

# Shell script programs

## 1. Arithmetic operation

### Code :

```
GNU nano 7.2 arithmetic.sh
#Shell program to add two integer values
#and check if any input is given or not

#!/usr/bin/bash
read -p "Input1 : " inp1
if [[ -z $inp1 ]]
then
    echo "Input 1 cannot be empty, please enter an integer."
    exit
fi

read -p "Input2 : " inp2
if [[ -z $inp2 ]]
then
    echo "Input 2 cannot be empty, please enter an integer."
    exit
fi

bc_val=$(echo "$inp1+$inp2" | bc)
echo "BC Value : $bc_val"

expr_val=$(expr $inp1 + $inp2)
echo "EXPR Value : $expr_val"
```

### Output :

```
hnruthin@4f7e8c7e4ccb5e3:~$ nano arithmetic.sh
hnruthin@4f7e8c7e4ccb5e3:~$ chmod +x arithmetic.sh
hnruthin@4f7e8c7e4ccb5e3:~$ ./arithmetic.sh
Input1 : 5
Input2 : 7
BC Value : 12
EXPR Value : 12
hnruthin@4f7e8c7e4ccb5e3:~$ nano arithmetic.sh
hnruthin@4f7e8c7e4ccb5e3:~$ nano arth2.sh
hnruthin@4f7e8c7e4ccb5e3:~$ chmod +x arth2.sh
hnruthin@4f7e8c7e4ccb5e3:~$ ./arth2.sh
Input 1: 6
./arth2.sh: line 3: [[-Z: command not found
Input 2:8
./arth2.sh: line 9: [[-Z: command not found
14
hnruthin@4f7e8c7e4ccb5e3:~$ nano arithmetic.sh
hnruthin@4f7e8c7e4ccb5e3:~$ nano arth2.sh
hnruthin@4f7e8c7e4ccb5e3:~$ ./arth2.sh
Input 1: 8
Input 2:10
18
hnruthin@4f7e8c7e4ccb5e3:~$ cat arithmetic.sh
cat: arithmetic.sh: No such file or directory
hnruthin@4f7e8c7e4ccb5e3:~$ cat arithmetic.sh
#Shell program to add two integer values
#and check if any input is given or not

#!/usr/bin/bash
read -p "Input1 : " inp1
if [[ -z $inp1 ]]
then
    echo "Input 1 cannot be empty, please enter an integer."
    exit
fi

read -p "Input2 : " inp2
if [[ -z $inp2 ]]
then
```

## 2. Sum of Array

### Code :

```
GNU nano 7.2 arrays2.sh
arr=(2 5 7 3 5 1)
for (( i=0; i<${#arr[*]}; i++ )); do
if (( arr[i] > 0 )); then
sum=$((sum + ${arr[i]}))
fi
done
echo "$sum"
```

### Output :

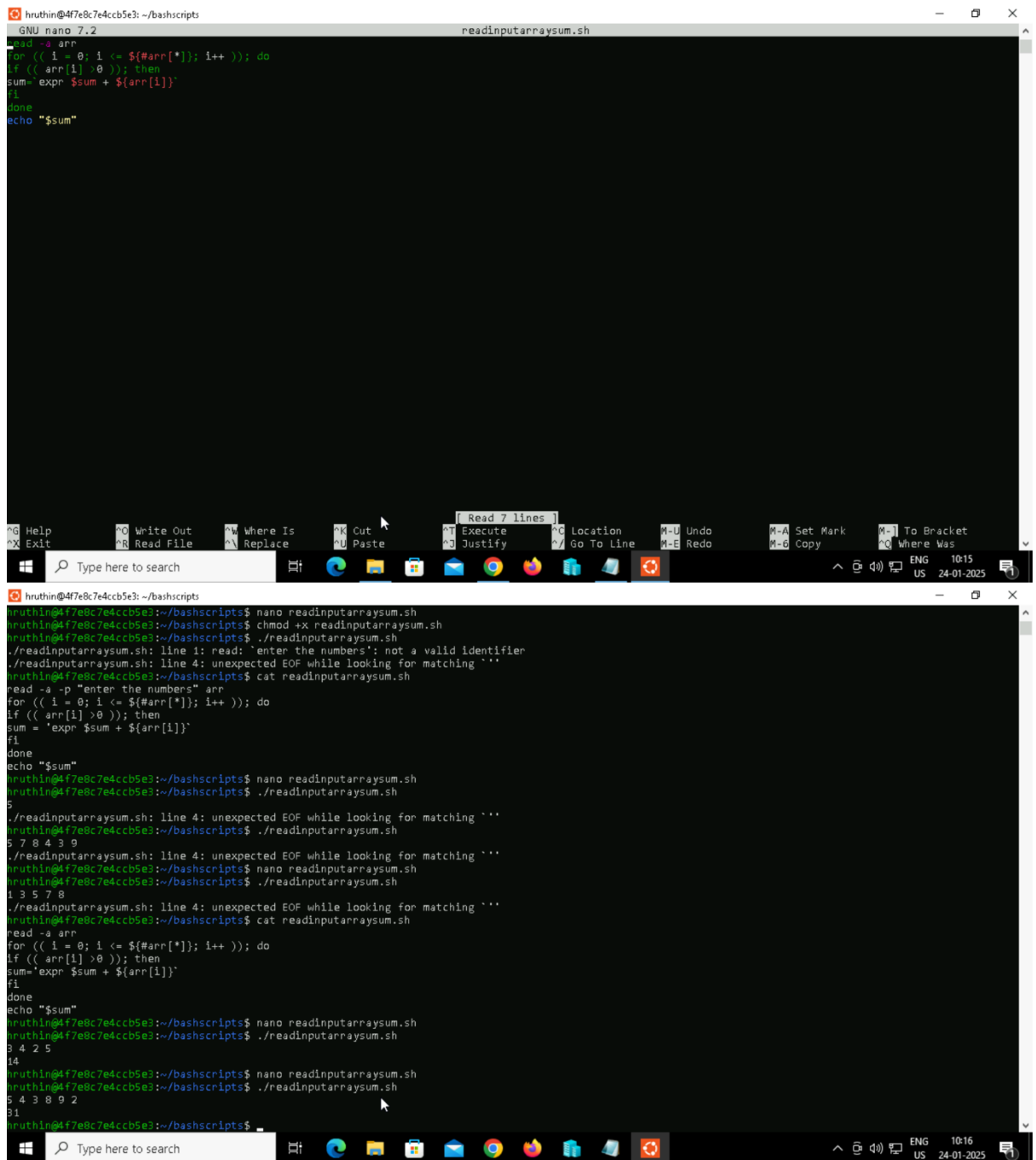
```
Memory usage: 5% IPv4 address for eth0: 172.30.10.97
Swap usage: 0%

* Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s
just raised the bar for easy, resilient and secure K8s cluster deployment.

https://ubuntu.com/engage/secure-kubernetes-at-the-edge

This message is shown once a day. To disable it please create the
/home/hruthin/.hushlogin file.
hruthin@4f7e8c7e4ccb5e3:~$ mkdir bashscripts
hruthin@4f7e8c7e4ccb5e3:~$ cd bashscripts
hruthin@4f7e8c7e4ccb5e3:~/bashscripts$ nano arrays2.sh
hruthin@4f7e8c7e4ccb5e3:~/bashscripts$ ./arrays2.sh
-bash: ./arrays2.sh: Permission denied
hruthin@4f7e8c7e4ccb5e3:~/bashscripts$ chmod +x arrays2.sh
hruthin@4f7e8c7e4ccb5e3:~/bashscripts$ ./arrays2.sh
23
hruthin@4f7e8c7e4ccb5e3:~/bashscripts$ nano arrays2.sh
hruthin@4f7e8c7e4ccb5e3:~/bashscripts$ chmod +x arrays2.sh
hruthin@4f7e8c7e4ccb5e3:~/bashscripts$ ./arrays2.sh
23
hruthin@4f7e8c7e4ccb5e3:~/bashscripts$ cat arrays2.sh
arr=(1 3 6 8 9 )
for (( i = 0; i<= ${#arr[*]}; i++ )); do
if (( arr[i] > 0 )); then
sum=$((sum + ${arr[i]}))
fi
done
echo "$sum"
```

## By taking input from user :



```
GNU nano 7.2 readInputarraysum.sh
read -a arr
for (( i = 0; i <= ${#arr[*]}; i++ )); do
if (( arr[i] > 0 )); then
sum=expr $sum + ${arr[i]}
fi
done
echo "$sum"
```

```
huthin@4f7e8c7e4ccb5e3: ~/bashscripts
huthin@4f7e8c7e4ccb5e3:~/bashscripts$ nano readInputarraysum.sh
huthin@4f7e8c7e4ccb5e3:~/bashscripts$ chmod +x readInputarraysum.sh
huthin@4f7e8c7e4ccb5e3:~/bashscripts$ ./readInputarraysum.sh
./readInputarraysum.sh: line 1: read: 'enter the numbers': not a valid identifier
./readInputarraysum.sh: line 4: unexpected EOF while looking for matching `''
huthin@4f7e8c7e4ccb5e3:~/bashscripts$ cat readInputarraysum.sh
read -a arr
for (( i = 0; i <= ${#arr[*]}; i++ )); do
if (( arr[i] > 0 )); then
sum = `expr $sum + ${arr[i]}`
fi
done
echo "$sum"
huthin@4f7e8c7e4ccb5e3:~/bashscripts$ nano readInputarraysum.sh
huthin@4f7e8c7e4ccb5e3:~/bashscripts$ ./readInputarraysum.sh
5
./readInputarraysum.sh: line 4: unexpected EOF while looking for matching `''
huthin@4f7e8c7e4ccb5e3:~/bashscripts$ ./readInputarraysum.sh
5 7 8 4 3 0
./readInputarraysum.sh: line 4: unexpected EOF while looking for matching `''
huthin@4f7e8c7e4ccb5e3:~/bashscripts$ nano readInputarraysum.sh
huthin@4f7e8c7e4ccb5e3:~/bashscripts$ ./readInputarraysum.sh
1 3 5 7 8
./readInputarraysum.sh: line 4: unexpected EOF while looking for matching `''
huthin@4f7e8c7e4ccb5e3:~/bashscripts$ cat readInputarraysum.sh
read -a arr
for (( i = 0; i <= ${#arr[*]}; i++ )); do
if (( arr[i] > 0 )); then
sum=`expr $sum + ${arr[i]}`
fi
done
echo "$sum"
huthin@4f7e8c7e4ccb5e3:~/bashscripts$ nano readInputarraysum.sh
huthin@4f7e8c7e4ccb5e3:~/bashscripts$ ./readInputarraysum.sh
3 4 2 5
14
huthin@4f7e8c7e4ccb5e3:~/bashscripts$ nano readInputarraysum.sh
huthin@4f7e8c7e4ccb5e3:~/bashscripts$ ./readInputarraysum.sh
5 4 3 8 9 2
31
huthin@4f7e8c7e4ccb5e3:~/bashscripts$
```

### 3. Reversing a number

Code :

```
GNU nano 7.2 reverse.sh
#!/bin/bash

n=$1
rev=0
sd=0

while [ $n -gt 0 ]
do
sd=`expr $n % 10`
rev=`expr $rev \* 10 + $sd`
n=`expr $n / 10`
done

echo "Reverse Number is $rev"
```

Output :

```
hnruthin@4f7e8c7e4ccb5e3: ~/bashscripts
hnruthin@4f7e8c7e4ccb5e3:~/bashscripts$ nano readinputarraysum.sh
hnruthin@4f7e8c7e4ccb5e3:~/bashscripts$ ./readinputarraysum.sh
5 4 3 8 9 2
31
hnruthin@4f7e8c7e4ccb5e3:~/bashscripts$ nano reverse.sh
hnruthin@4f7e8c7e4ccb5e3:~/bashscripts$ chmod +x reverse.sh
hnruthin@4f7e8c7e4ccb5e3:~/bashscripts$ ./reverse.sh
./reverse.sh: line 8: [: -gt: unary operator expected
Reverse Number is 0
hnruthin@4f7e8c7e4ccb5e3:~/bashscripts$ nano reverse.sh
hnruthin@4f7e8c7e4ccb5e3:~/bashscripts$ ./reverse.sh
./reverse.sh: line 8: [: -gt: unary operator expected
Reverse Number is 0
hnruthin@4f7e8c7e4ccb5e3:~/bashscripts$ nano reverse.sh
hnruthin@4f7e8c7e4ccb5e3:~/bashscripts$ cat reverse.sh
#!/bin/bash

n=$1
rev=0
sd=0

while [ $n -gt 0 ]
do
sd=`expr $n % 10`
rev=`expr $rev \* 10 + $sd`
n=`expr $n / 10`
done

echo "Reverse Number is $rev"
hnruthin@4f7e8c7e4ccb5e3:~/bashscripts$ ./reverse.sh 121
Reverse Number is 121
hnruthin@4f7e8c7e4ccb5e3:~/bashscripts$ nano reverse.sh
hnruthin@4f7e8c7e4ccb5e3:~/bashscripts$ ./reverse.sh 125
Reverse Number is 521
hnruthin@4f7e8c7e4ccb5e3:~/bashscripts$
```

## 4. Palindrome

Code :

```
GNU nano 7.2 palindrome.sh
#!/bin/bash
echo "Enter the number:"
read n
num=$n
rev=0
while [ $n -gt 0 ]
do
a=$((n % 10))
n=$((n / 10))
rev=$((rev * 10 + a))
done
echo $rev
if [ $num -eq $rev ]
then
echo "The number is a palindrome!"
else
echo "The number is not a palindrome number!"
fi
```

Output :

```
hruthin@4f7e8c7e4ccb5e3: ~/bashscripts
hruthin@4f7e8c7e4ccb5e3:~/bashscripts$ ./reverse.sh 125
expr: syntax error: unexpected argument 'arraysum.sh'
expr: syntax error: unexpected argument 'arraysum2.sh'
expr: syntax error: unexpected argument 'arraysum2.sh'
Reverse Number is
hruthin@4f7e8c7e4ccb5e3:~/bashscripts$ nano reverse.sh
hruthin@4f7e8c7e4ccb5e3:~/bashscripts$ nano reverse2.sh
hruthin@4f7e8c7e4ccb5e3:~/bashscripts$ chmod +x reverse2.sh
hruthin@4f7e8c7e4ccb5e3:~/bashscripts$ ./reverse2.sh
./reverse2.sh: line 4: -gt: command not found
0
hruthin@4f7e8c7e4ccb5e3:~/bashscripts$ ./reverse2.sh 12345
./reverse2.sh: line 4: 12345: command not found
0
hruthin@4f7e8c7e4ccb5e3:~/bashscripts$ nano reverse2.sh
hruthin@4f7e8c7e4ccb5e3:~/bashscripts$ ./reverse2.sh 12345
./reverse2.sh: line 4: 12345: command not found
0
hruthin@4f7e8c7e4ccb5e3:~/bashscripts$ nano reverse2.sh
hruthin@4f7e8c7e4ccb5e3:~/bashscripts$ ./reverse2.sh 12345
54321
hruthin@4f7e8c7e4ccb5e3:~/bashscripts$ nano reverse2.sh
hruthin@4f7e8c7e4ccb5e3:~/bashscripts$ nano palindrome.sh
hruthin@4f7e8c7e4ccb5e3:~/bashscripts$ chmod +x palindrome.sh
hruthin@4f7e8c7e4ccb5e3:~/bashscripts$ ./palindrome.sh
Enter the number:
6
6
The number is a palindrome!
hruthin@4f7e8c7e4ccb5e3:~/bashscripts$ ./palindrome.sh
Enter the number:
121
121
The number is a palindrome!
hruthin@4f7e8c7e4ccb5e3:~/bashscripts$ nano palindrome.sh
hruthin@4f7e8c7e4ccb5e3:~/bashscripts$ ./palindrome.sh
Enter the number:
123
321
The number is not a palindrome number!
hruthin@4f7e8c7e4ccb5e3:~/bashscripts$
```

## 5. Bubble sort

Code :

```
GNU nano 7.2                                bubblesort.sh
#bubble sort in shell with static array

declare -a arr
arr=(10 8 20 100 12)

echo "Entered array:"
echo ${arr[@]}

for ((i = 0; i < 5; i++))
do
    for((j = 0; j < 5-i-1; j++))
    do
        if [ ${arr[j]} -gt ${arr[j+1]} ]; then
            temp=${arr[j]}
            arr[j]=${arr[j+1]}
            arr[j+1]=$temp
        fi
    done
done
echo "Sorted array:"
echo ${arr[@]}
```

Output :

```
huthin@4f7e8c7e4ccb5e3: ~/bashscripts
huthin@4f7e8c7e4ccb5e3:~/bashscripts$ nano reverse2.sh
huthin@4f7e8c7e4ccb5e3:~/bashscripts$ ./reverse2.sh 12345
./reverse2.sh: line 4: 12345: command not found
huthin@4f7e8c7e4ccb5e3:~/bashscripts$ nano reverse2.sh
huthin@4f7e8c7e4ccb5e3:~/bashscripts$ ./reverse2.sh 12345
54321
huthin@4f7e8c7e4ccb5e3:~/bashscripts$ nano reverse2.sh
huthin@4f7e8c7e4ccb5e3:~/bashscripts$ nano palindrome.sh
huthin@4f7e8c7e4ccb5e3:~/bashscripts$ chmod +x palindrome.sh
huthin@4f7e8c7e4ccb5e3:~/bashscripts$ ./palindrome.sh
Enter the number:
0
0
The number is a palindrome!
huthin@4f7e8c7e4ccb5e3:~/bashscripts$ ./palindrome.sh
Enter the number:
121
121
The number is a palindrome!
huthin@4f7e8c7e4ccb5e3:~/bashscripts$ nano palindrome.sh
huthin@4f7e8c7e4ccb5e3:~/bashscripts$ ./palindrome.sh
Enter the number:
123
321
The number is not a palindrome number!
huthin@4f7e8c7e4ccb5e3:~/bashscripts$ nano palindrome.sh
huthin@4f7e8c7e4ccb5e3:~/bashscripts$ nano bubblesort.sh
huthin@4f7e8c7e4ccb5e3:~/bashscripts$ chmod bubblesort.sh
chmod: missing operand after 'bubblesort.sh'
Try 'chmod --help' for more information.
huthin@4f7e8c7e4ccb5e3:~/bashscripts$ chmod +x bubblesort.sh
huthin@4f7e8c7e4ccb5e3:~/bashscripts$ ./bubblesort
-bash: ./bubblesort: No such file or directory
huthin@4f7e8c7e4ccb5e3:~/bashscripts$ ./bubblesort.sh
Entered array:
10 8 20 100 12
Sorted array:
8 10 12 20 100
huthin@4f7e8c7e4ccb5e3:~/bashscripts$
```

## 6. Pascal triangle

### Code :

```
GNU nano 7.2 pascal.sh
#shell program to print Pascal triangle

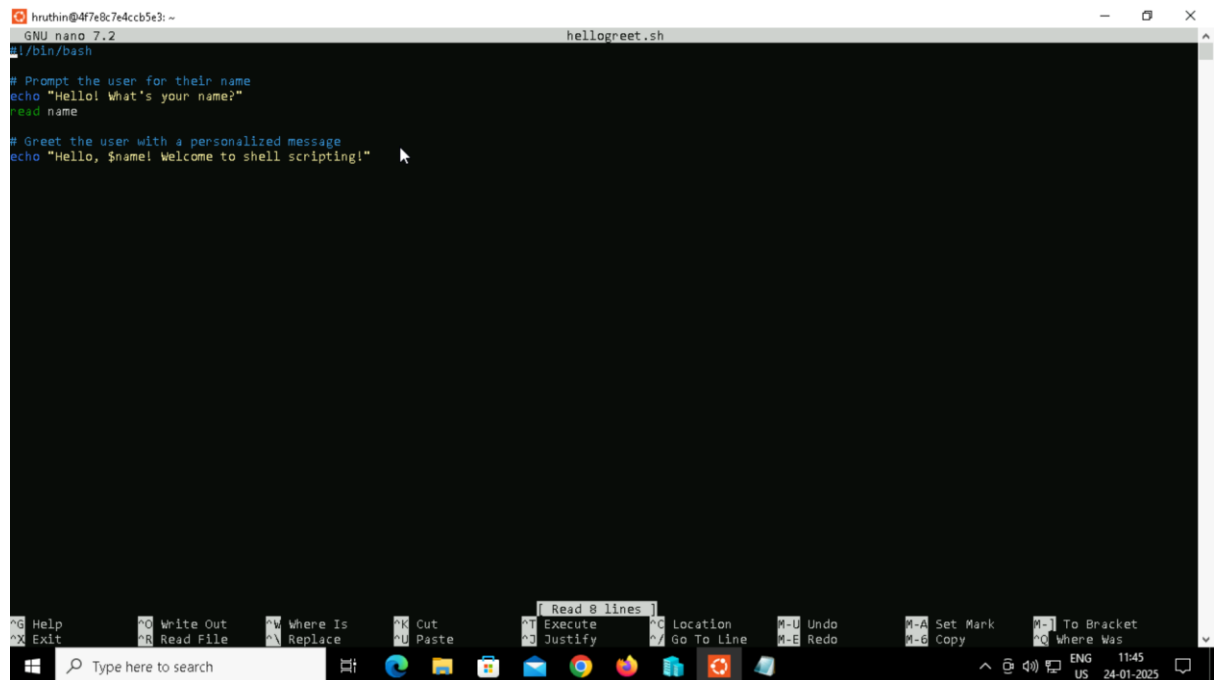
pastr1()
{
n=$1
c=1
for((i=0;i<=n;i++))
do
for((s=1;s<=n-i;s++))
do
echo -n " "
done
for((j=0;j<=i;j++))
do
if [ $j -eq 0 -o $i -eq 0 ]
then
c=1
else
c=$((c*(i-j+1)/j))
fi
echo -n $c " "
done
echo
done
echo "enter the number of rows:"
read n
pastr1 $n
}
```

### Output :

```
123
321
The number is not a palindrome number!
hruthin@4f7e8c7e4ccb5e3: ~/bashscripts$ nano palindrome.sh
hruthin@4f7e8c7e4ccb5e3: ~/bashscripts$ nano bubblesort.sh
hruthin@4f7e8c7e4ccb5e3: ~/bashscripts$ chmod bubblesort.sh
chmod: missing operand after 'bubblesort.sh'
Try 'chmod --help' for more information.
hruthin@4f7e8c7e4ccb5e3: ~/bashscripts$ chmod +x bubblesort.sh
hruthin@4f7e8c7e4ccb5e3: ~/bashscripts$ ./bubblesort
-bash: ./bubblesort: No such file or directory
hruthin@4f7e8c7e4ccb5e3: ~/bashscripts$ ./bubblesort.sh
Entered array:
10 8 20 100 12
Sorted array:
8 10 12 20 100
hruthin@4f7e8c7e4ccb5e3: ~/bashscripts$ nano bubblesort.sh
hruthin@4f7e8c7e4ccb5e3: ~/bashscripts$ nano pascal.sh
hruthin@4f7e8c7e4ccb5e3: ~/bashscripts$ chmod +x pascal.sh
hruthin@4f7e8c7e4ccb5e3: ~/bashscripts$ ./pascal.sh
enter the number of rows:
5
      1
     1 1
    1 2 1
   1 3 3 1
  1 4 6 4 1
hruthin@4f7e8c7e4ccb5e3: ~/bashscripts$ ./pascal.sh
enter the number of rows:
10
      1
     1 1
    1 2 1
   1 3 3 1
  1 4 6 4 1
 1 5 10 10 5 1
1 6 15 20 15 6 1
1 7 21 35 35 21 7 1
1 8 28 56 70 56 28 8 1
1 9 36 84 126 126 84 36 9 1
hruthin@4f7e8c7e4ccb5e3: ~/bashscripts$
```

## 7. Hello Greeting

### Code :

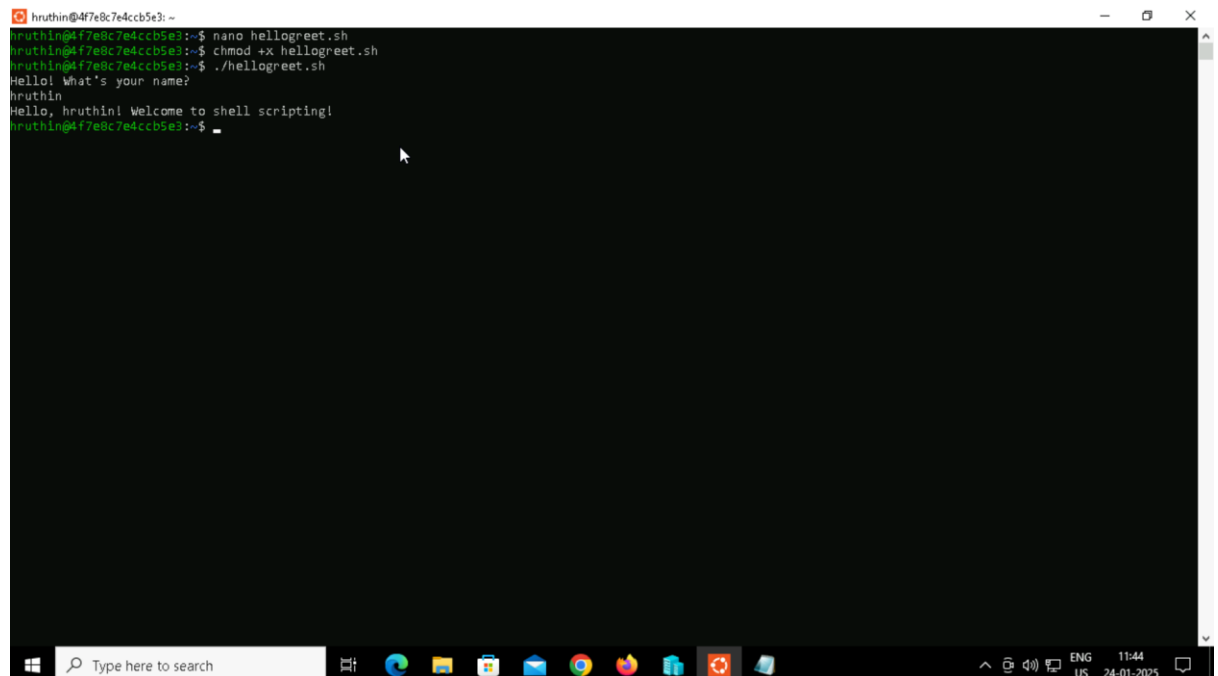


```
GNU nano 7.2 hellogreet.sh
#!/bin/bash

# Prompt the user for their name
echo "Hello! What's your name?"
read name

# Greet the user with a personalized message
echo "Hello, $name! Welcome to shell scripting!"
```

### Output :



```
hruthin@4f7e8c7e4ccb5e3: ~
hruthin@4f7e8c7e4ccb5e3:~$ nano hellogreet.sh
hruthin@4f7e8c7e4ccb5e3:~$ chmod +x hellogreet.sh
hruthin@4f7e8c7e4ccb5e3:~$ ./hellogreet.sh
Hello! What's your name?
hruthin
Hello, hruthin! Welcome to shell scripting!
hruthin@4f7e8c7e4ccb5e3:~$
```