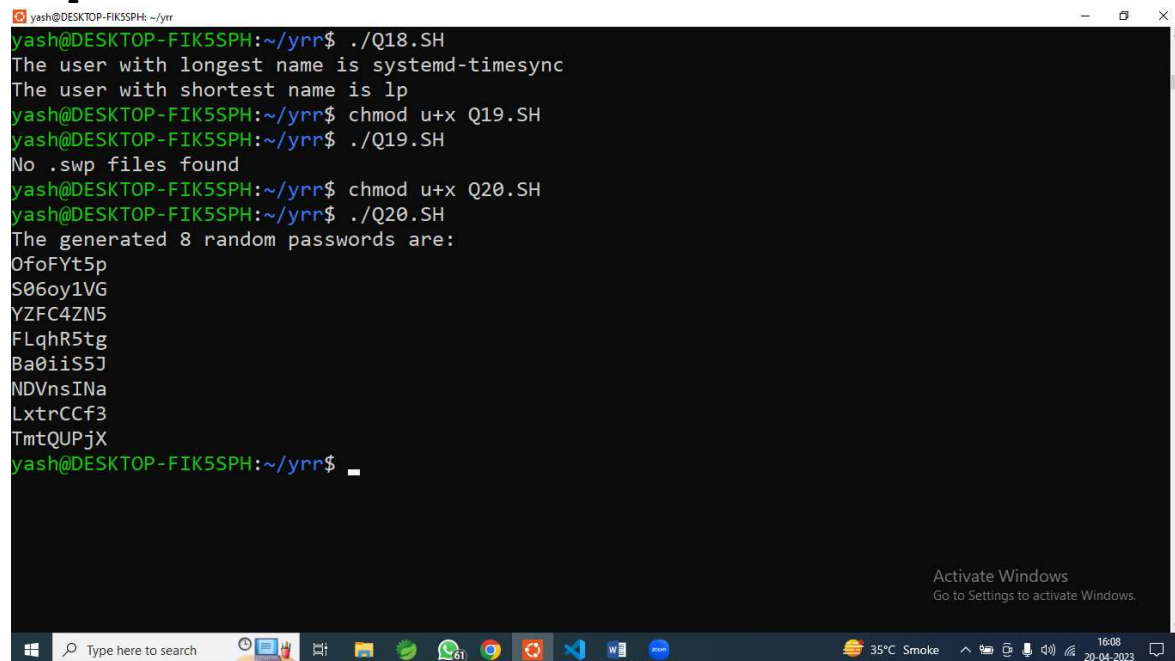
```
yash@DESKTOP-FIK5SPH: ~                                                                                  —  □  ×
  GNU nano 6.2                                               q20.sh
#!/bin/bash

generate_password() {
    charset='ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz0123456789'

    password=$(head /dev/urandom | tr -dc $charset | head -c 8)

    echo "$password"
}


echo "The generated 8 random passwords are:"
for i in {1..8}
do
    generate_password
done

                                                    [ Wrote 18 lines ]
^G Help       ^O Write Out   ^W Where Is   ^K Cut       ^T Execute    ^C Location    M-U Undo    M-A Set Mark
^X Exit       ^R Read File   ^\ Replace    ^U Paste     ^J Justify    ^/ Go To Line  M-E Redo    M-6 Copy
```

Output

```
yash@DESKTOP-FIK5SPH: ~/yrr                                                                              —  □  ×
yash@DESKTOP-FIK5SPH:~/yrr$ ./Q18.SH
The user with longest name is systemd-timesync
The user with shortest name is lp
yash@DESKTOP-FIK5SPH:~/yrr$ chmod u+x Q19.SH
yash@DESKTOP-FIK5SPH:~/yrr$ ./Q19.SH
No .swp files found
yash@DESKTOP-FIK5SPH:~/yrr$ chmod u+x Q20.SH
yash@DESKTOP-FIK5SPH:~/yrr$ ./Q20.SH
The generated 8 random passwords are:
OfoFYt5p
S06oy1VG
YZFC4ZN5
FLqhR5tg
Ba0iiS5J
NDVnsINa
LxtrCCf3
TmtQUPjX
yash@DESKTOP-FIK5SPH:~/yrr$
```
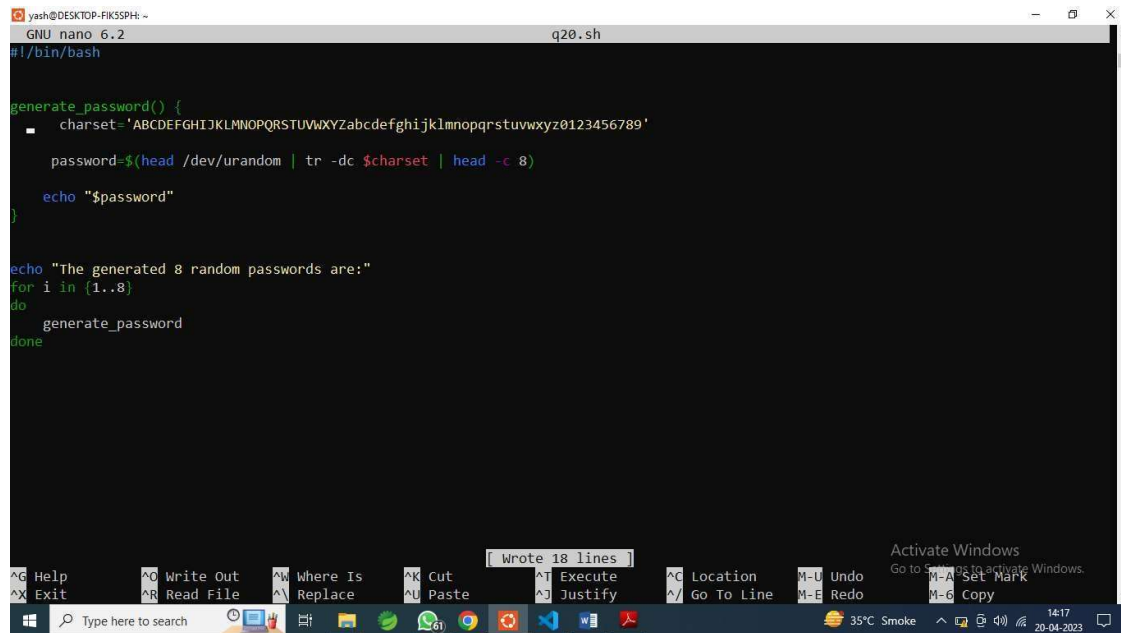
Ques 21
Description- Script called say_hello, which will print greetings basedon time and to provide date information .
Input- in bashrc file-
/home/siddaling/21_say_hello.sh Output- Good evening siddaling,have nice day!
        This is Saturday 09 in January of 2021 (07:58:53 PM)
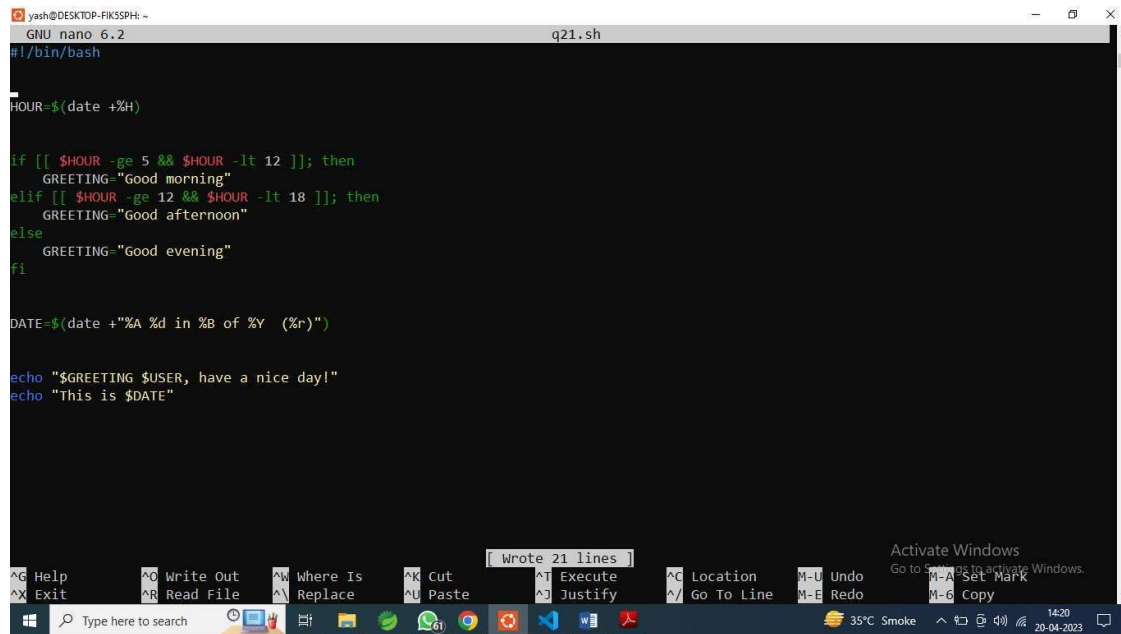
comment

```
GNU nano 6.2                                            q21.sh
#!/bin/bash


HOUR=$(date +%H)


if [[ $HOUR -ge 5 && $HOUR -lt 12 ]]; then
    GREETING="Good morning"
elif [[ $HOUR -ge 12 && $HOUR -lt 18 ]]; then
    GREETING="Good afternoon"
else
    GREETING="Good evening"
fi


DATE=$(date +"%A %d in %B of %Y  (%r)")


echo "$GREETING $USER, have a nice day!"
echo "This is $DATE"




                              [ Wrote 21 lines ]
^G Help      ^O Write Out  ^W Where Is   ^K Cut      ^T Execute   ^C Location   M-U Undo   M-A Set Mark
^X Exit      ^R Read File  ^  Replace    ^U Paste    ^J Justify   ^/ Go To Line M-E Redo   M-6 Copy
```
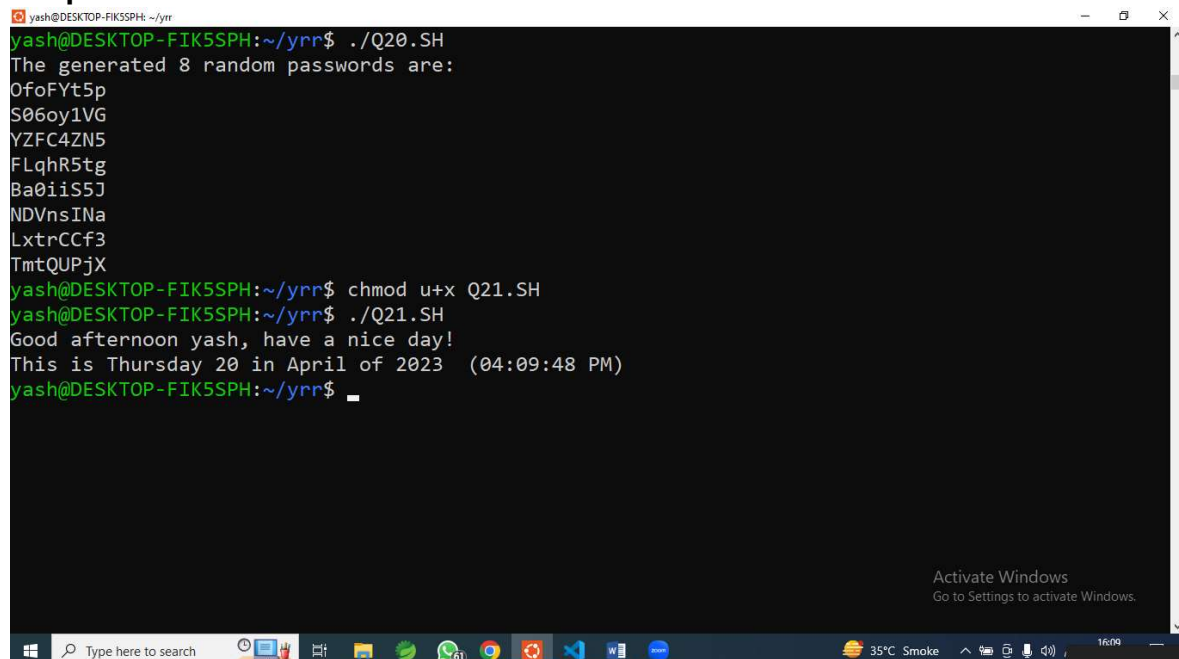
Output

```
yash@DESKTOP-FIK5SPH:~/yrr$ ./Q20.SH
The generated 8 random passwords are:
OfoFYt5p
S06oy1VG
YZFC4ZN5
FLqhR5tg
Ba0iiS5J
NDVnsINa
LxtrCCf3
TmtQUPjX
yash@DESKTOP-FIK5SPH:~/yrr$ chmod u+x Q21.SH
yash@DESKTOP-FIK5SPH:~/yrr$ ./Q21.SH
Good afternoon yash, have a nice day!
This is Thursday 20 in April of 2023  (04:09:48 PM)
yash@DESKTOP-FIK5SPH:~/yrr$
```

Ques 22
Description- Script to convert content of file lower to uppercase andupper to lowercase.
Input- bash 22_upper_lower.sh a.txt

1 – Lower to upper
        2 – Upper to lower
        please select the
option: 1Output- Before
running the script:
        Content of the file a.txt-   Hello, I am Siddaling
        Kempasatti,
                                    From Belgaum.
        After Running script:
        content of the file a.txt-   HELLO, I AM SIDDALING
        KEMPASATTI,
commen   FROM
t   BELGAUM.

```bash
#!/bin/bash

if [[ $# -eq 0 ]]; then
    echo "Please provide a file name as argument"
    exit 1
fi

if [[ ! -f $1 ]]; then
    echo "File does not exist"
    exit 1
fi


echo "1 - Lower to upper"
echo "2 - Upper to lower"
read -p "Please select the option: " choice


if [[ $choice -eq 1 ]]; then
    tr '[:lower:]' '[:upper:]' < $1 > temp.txt
    mv temp.txt $1
    echo "Converted lowercase to uppercase"
elif [[ $choice -eq 2 ]]; then
    tr '[:upper:]' '[:lower:]' < $1 > temp.txt
    mv temp.txt $1
    echo "Converted uppercase to lowercase"
```

Ques 23

Description- Script to convert content of file lower to uppercase andupper to lowercase.

Input- bash

23_print_fifth_line.sh a.txt

Output- Before running the script:

Content of the file a.txt-   Hello, I am Siddaling Kempasatti,

From Belgaum.
PESU,
Bangalore.
Electronics and communication,

After Running script:
Output of the script-   hELLO, i AM sIDDALING kEMPASATTI,

fROM, bELGAUM.
pesu, bANGALORE.
eLECTRONICS AND COMMUNICATION.

comment

```
GNU nano 6.2                                    q23.sh
#!/bin/bash

if [ $# -ne 1 ]; then
    echo "Usage: $0 <filename>"
    exit 1
fi

filename=$1

if [ ! -f $filename ]; then
    echo "$filename not found"
    exit 1
fi

line=$(sed -n 5p $filename)
echo "Fifth line of the file $filename is: $line"
```

```
[ Wrote 17 lines ]
^G Help      ^O Write Out    ^W Where Is    ^K Cut        ^T Execute    ^C Location    M-U Undo    M-A Set Mark
^X Exit      ^R Read File    ^\ Replace     ^U Paste      ^J Justify    ^/ Go To Line  M-E Redo    M-6 Copy
```

Output

```
yash@DESKTOP-FIK5SPH:~/yrr$ ./Q22.SH
Please provide a file name as argument
yash@DESKTOP-FIK5SPH:~/yrr$ chmod u+x Q23.SH
yash@DESKTOP-FIK5SPH:~/yrr$ ./Q23.SH
Usage: ./Q23.SH <filename>
yash@DESKTOP-FIK5SPH:~/yrr$
```

Ques 24

Description- Script to use pipes or redirection to create an infinite feedback loop.

Input-   bash 24_redirection.sh Output-

Hello Siddaling
Hello
Siddaling
Hello
Siddaling
Hello
Siddaling
Hello
Siddaling
Hello
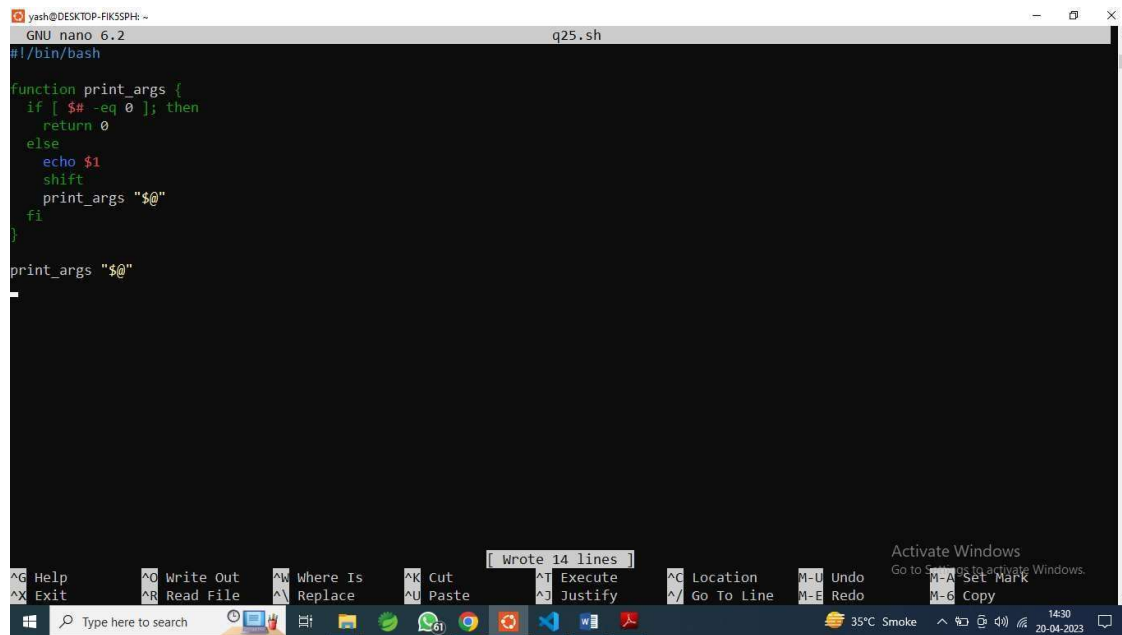
```
    Siddaling
    Hello
    Siddaling
    Hello
    Siddaling
    Hello
    Siddaling
    Hello
    Siddaling
    Hello
    Siddaling
    Hello Siddaling.................[infinity times]
comment
```

Output

Ques 25
Description-Script to use a recursive function to print each argumentpassed to the function.
Input-bash 25_recursion.sh 1 2 5 9 4 s jk l 7 5Output-1
    2
    5
    9
    4
    s
    j
    k
    l
    7

5

comment

```
GNU nano 6.2                                    q25.sh
#!/bin/bash

function print_args {
  if [ $# -eq 0 ]; then
    return 0
  else
    echo $1
    shift
    print_args "$@"
  fi
}

print_args "$@"
```

```
[ Wrote 14 lines ]
^G Help      ^O Write Out   ^W Where Is   ^K Cut      ^T Execute   ^C Location    M-U Undo    M-A Set Mark
^X Exit      ^R Read File   ^\ Replace    ^U Paste    ^J Justify   ^/ Go To Line  M-E Redo    M-6 Copy
```
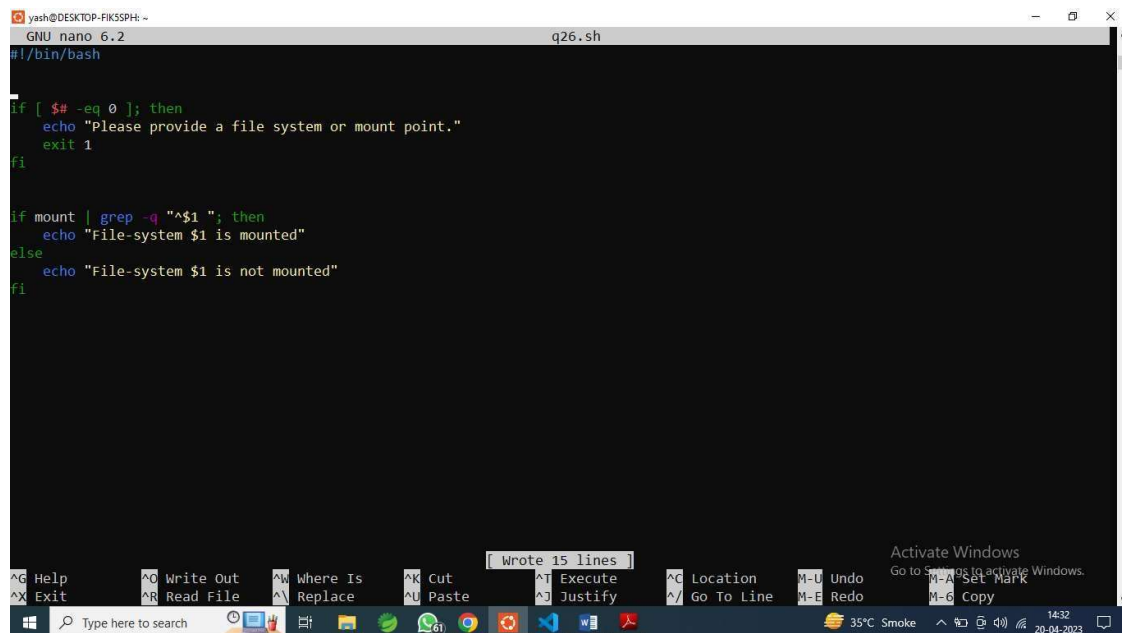
Ques 26

Description- Script to determine whether a given file system or mountpoint is mounted.
Input- bash 26_mounted_fs.sh /dev/sda8
Output- File-system /dev/sda8 is mounted on / and it is having 7% usedspace with 227859240 KB free
comment

```
GNU nano 6.2                                    q26.sh
#!/bin/bash


if [ $# -eq 0 ]; then
    echo "Please provide a file system or mount point."
    exit 1
fi

if mount | grep -q "^$1 "; then
    echo "File-system $1 is mounted"
else
    echo "File-system $1 is not mounted"
fi
```

```
[ Wrote 15 lines ]
^G Help      ^O Write Out   ^W Where Is   ^K Cut      ^T Execute   ^C Location    M-U Undo    M-A Set Mark
^X Exit      ^R Read File   ^\ Replace    ^U Paste    ^J Justify   ^/ Go To Line  M-E Redo    M-6 Copy
```

Ques 27

Description- Script that takes any number of directories as command- line arguments and then lists the contents of each of the directories. Input- bash 27_output_ls.sh siddaling Desktop
Output-

	siddaling : /home/siddaling/siddaling : 28_lock_permissions.sh a.c b.c test
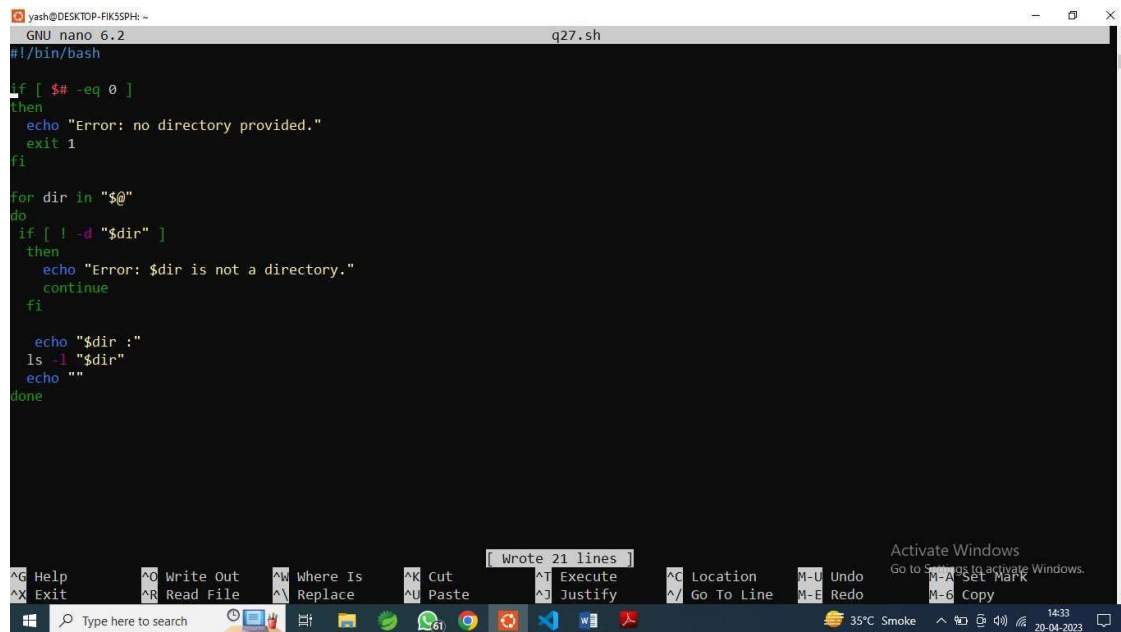
siddaling :
/home/siddaling/siddaling :
28_lock_permissions.sh a.c
b.c test

/home/siddaling/siddaling/test :
a.txt b.txt c.txt d.txt Emertxe f.sh Siddaling z.sh

Desktop :
/home/siddaling/Desk
top : Emertxe

comment /home/siddaling/Desktop/Eme
rtxe : C Documents Linux
Systems
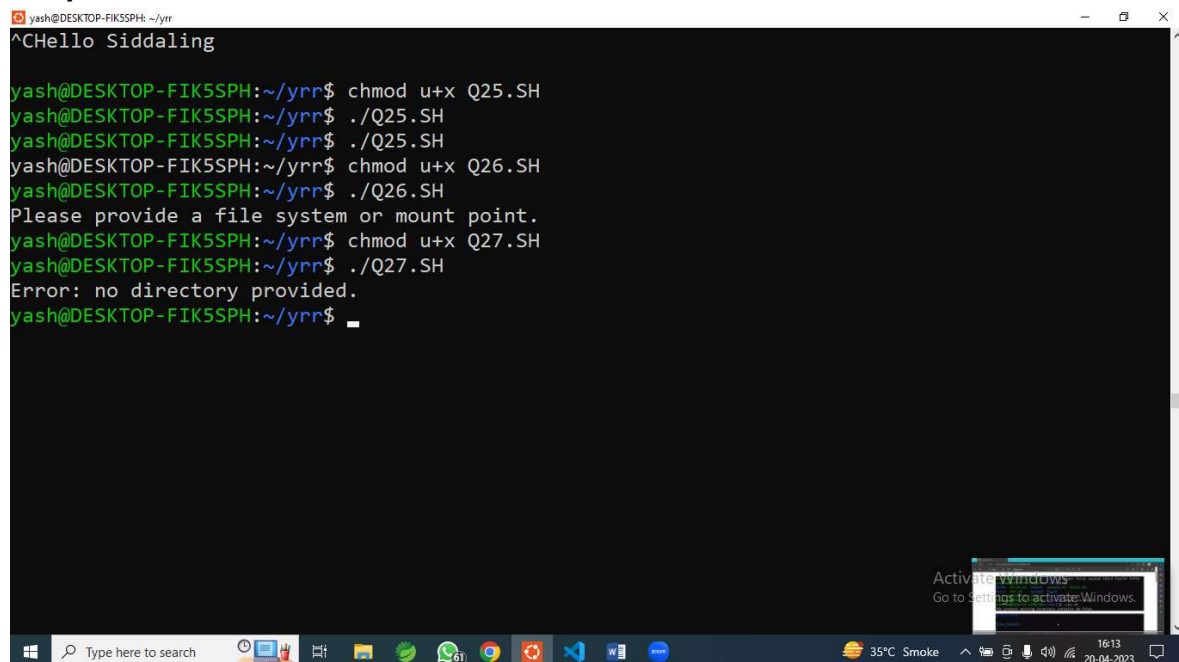
```bash
#!/bin/bash

if [ $# -eq 0 ]
then
  echo "Error: no directory provided."
  exit 1
fi

for dir in "$@"
do
 if [ ! -d "$dir" ]
  then
    echo "Error: $dir is not a directory."
    continue
  fi

  echo "$dir :"
 ls -l "$dir"
  echo ""
done
```

GNU nano 6.2   q27.sh

[Wrote 21 lines]

Output

```
^CHello Siddaling

yash@DESKTOP-FIK5SPH:~/yrr$ chmod u+x Q25.SH
yash@DESKTOP-FIK5SPH:~/yrr$ ./Q25.SH
yash@DESKTOP-FIK5SPH:~/yrr$ ./Q25.SH
yash@DESKTOP-FIK5SPH:~/yrr$ chmod u+x Q26.SH
yash@DESKTOP-FIK5SPH:~/yrr$ ./Q26.SH
Please provide a file system or mount point.
yash@DESKTOP-FIK5SPH:~/yrr$ chmod u+x Q27.SH
yash@DESKTOP-FIK5SPH:~/yrr$ ./Q27.SH
Error: no directory provided.
yash@DESKTOP-FIK5SPH:~/yrr$
```

Ques 28

Description- Script to locks file permissions for a
particulardirectory for groups and others

Input- bash

28_lock_permissions.sh test

Output- total 8

-rw-rw-r--	siddaling	0 Jan 17 01:2	a.txt
1	siddaling	4	
-rw-rw-r--	siddaling	0 Jan 17 01:2	b.txt
1	siddaling	4	
-rw-rw-r--	siddaling	0 Jan 17 01:2	c.txt
1	siddaling	4	
-rw-rw-r--	siddaling	0 Jan 17 01:2	d.txt
1	siddaling	4	
drwxrwxr-x	siddaling	4096 17 01:2	Emertxe
2	siddaling	Jan 5	
-rw-rw-r--	siddaling	0 Jan 17 01:2	f.sh
1	siddaling	4	
drwxrwxr-x	siddaling	4096 17 01:2	Siddali
2	siddaling	Jan 5	ng
-rw-rw-r--	siddaling	0 Jan 17 01:2	z.sh
1	siddaling	4	

All files are locked for groups and
otherstotal 8

-rw------- 1 siddaling siddaling 0 Jan 17 01:24 a.txt
-rw------- 1 siddaling siddaling 0 Jan 17 01:24 b.txt
-rw------- 1 siddaling siddaling 0 Jan 17 01:24 c.txt
-rw------- 1 siddaling siddaling 0 Jan 17 01:24 d.txt
drwxrwxr-x 2 siddaling siddaling 4096 Jan 17 01:25
Emertxe

```
-rw------- 1 siddaling siddaling    0 Jan 17 01:24 f.sh
drwxrwxr-x 2 siddaling siddaling 4096 Jan 17 01:25
Siddaling
-rw------- 1 siddaling siddaling    0 Jan 17 01:24 z.sh
```

commen
t

```
 yash@DESKTOP-FIK5SPH: ~                                                              —  □  ×
  GNU nano 6.2                                  q28.sh
#!/bin/bash

if [ $# -eq 0 ]
then
    echo "Error: No directory specified"
    exit 1
fi

dir=$1
echo "Before changing permissions:"
ls -l $dir

chmod -R go-rwx $dir

echo "After changing permissions:"
ls -l $dir




                                                            Activate Windows
                                                            Go to Settings to activate Windows.
                               [ Wrote 17 lines ]
^G Help       ^O Write Out   ^W Where Is   ^K Cut       ^T Execute    M-U Undo    M-A Set Mark
^X Exit       ^R Read File   ^\ Replace    ^U Paste     ^J Justify    M-E Redo    M-6 Copy
```

Ques 29
Description- Script to display the names of any file-system which have less than 10% free space available
Input- bash 29_free_space.sh
Output- The filesystem /dev/sda5 has les than 10% free space The filesystem /dev/sda6 has les than 10% free space

comment

```
 yash@DESKTOP-FIK5SPH: ~                                                              —  □  ×
  GNU nano 6.2                                  q29.sh
#!/bin/bash

filesystems=$(df -h | awk '{print $1" "$5}')


while read -r fs
do
    usage=$(echo $fs | awk '{print $2}' | tr -d '%')

    if [[ $usage -lt 10 ]]; then
        echo "The filesystem $(echo $fs | awk '{print $1}') has les than 10% free space"
    fi
done <<< "$filesystems"




                                                            Activate Windows
                                                            Go to Settings to activate Windows.
                               [ Wrote 14 lines ]
^G Help       ^O Write Out   ^W Where Is   ^K Cut       ^T Execute    M-U Undo    M-A Set Mark
^X Exit       ^R Read File   ^\ Replace    ^U Paste     ^J Justify    M-E Redo    M-6 Copy
```

Output

Ques 30
Description- Script to count the number of users with user IDs between
500 and 10000 on the system
Input- bash 30_print_user_ids.sh 200 2500
Output- Total count of user ID between 200 to 2500
is : 2comment


```bash
#!/bin/bash

if [ $# -ne 2 ]; then
  echo "Usage: $0 <start_id> <end_id>"
  exit 1
fi


start_id=$1
end_id=$2


user_count=0


while IFS=: read -r user pass uid gid full_name home shell; do

  if [ $uid -ge $start_id ] && [ $uid -le $end_id ]; then
    ((user_count++))
  fi
done < /etc/passwd

echo "Total count of user ID between $start_id to $end_id is : $user_count"
```

Output

```
yash@DESKTOP-FIK5SPH:~/yrr$ chmod u+x Q28.SH
yash@DESKTOP-FIK5SPH:~/yrr$ ./Q28.SH
Error: No directory specified
yash@DESKTOP-FIK5SPH:~/yrr$ chmod u+x Q29.SH
yash@DESKTOP-FIK5SPH:~/yrr$ ./Q29.SH
The filesystem Filesystem has les than 10% free space
The filesystem E:\ has les than 10% free space
The filesystem G:\ has les than 10% free space
yash@DESKTOP-FIK5SPH:~/yrr$ chmod u+x Q30.SH
yash@DESKTOP-FIK5SPH:~/yrr$ ./Q30.SH
Usage: ./Q30.SH <start_id> <end_id>
yash@DESKTOP-FIK5SPH:~/yrr$
```

Ques 31

Description-Script or each directory in the $PATH variable, to displaythe number of executable files in that directory.
Input- bash
31_executable_path.sh Output-
Current dir: /usr/local/sbin
    Current count: 0

    Current dir:
    /usr/local/bin Current
    count: 1

    Current dir:
    /usr/sbin Current
    count: 387

    Current dir:
    /usr/bin Current
    count: 1544

    Current dir:
    /sbin Current
    count: 387

    Current dir:
    /bin Current
    count: 1544

    Current dir:
    /usr/games Current
    count: 0

    Current dir:

```
/usr/local/games Current
count: 0

Current dir: /snap/bin
```

Current count: 5

        Total- 3868
commen
t


```
#!/bin/bash

IFS=: # Set the field separator to :

total=0

for dir in $PATH; do
 count=0

  for file in $dir/*; do

   if [[ -x "$file" ]]; then
     ((count++))
   fi
  done

  echo "Current dir: $dir"
  echo "Current count: $count"


  ((total += count))
done

echo "Total- $total"
```

GNU nano 6.2   q31.sh

[Wrote 28 lines]

^G Help   ^O Write Out   ^W Where Is   ^K Cut   ^T Execute   ^C Location   M-U Undo   M-A Set Mark
^X Exit   ^R Read File   ^\ Replace   ^U Paste   ^J Justify   ^/ Go To Line M-E Redo   M-6 Copy

Output


```
yash@DESKTOP-FIK5SPH:~/yrr$ chmod u+x Q30.SH
yash@DESKTOP-FIK5SPH:~/yrr$ ./Q30.SH
Usage: ./Q30.SH <start_id> <end_id>
yash@DESKTOP-FIK5SPH:~/yrr$ chmod u+x Q31.SH
yash@DESKTOP-FIK5SPH:~/yrr$ ./Q31.SH
Current dir: /usr/local/sbin
Current count: 0
Current dir: /usr/local/bin
Current count: 0
Current dir: /usr/sbin
Current count: 254
Current dir: /usr/bin
Current count: 784
Current dir: /sbin
Current count: 254
Current dir: /bin
Current count: 784
Current dir: /usr/games
Current count: 0
Current dir: /usr/local/games
Current count: 0
Current dir: /mnt/c/Program Files/WindowsApps/CanonicalGroupLimited.Ubuntu_2204.1.8.0_x64__79rhk
p1fndgsc
Current count: 5
```
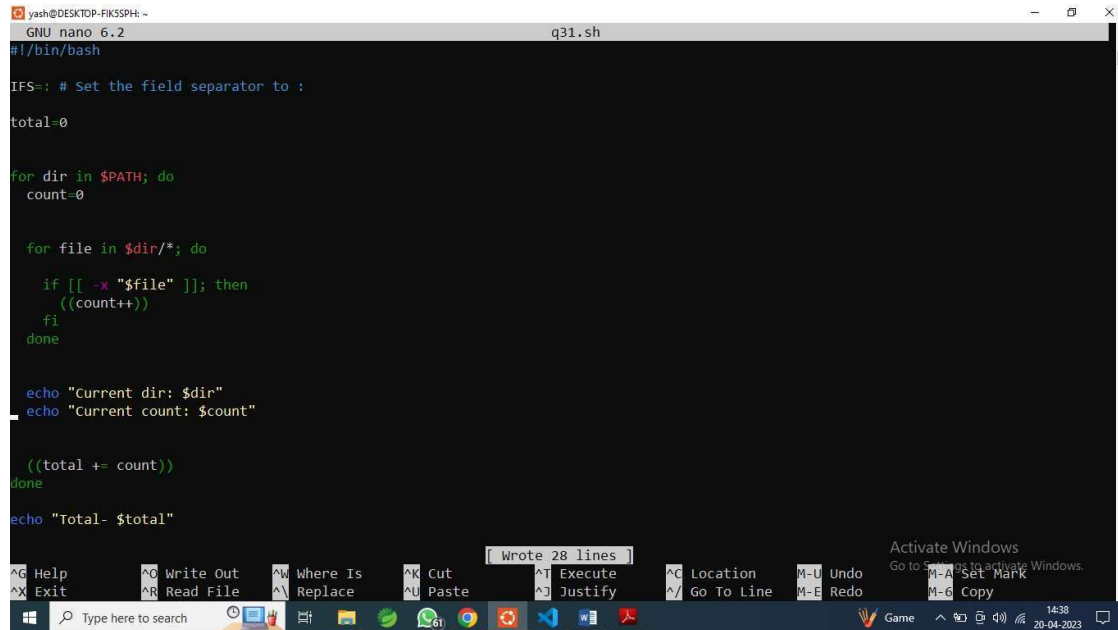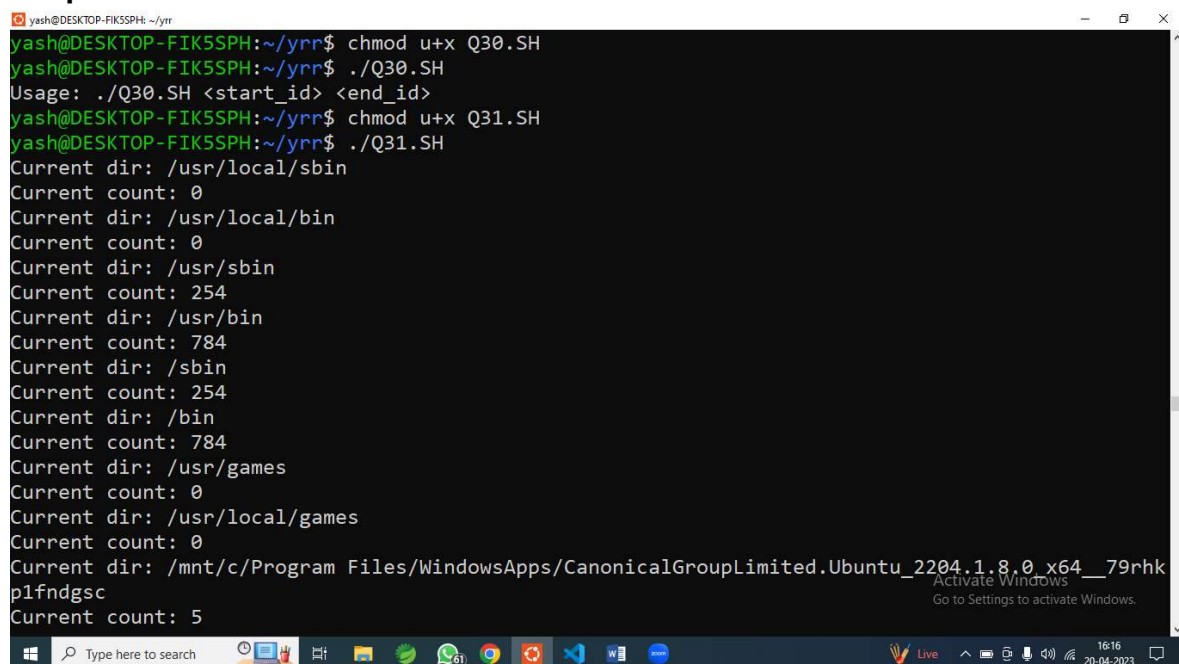
Ques 32
Description- Script to search a user present in
the system. Input- bash 32_user_present.sh root
Output- User root is
presentcomment
Description- Script to replace 20% lines in a C file
randomly andreplace it with the pattern <---DEL--->
Input- bash 33_replace_DEL.sh

```c
mycode.cOutput-<
...................................Deleted
...................................>
    int main()
    {
        int num, rem, reverse_num, temp,
        start, end;printf("Enter the lower
        limit: "); scanf("%d", &start);
        printf("Enter the upper limit: ");
    <...............Deleted...............>
        printf("Palindrome numbers between %d and %d
        are: ",
start, end);
        for (num = start; num <= end; num++)
    <...............Deleted...............>
            temp = num;
            reverse_num =
            0;while
            (temp)
            {
                rem = temp %
                10;temp =
                temp / 10;
                reverse_num = reverse_num *10 + rem;
            }
            if (num == reverse_num)
                printf("%d ", num);
        }
```

```
            <..................Deleted..................>
            }
commen
t
```

Ques 33
Description- Script to replace 20% lines in a C file randomly andreplace it with the pattern <---DEL--->
Input- bash 33_replace_DEL.sh mycode.cOutput- <
.................................Deleted
.................................>

```
        int main()
        {
                int num, rem, reverse_num, temp,
                start, end;printf("Enter the lower
                limit: "); scanf("%d", &start);
                printf("Enter the upper limit: ");
        <..................Deleted..................>
                printf("Palindrome numbers between %d and %d
                are: ",
start, end);
                for (num = start; num <= end; num++)
        <..................Deleted..................>
                        temp = num;
                        reverse_num =
                        0;while
                        (temp)
                        {
                                rem = temp %
                                10;temp =
                                temp / 10;
                                reverse_num = reverse_num *10 + rem;
                        }
                        if (num == reverse_num)
                                printf("%d ", num);
                }
```

<<............Deleted...............>

}

commen
t

```
GNU nano 6.2                                           q33.sh
#!/bin/bash


if [ -z "$1" ]; then
  echo "Please provide a file name"
  exit 1
fi


total_lines=$(wc -l < "$1")


num_to_replace=$((total_lines / 5))


lines_to_replace=$(shuf -i 1-"$total_lines" -n "$num_to_replace")


sed -i "${lines_to_replace[@]} s/.*/<---DEL--->/" "$1"


echo "Successfully replaced $num_to_replace lines with <---DEL---> in $1"
```

[Wrote 22 lines]

Ques 34

Description- Script to to calculate the BMI. Input- bash 34_BMI.sh
        Enter the weight in Kg :48.2 Enter the height in meters :1.4

Output- The BMI is 25.3
        You are overweight

comment

```
GNU nano 6.2                                           q34.sh
#!/bin/bash

read -p "Enter the weight in Kg : " weight
read -p "Enter the height in meters : " height

bmi=$(echo "scale=1; $weight / ($height * $height)" | bc)

echo "The BMI is $bmi"


if (( $(echo "$bmi < 18.5" | bc -l) )); then
  echo "You are underweight"
elif (( $(echo "$bmi < 25" | bc -l) )); then
  echo "You are healthy"
elif (( $(echo "$bmi < 30" | bc -l) )); then
  echo "You are overweight"
else
  echo "You are obese"
fi
```

[Wrote 22 lines]

Output

```
./Q33.SH: line 10: yash: No such file or directory
shuf: invalid input range: ''
sed: can't read yash: No such file or directory
Successfully replaced 0 lines with <---DEL---> in yash
yash@DESKTOP-FIK5SPH:~/yrr$ ./Q33.SH yrr
./Q33.SH: line 10: yrr: No such file or directory
shuf: invalid input range: ''
sed: can't read yrr: No such file or directory
Successfully replaced 0 lines with <---DEL---> in yrr
yash@DESKTOP-FIK5SPH:~/yrr$ chmod u+x Q34.SH
yash@DESKTOP-FIK5SPH:~/yrr$ ./Q34.SH
Enter the weight in Kg : 15
Enter the height in meters : 150
./Q34.SH: line 7: bc: command not found
The BMI is
./Q34.SH: line 13: bc: command not found
./Q34.SH: line 15: bc: command not found
./Q34.SH: line 17: bc: command not found
You are obese
yash@DESKTOP-FIK5SPH:~/yrr$
```

Assignment 3

Write a shell script that consists of a function that displays the number of files in the present working directory. Name this function "file_count" and call it in your script. If you use variable in your function, remember to make it a local variable.


```
GNU nano 6.2                        a3.sh
#!/bin/bash


IFS=':' read -ra dirs <<< "$PATH"

for dir in "${dirs[@]}";
do

  num_exec=$(find "$dir" -type f -perm +x | wc -l)


  echo "Directory: $dir"
  echo "Number of executable files: $num_exec"
  echo ""

done
```

Output

```
yash@DESKTOP-FIK5SPH:~/yrr$ chmod u+x a3.SH
chmod: cannot access 'a3.SH': No such file or directory
yash@DESKTOP-FIK5SPH:~/yrr$ chmod u+x a3.sh
yash@DESKTOP-FIK5SPH:~/yrr$ ./a3.sh
Directory: /usr/local/sbin
Number of executable files: 0
./a3.sh: line 14:   echo : command not found
Directory: /usr/local/bin
Number of executable files: 0
./a3.sh: line 14:   echo : command not found
Directory: /usr/sbin
Number of executable files: 0
./a3.sh: line 14:   echo : command not found
Directory: /usr/bin
Number of executable files: 0
./a3.sh: line 14:   echo : command not found
Directory: /sbin
Number of executable files: 0
./a3.sh: line 14:   echo : command not found
Directory: /bin
Number of executable files: 0
./a3.sh: line 14:   echo : command not found
Directory: /usr/games
Number of executable files: 0
```

Activate Windows
Go to Settings to activate Windows.