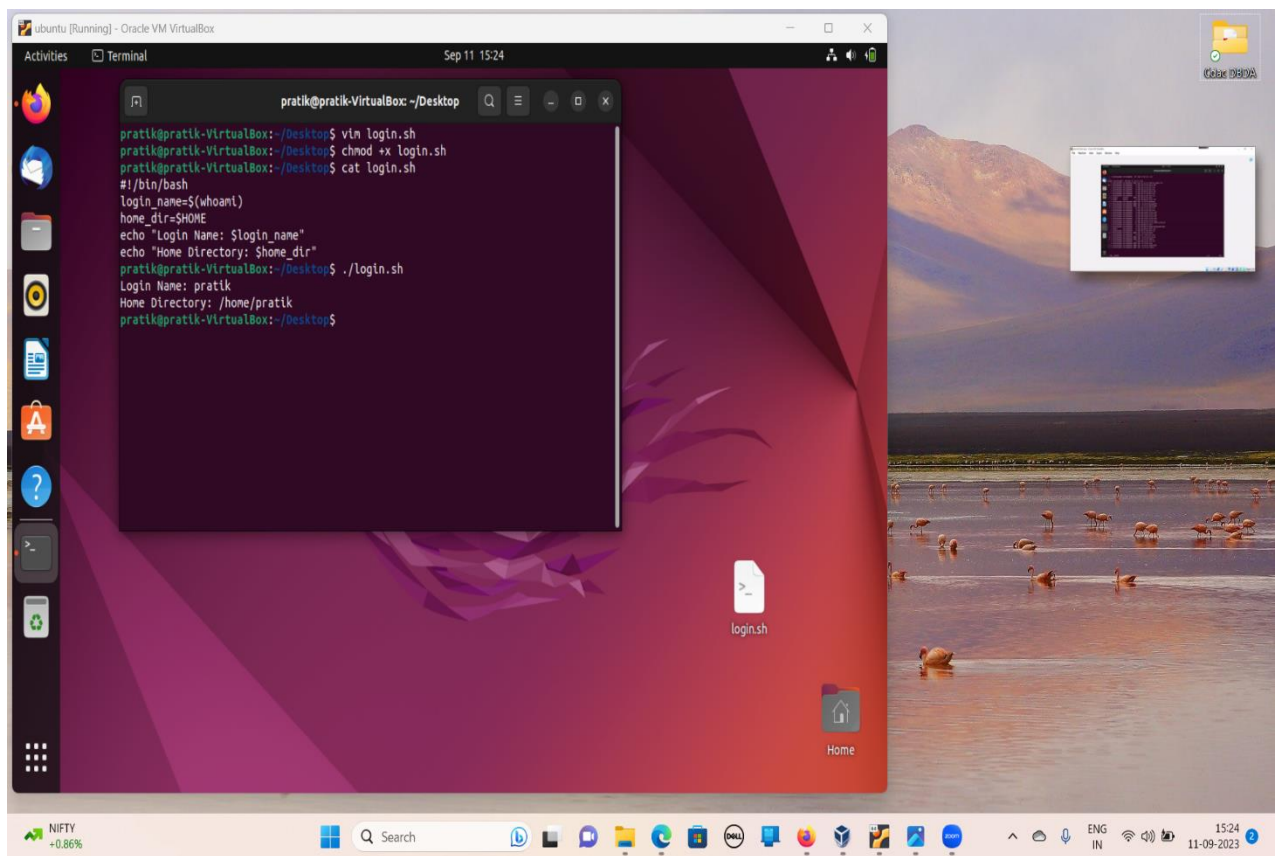


Q1)

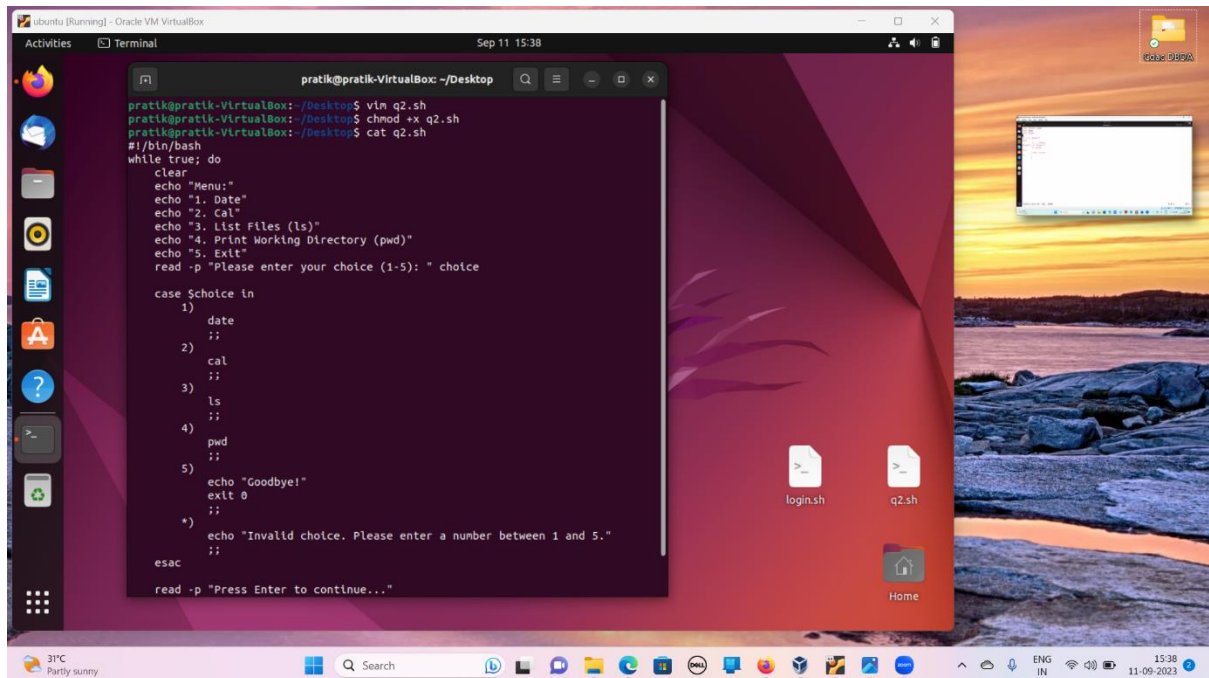
Ans=



Q2)

Ans=

Shell Programme-

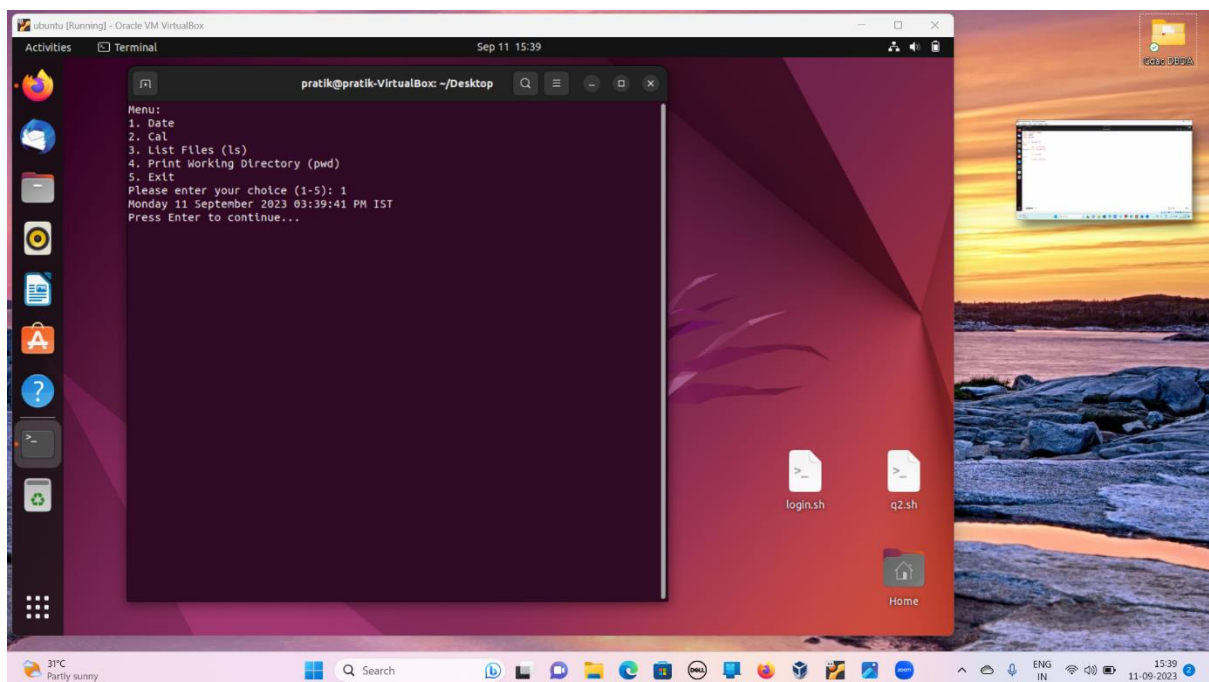


```
pratik@pratik-VirtualBox: ~/Desktop
pratik@pratik-VirtualBox:~/Desktop$ vi q2.sh
pratik@pratik-VirtualBox:~/Desktop$ chmod +x q2.sh
pratik@pratik-VirtualBox:~/Desktop$ cat q2.sh
#!/bin/bash
while true; do
clear
echo "Menu:"
echo "1. Date"
echo "2. Cal"
echo "3. List Files (ls)"
echo "4. Print Working Directory (pwd)"
echo "5. Exit"
read -p "Please enter your choice (1-5): " choice

case $choice in
1)
date
;;
2)
cal
;;
3)
ls
;;
4)
pwd
;;
5)
echo "Goodbye!"
exit 0
;;
*)
echo "Invalid choice. Please enter a number between 1 and 5."
;;
esac

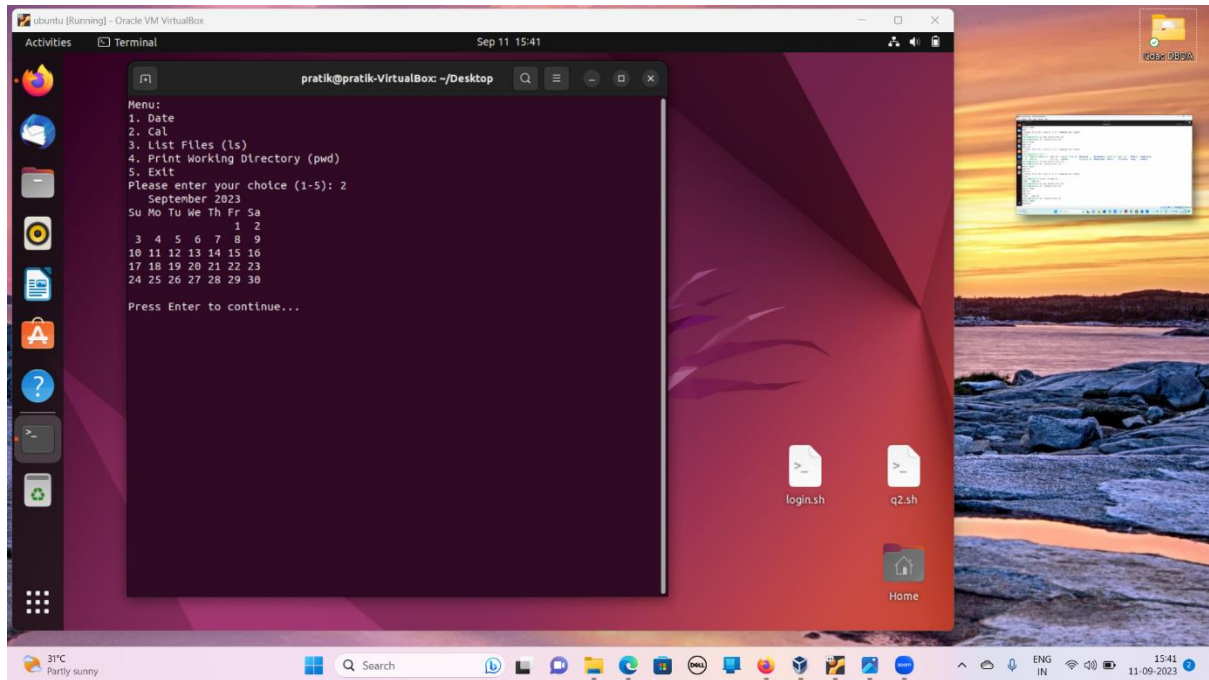
read -p "Press Enter to continue..."
```

a) Date-

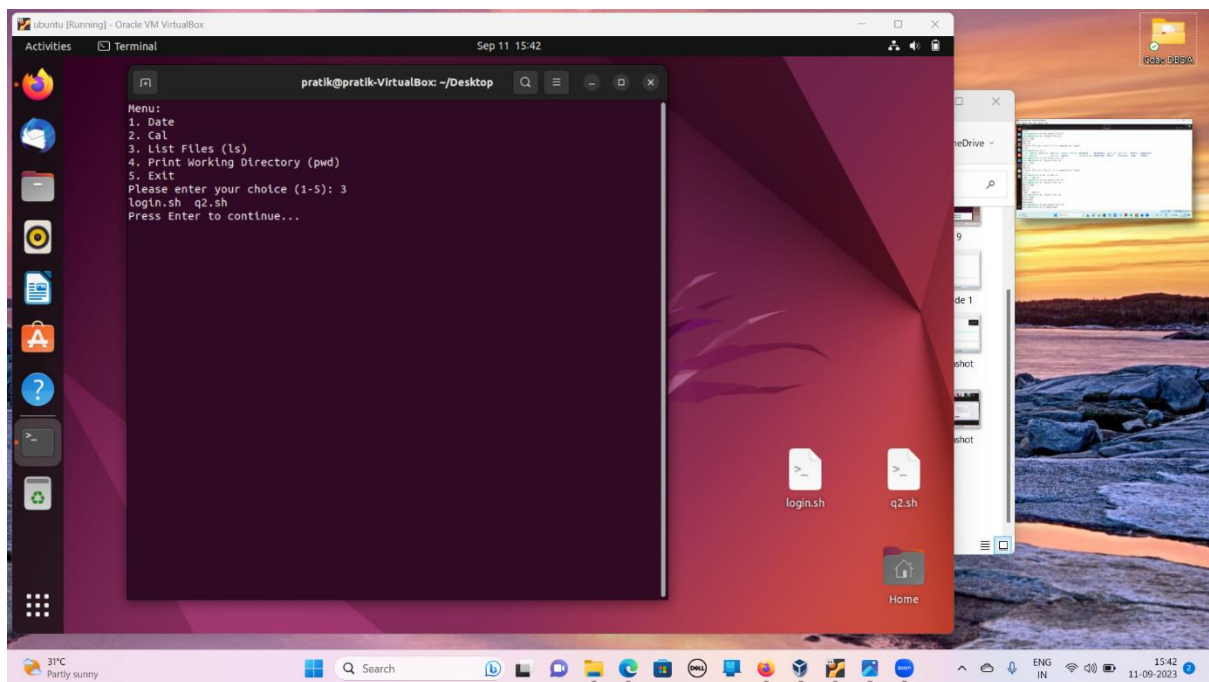


```
pratik@pratik-VirtualBox: ~/Desktop
Menu:
1. Date
2. Cal
3. List Files (ls)
4. Print Working Directory (pwd)
5. Exit
Please enter your choice (1-5): 1
Monday 11 September 2023 03:39:41 PM IST
Press Enter to continue...
```

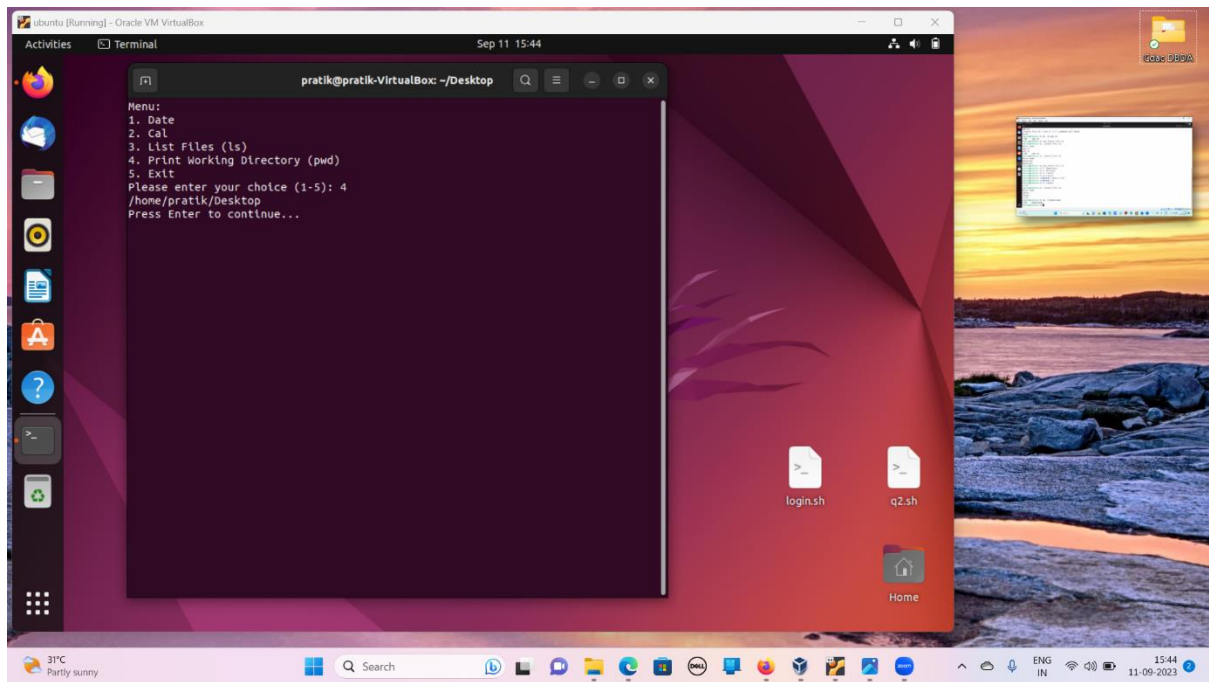
b) cal-



c) ls-



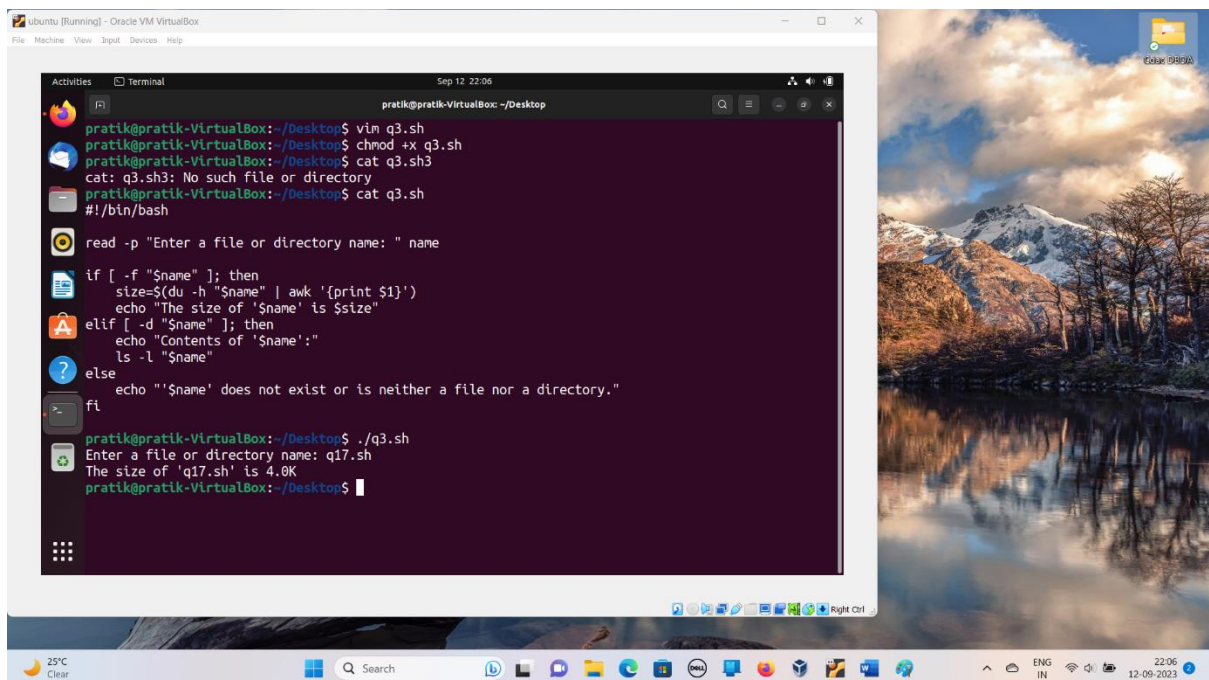
d) pwd-





Q3)

Ans=



```
pratik@pratik-VirtualBox: ~/Desktop
pratik@pratik-VirtualBox:~/Desktop$ vim q3.sh
pratik@pratik-VirtualBox:~/Desktop$ chmod +x q3.sh
pratik@pratik-VirtualBox:~/Desktop$ cat q3.sh3
cat: q3.sh3: No such file or directory
pratik@pratik-VirtualBox:~/Desktop$ cat q3.sh
#!/bin/bash

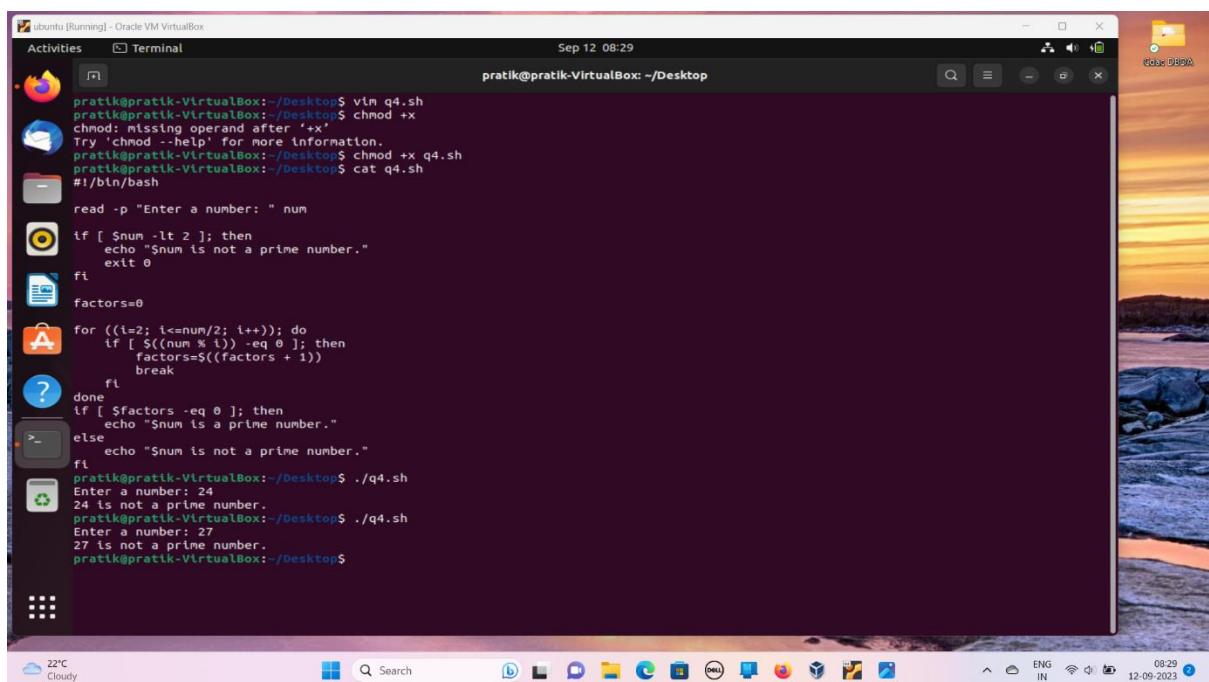
read -p "Enter a file or directory name: " name

if [ -f "$name" ]; then
    size=$(du -h "$name" | awk '{print $1}')
    echo "The size of '$name' is $size"
elif [ -d "$name" ]; then
    echo "Contents of '$name':"
    ls -l "$name"
else
    echo "'$name' does not exist or is neither a file nor a directory."
fi

pratik@pratik-VirtualBox:~/Desktop$ ./q3.sh
Enter a file or directory name: q17.sh
The size of 'q17.sh' is 4.0K
pratik@pratik-VirtualBox:~/Desktop$
```

Q4)

Ans=



```
pratik@pratik-VirtualBox: ~/Desktop
pratik@pratik-VirtualBox:~/Desktop$ vim q4.sh
pratik@pratik-VirtualBox:~/Desktop$ chmod +x q4.sh
pratik@pratik-VirtualBox:~/Desktop$ cat q4.sh
#!/bin/bash

read -p "Enter a number: " num

if [ $num -lt 2 ]; then
    echo "$num is not a prime number."
    exit 0
fi

factors=0

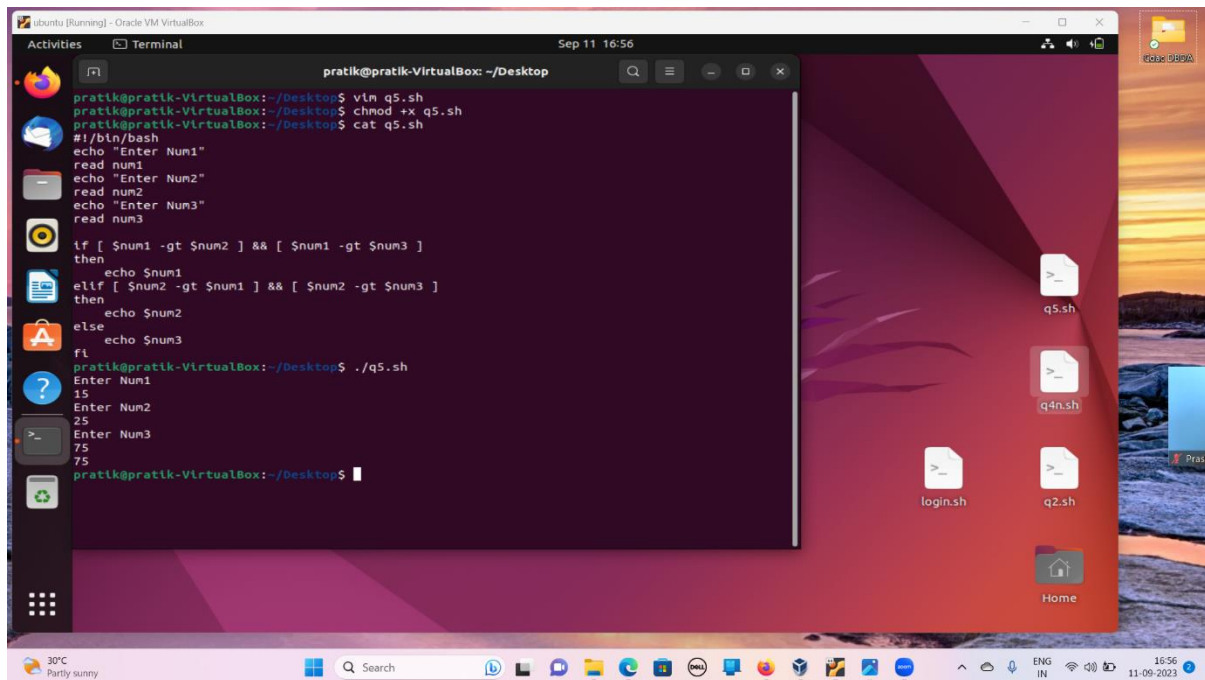
for ((i=2; i<=num/2; i++)); do
    if [ $((num % i)) -eq 0 ]; then
        factors=$((factors + 1))
        break
    fi
done

if [ $factors -eq 0 ]; then
    echo "$num is a prime number."
else
    echo "$num is not a prime number."
fi

pratik@pratik-VirtualBox:~/Desktop$ ./q4.sh
Enter a number: 24
24 is not a prime number.
pratik@pratik-VirtualBox:~/Desktop$ ./q4.sh
Enter a number: 27
27 is not a prime number.
pratik@pratik-VirtualBox:~/Desktop$
```

Q5)

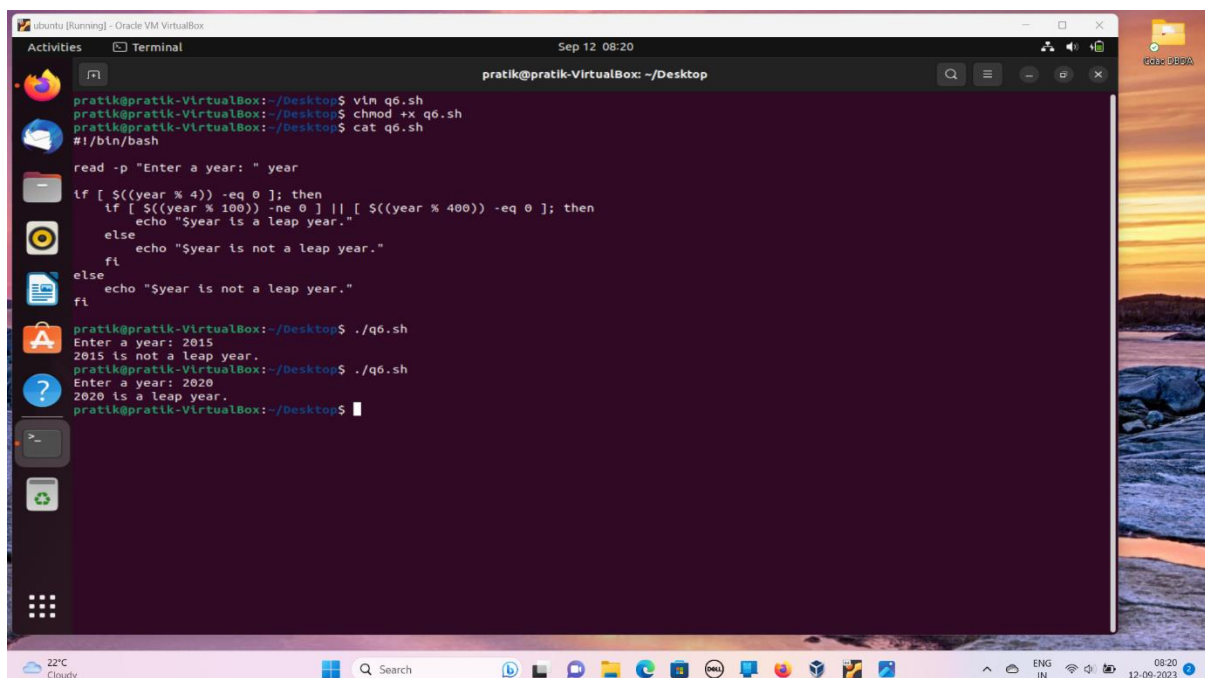
Ans=



```
pratik@pratik-VirtualBox: ~/Desktop
pratik@pratik-VirtualBox:~/Desktop$ vim q5.sh
pratik@pratik-VirtualBox:~/Desktop$ chmod +x q5.sh
pratik@pratik-VirtualBox:~/Desktop$ cat q5.sh
#!/bin/bash
echo "Enter Num1"
read num1
echo "Enter Num2"
read num2
echo "Enter Num3"
read num3
if [ $num1 -gt $num2 ] && [ $num1 -gt $num3 ]
then
echo $num1
elif [ $num2 -gt $num1 ] && [ $num2 -gt $num3 ]
then
echo $num2
else
echo $num3
fi
pratik@pratik-VirtualBox:~/Desktop$ ./q5.sh
Enter Num1
15
Enter Num2
25
Enter Num3
75
pratik@pratik-VirtualBox:~/Desktop$
```

Q6)

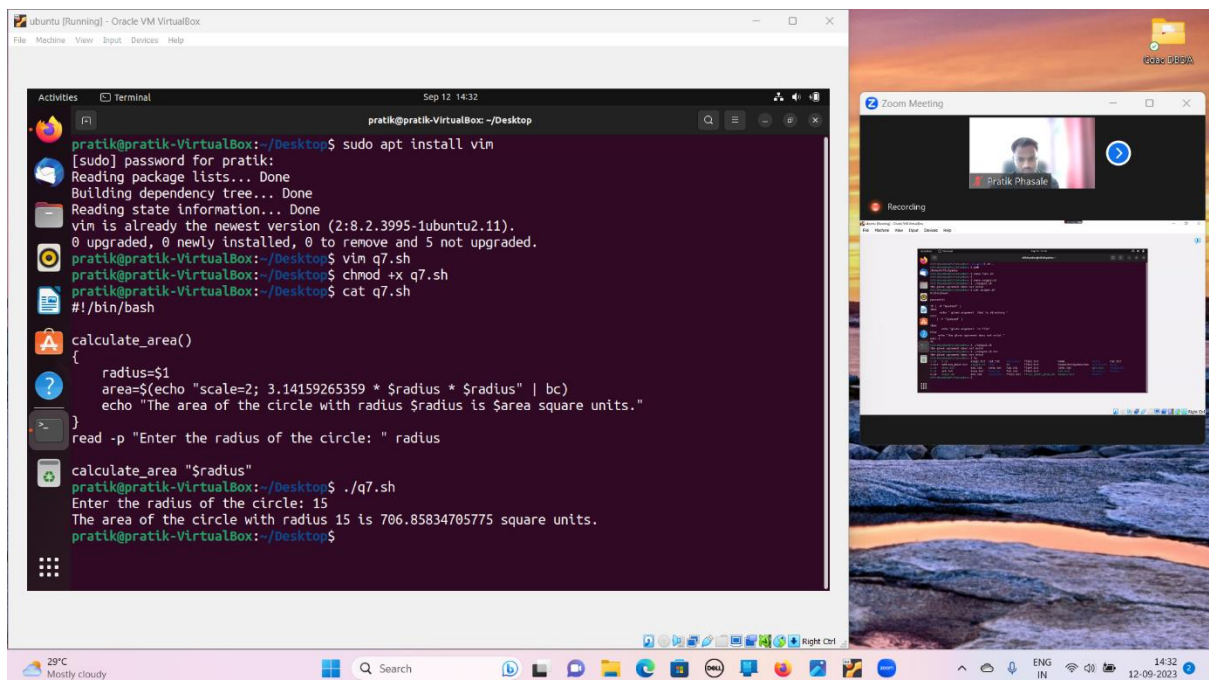
Ans=



```
pratik@pratik-VirtualBox:~/Desktop
pratik@pratik-VirtualBox:~/Desktop$ vim q6.sh
pratik@pratik-VirtualBox:~/Desktop$ chmod +x q6.sh
pratik@pratik-VirtualBox:~/Desktop$ cat q6.sh
#!/bin/bash
read -p "Enter a year: " year
if [ $((year % 4)) -eq 0 ]; then
if [ $((year % 100)) -ne 0 ] || [ $((year % 400)) -eq 0 ]; then
echo "$year is a leap year."
else
echo "$year is not a leap year."
fi
else
echo "$year is not a leap year."
fi
pratik@pratik-VirtualBox:~/Desktop$ ./q6.sh
Enter a year: 2015
2015 is not a leap year.
pratik@pratik-VirtualBox:~/Desktop$ ./q6.sh
Enter a year: 2020
2020 is a leap year.
pratik@pratik-VirtualBox:~/Desktop$
```

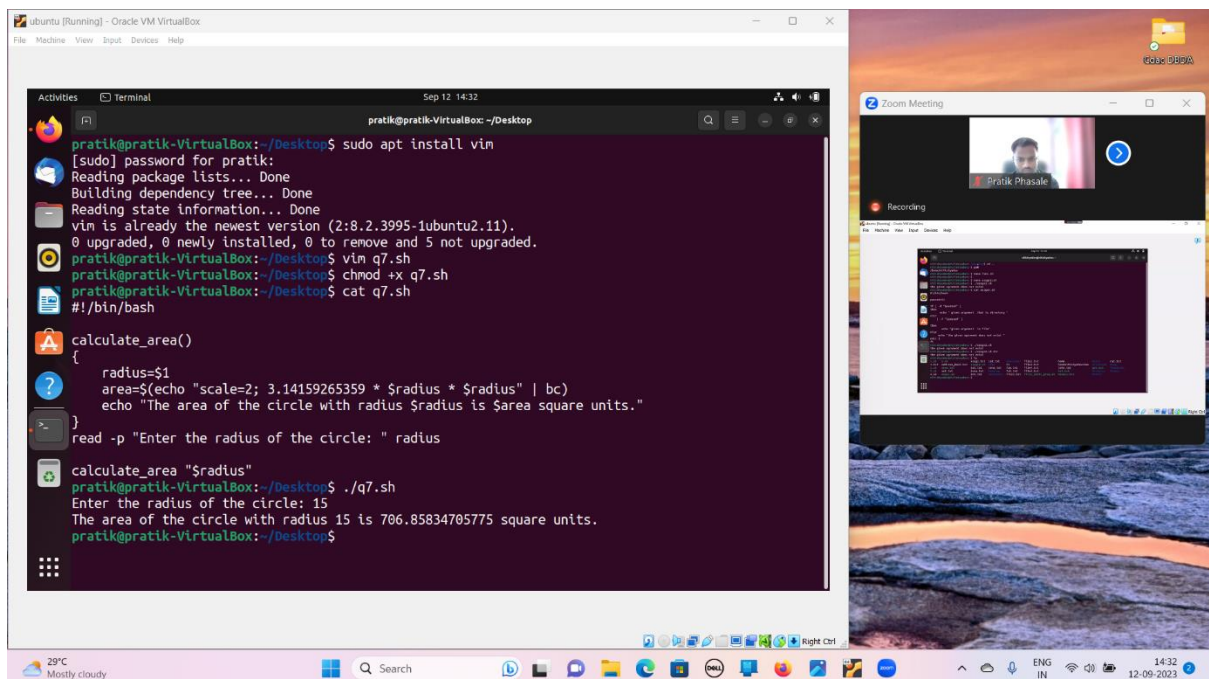
Q7)

Ans=



Q8)

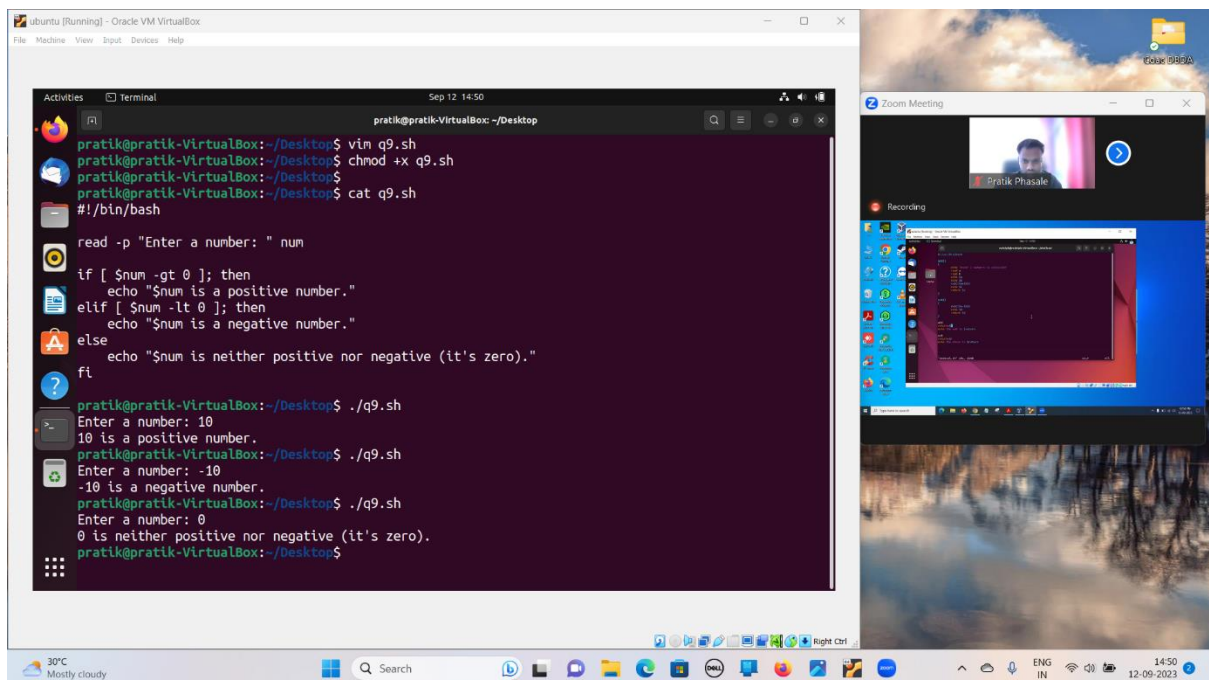
Ans=





Q9)

Ans=



```
pratik@pratik-VirtualBox: ~/Desktop
pratik@pratik-VirtualBox:~/Desktop$ vim q9.sh
pratik@pratik-VirtualBox:~/Desktop$ chmod +x q9.sh
pratik@pratik-VirtualBox:~/Desktop$ cat q9.sh
#!/bin/bash

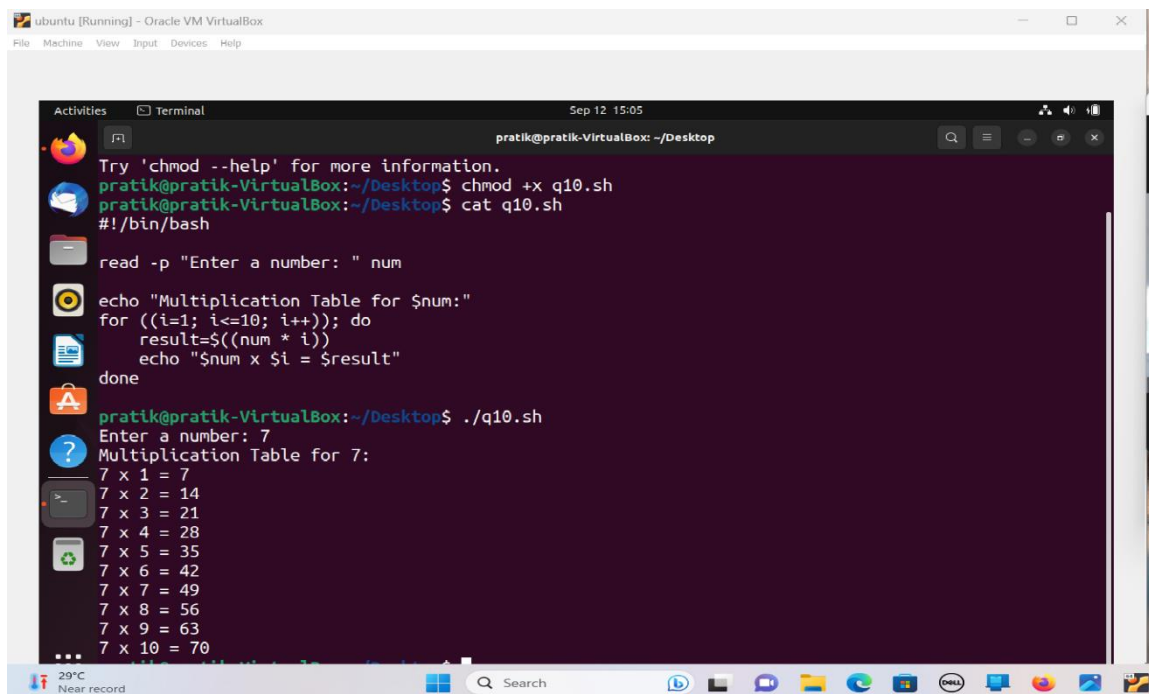
read -p "Enter a number: " num

if [ $num -gt 0 ]; then
    echo "$num is a positive number."
elif [ $num -lt 0 ]; then
    echo "$num is a negative number."
else
    echo "$num is neither positive nor negative (it's zero)."
```

pratik@pratik-VirtualBox:~/Desktop\$ ./q9.sh  
Enter a number: 10  
10 is a positive number.  
pratik@pratik-VirtualBox:~/Desktop\$ ./q9.sh  
Enter a number: -10  
-10 is a negative number.  
pratik@pratik-VirtualBox:~/Desktop\$ ./q9.sh  
Enter a number: 0  
0 is neither positive nor negative (it's zero).  
pratik@pratik-VirtualBox:~/Desktop\$

Q10)

Ans=



```
pratik@pratik-VirtualBox: ~/Desktop
pratik@pratik-VirtualBox:~/Desktop$ chmod +x q10.sh
pratik@pratik-VirtualBox:~/Desktop$ cat q10.sh
#!/bin/bash

read -p "Enter a number: " num

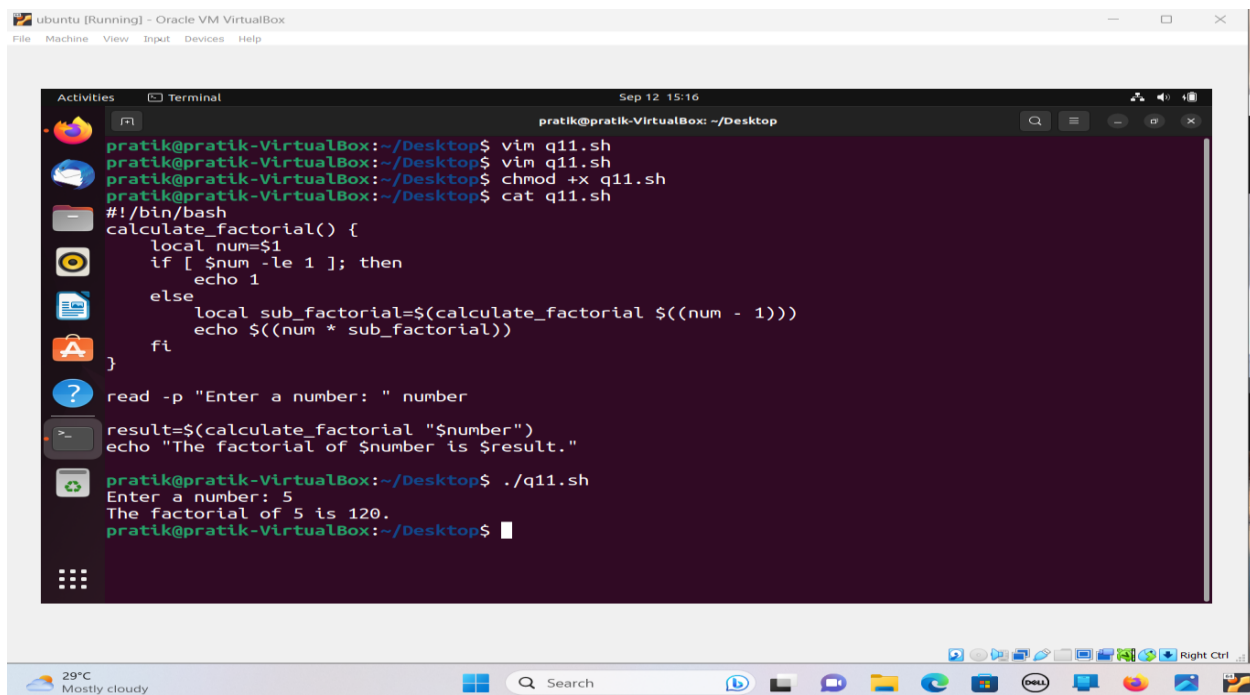
echo "Multiplication Table for $num:"
for ((i=1; i<=10; i++)); do
    result=$((num * i))
    echo "$num x $i = $result"
done

pratik@pratik-VirtualBox:~/Desktop$ ./q10.sh
Enter a number: 7
Multiplication Table for 7:
7 x 1 = 7
7 x 2 = 14
7 x 3 = 21
7 x 4 = 28
7 x 5 = 35
7 x 6 = 42
7 x 7 = 49
7 x 8 = 56
7 x 9 = 63
7 x 10 = 70
```



Q11)

Ans=



The screenshot shows a terminal window titled "pratik@pratik-VirtualBox: ~/Desktop". The user has created a script named "q11.sh" using the "vim" editor. The script calculates the factorial of a number entered by the user. The script content is as follows:

```
#!/bin/bash
calculate_factorial() {
    local num=$1
    if [ $num -le 1 ]; then
        echo 1
    else
        local sub_factorial=$(calculate_factorial $((num - 1)))
        echo $((num * sub_factorial))
    fi
}

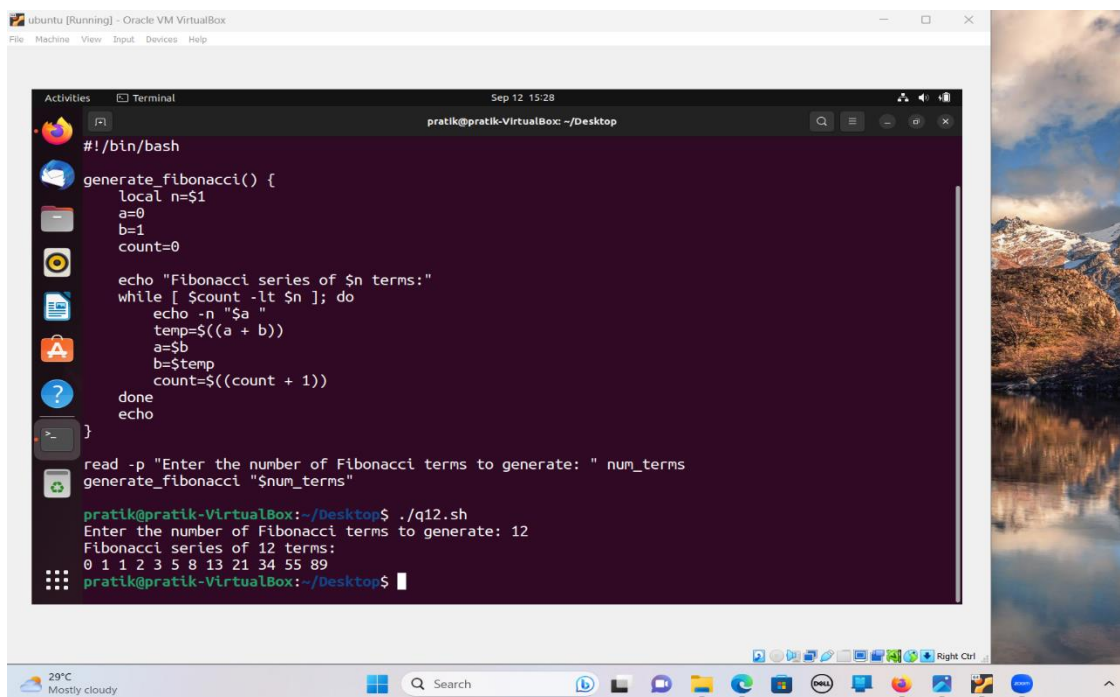
read -p "Enter a number: " number

result=$(calculate_factorial "$number")
echo "The factorial of $number is $result."
```

The user has executed the script with the command `./q11.sh`, entered the number 5, and the output is "The factorial of 5 is 120."

Q12)

Ans=



The screenshot shows a terminal window titled "pratik@pratik-VirtualBox: ~/Desktop". The user has created a script named "q12.sh" using the "vim" editor. The script generates the Fibonacci series for a given number of terms. The script content is as follows:

```
#!/bin/bash
generate_fibonacci() {
    local n=$1
    a=0
    b=1
    count=0

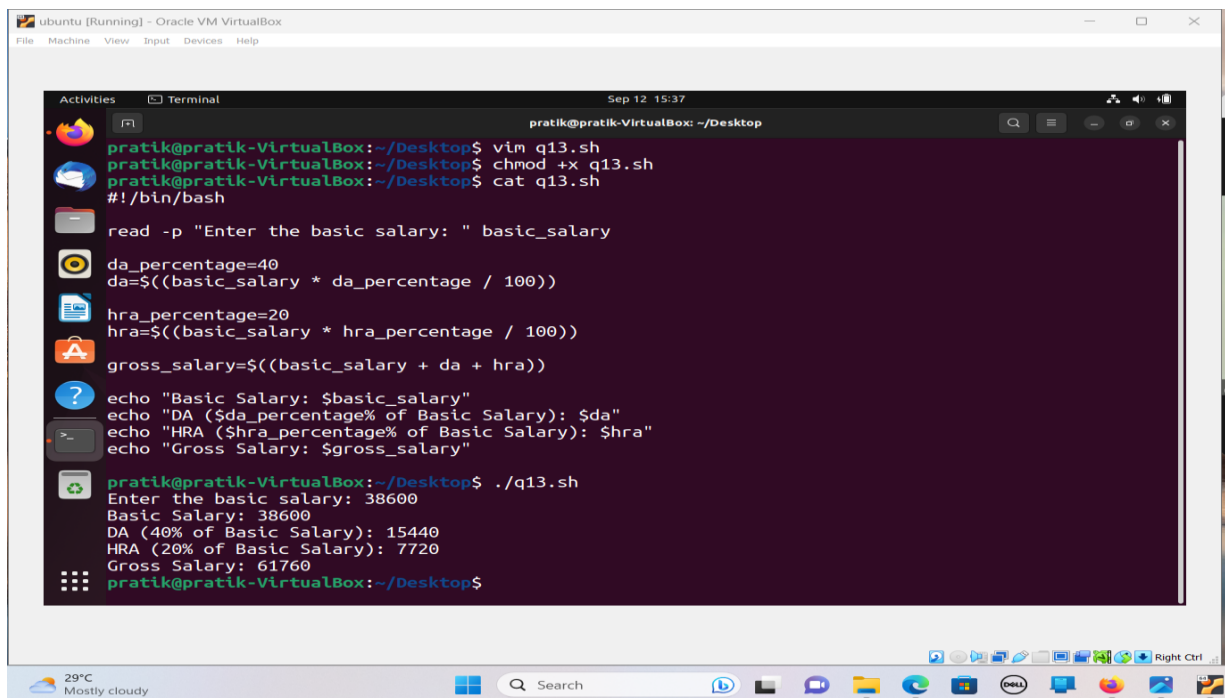
    echo "Fibonacci series of $n terms:"
    while [ $count -lt $n ]; do
        echo -n "$a "
        temp=$((a + b))
        a=$b
        b=$temp
        count=$((count + 1))
    done
    echo
}

read -p "Enter the number of Fibonacci terms to generate: " num_terms
generate_fibonacci "$num_terms"
```

The user has executed the script with the command `./q12.sh`, entered the number 12, and the output is "Fibonacci series of 12 terms: 0 1 1 2 3 5 8 13 21 34 55 89".

Q13)

Ans=



```
pratik@pratik-VirtualBox: ~/Desktop
pratik@pratik-VirtualBox:~/Desktop$ vim q13.sh
pratik@pratik-VirtualBox:~/Desktop$ chmod +x q13.sh
pratik@pratik-VirtualBox:~/Desktop$ cat q13.sh
#!/bin/bash

read -p "Enter the basic salary: " basic_salary

da_percentage=40
da=$((basic_salary * da_percentage / 100))

hra_percentage=20
hra=$((basic_salary * hra_percentage / 100))

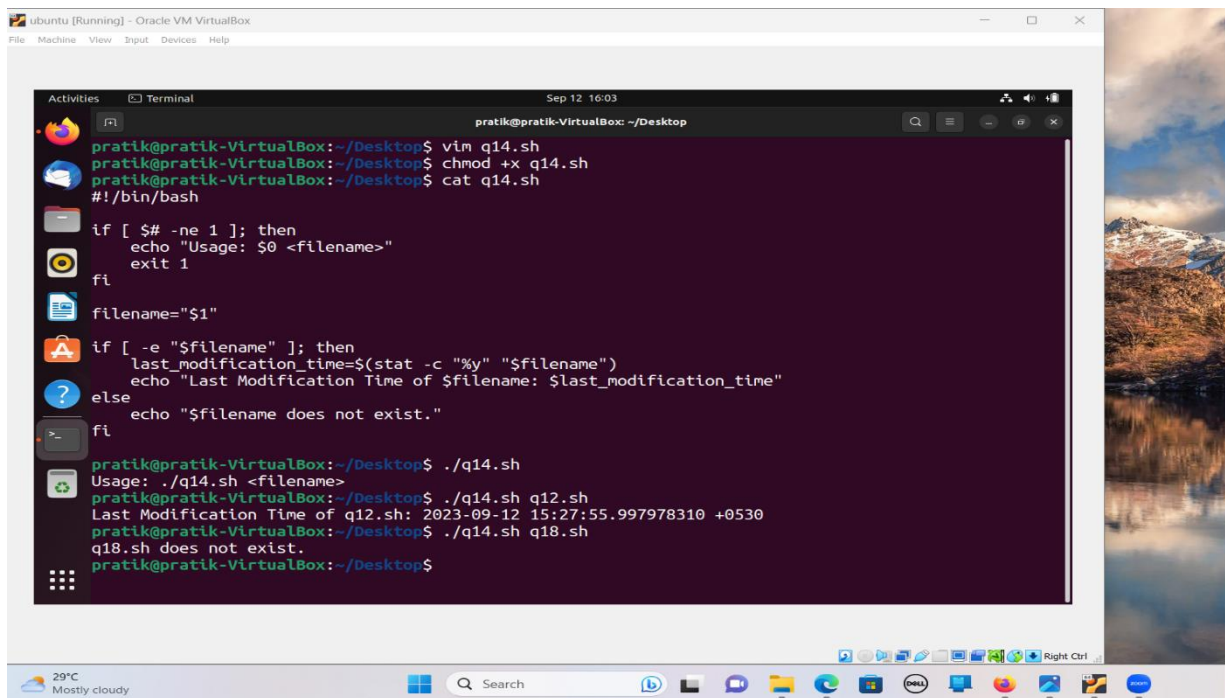
gross_salary=$((basic_salary + da + hra))

echo "Basic Salary: $basic_salary"
echo "DA ($da_percentage% of Basic Salary): $da"
echo "HRA ($hra_percentage% of Basic Salary): $hra"
echo "Gross Salary: $gross_salary"

pratik@pratik-VirtualBox:~/Desktop$ ./q13.sh
Enter the basic salary: 38600
Basic Salary: 38600
DA (40% of Basic Salary): 15440
HRA (20% of Basic Salary): 7720
Gross Salary: 61760
pratik@pratik-VirtualBox:~/Desktop$
```

Q14)

Ans=



```
pratik@pratik-VirtualBox:~/Desktop$ vim q14.sh
pratik@pratik-VirtualBox:~/Desktop$ chmod +x q14.sh
pratik@pratik-VirtualBox:~/Desktop$ cat q14.sh
#!/bin/bash

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

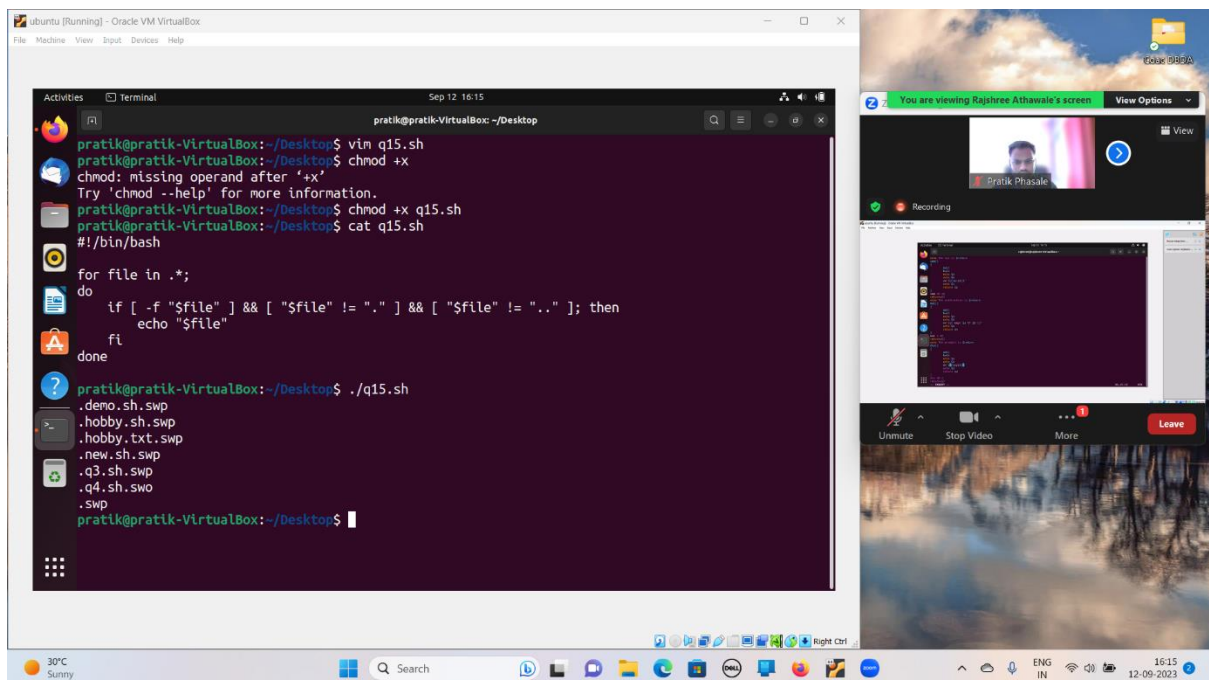
filename="$1"

if [ -e "$filename" ]; then
    last_modification_time=$(stat -c "%y" "$filename")
    echo "Last Modification Time of $filename: $last_modification_time"
else
    echo "$filename does not exist."
fi

pratik@pratik-VirtualBox:~/Desktop$ ./q14.sh
Usage: ./q14.sh <filename>
pratik@pratik-VirtualBox:~/Desktop$ ./q14.sh q12.sh
Last Modification Time of q12.sh: 2023-09-12 15:27:55.997978310 +0530
pratik@pratik-VirtualBox:~/Desktop$ ./q14.sh q18.sh
q18.sh does not exist.
pratik@pratik-VirtualBox:~/Desktop$
```

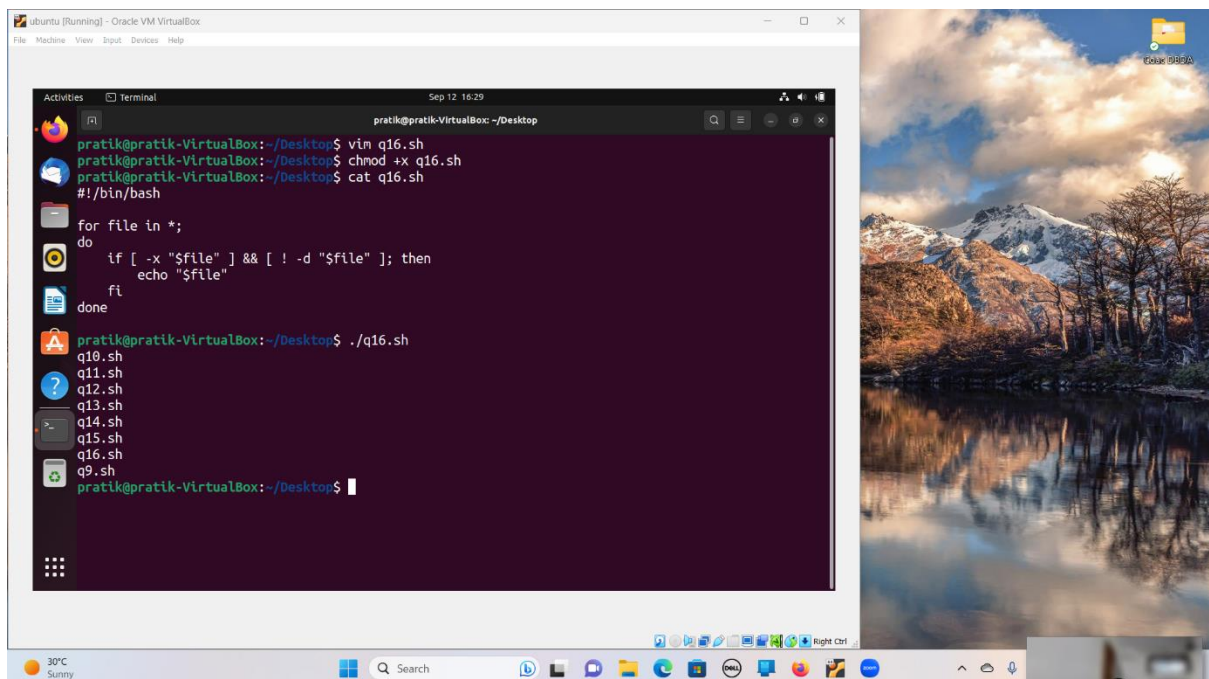
Q15)

Ans=



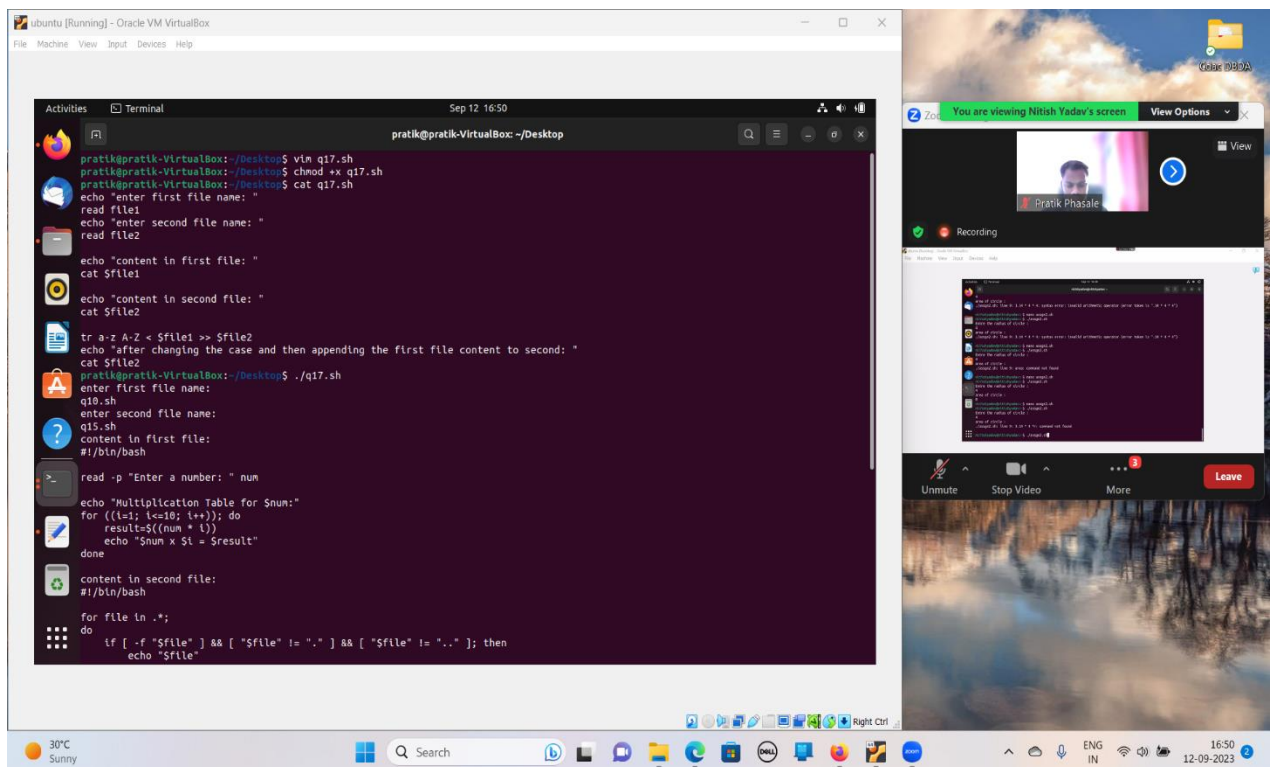
Q16)

Ans=

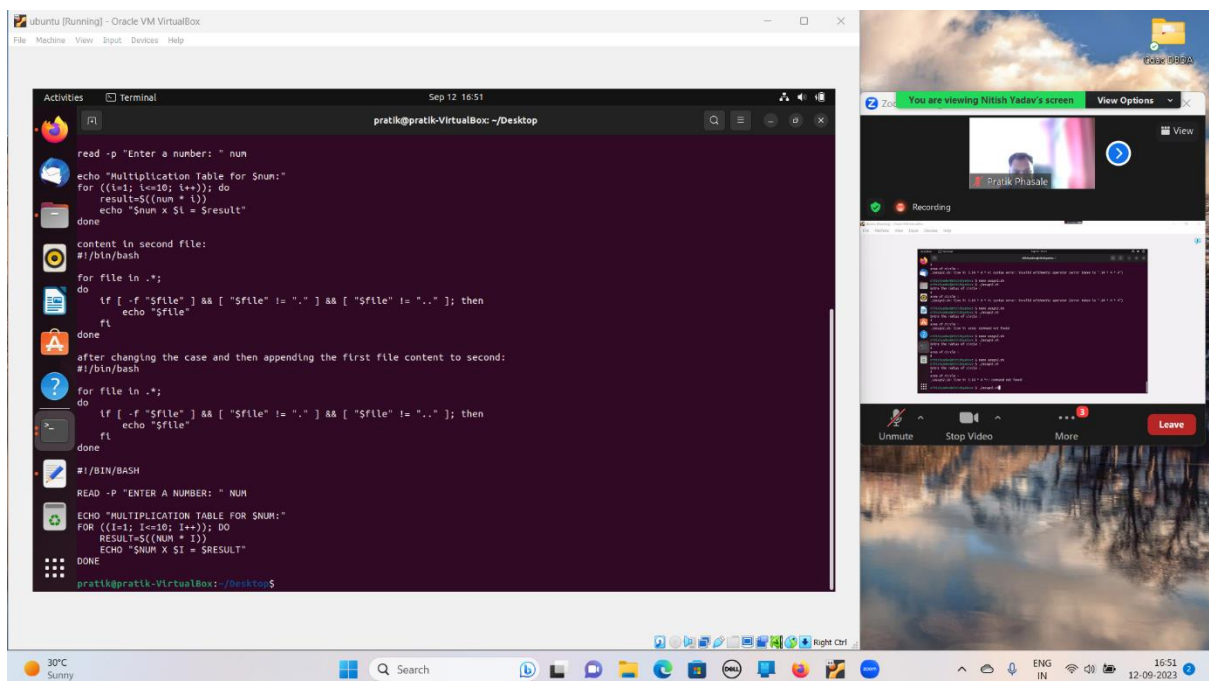


Q17)

Ans= Part 1



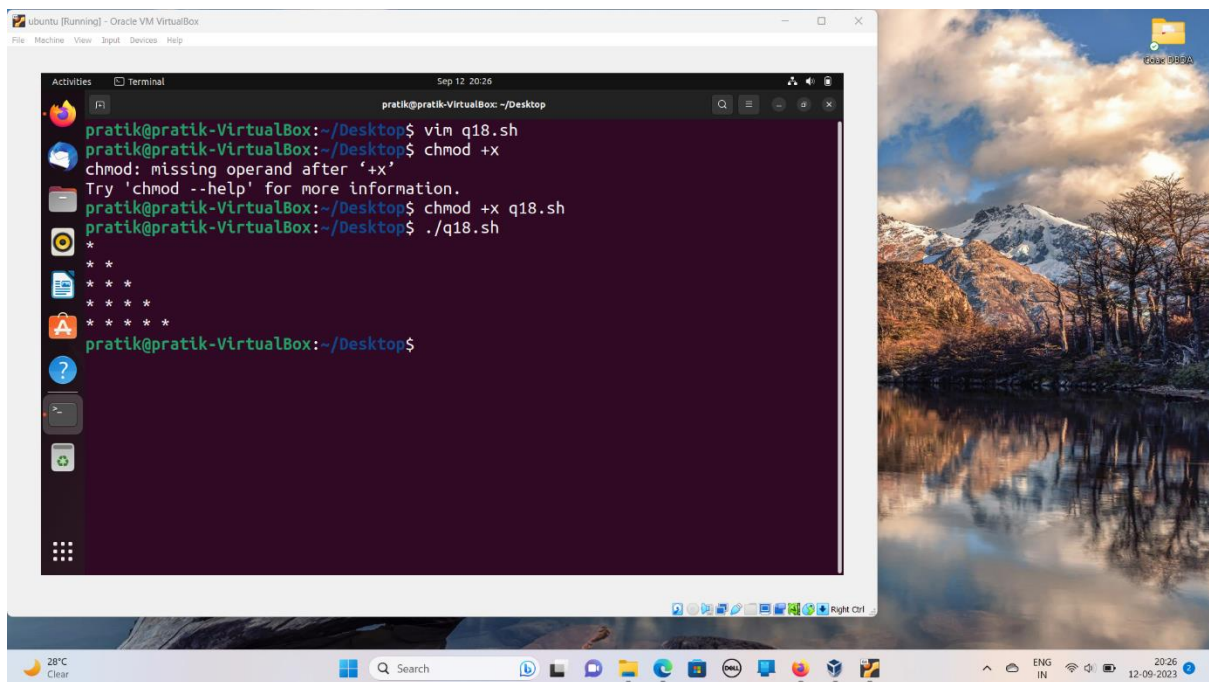
Part 2





Q18)

Ans=



The screenshot shows a Windows 10 desktop environment. On the left, a terminal window titled "pratik@pratik-VirtualBox: ~/Desktop" is open, displaying the following commands and output:

```
pratik@pratik-VirtualBox:~/Desktop$ vim q18.sh
pratik@pratik-VirtualBox:~/Desktop$ chmod +x
chmod: missing operand after '+'
Try 'chmod --help' for more information.
pratik@pratik-VirtualBox:~/Desktop$ chmod +x q18.sh
pratik@pratik-VirtualBox:~/Desktop$ ./q18.sh
*
*
* *
* *
* * *
* * * *
```

The terminal window is overlaid on a desktop background featuring a scenic view of snow-capped mountains and a lake. The Windows taskbar at the bottom shows the date as 12-09-2023 and the time as 20:26. The system tray includes icons for network, volume, and power.