1. Write a shell program to perform the addition of two numbers.

Bash Script

```
echo "Enter the 1st number"
read a
echo "Enter the 2nd number"
read b
S=`expr $a + $b`
echo "The result is:"$S
```

Output

```
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ sh 1.sh
Enter the 1st number
56
Enter the 2nd number
87
The result is:143
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ sh 1.sh
Enter the 1st number
-8
Enter the 2nd number
-4
The result is:-12
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ sh 1.sh
Enter the 1st number
-9
Enter the 2nd number
6
The result is:-3
```

2. Write shell script to show the all-natural numbers from 1 to n (n is taken from the user).

Bash Script

```
read -p "Enter the limit of the series:" n
i=1
echo -n "\nThe realnumber series is:"
while [ $i -le $n ]
do
echo -n " " $i
i=`expr $i + 1`
done
```

Output

```
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ sh 2.sh
Enter the limit of the series:10

The realnumber series is:  1  2  3  4  5  6  7  8  9  10

pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ sh 2.sh
Enter the limit of the series:5

The realnumber series is:  1  2  3  4  5
```

3. Write a shell program to find the maximum number between two number

Bash Script

```
echo "Ente the 1st number"
read a
echo "Ente the 2nd number"
read b
if [ $a -gt $b ]
then
echo "The greater number is:"$a
else
echo "The greater number is:"$b
fi
```

Output

```
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ sh 3.sh
Ente the 1st number
24
Ente the 2nd number
65
The greater number is:65
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ sh 3.sh
Ente the 1st number
-8
Ente the 2nd number
-5
The greater number is:-5
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ sh 3.sh
Ente the 1st number
9
Ente the 2nd number
-5
The greater number is:9
```

4. Write a shell script program to calculate the what is the greater number between three number.

Bash Script

```
echo "Enter the numbers"
read a b c
if [ $a -gt $b ]
then
        if [ $a -gt $c ]
        then
                echo "The greater number is:"$a
        else
                echo "The greater number is:"$c
        fi
elif [ $a -eq $b -a $b -eq $c ]
then
        echo "The number are equal"
else
        if [ $b -gt $c ]
        then
                 echo "The greater number is:"$b
        else
                 echo "The greater number is:"$c
        fi
fi
```

Output

```
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ sh 4.sh
Enter the numbers
12 5 10
The greater number is:12
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ sh 4.sh
Enter the numbers
-5 -8 6
The greater number is:6
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ sh 4.sh
Enter the numbers
-9 -4 -12
The greater number is:-4
```

5. Write a shell script program to find the number is even or odd.

Bash Script

```
echo "Enter the number"
read n
s=`expr $n % 2`
if [ $s -eq 0 ]
then
        echo "The number is even"
else
        echo "The number is odd"
fi
```

Output

```
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ sh 5.sh
Enter the number
25
The number is odd
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ sh 5.sh
Enter the number
20
The number is even
```

6. Write a shell script to check whether a year is leapyear or not.

Bash Script

```
read -p "Enter the year: " year

if ((year % 400 == 0 && year % 100 == 0 ||
year % 4 == 0)); then
   echo -e "\n$year year is leap year\n"
else
   echo -e "\nThe year is not leap year\n"
fi
```

Output

```
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ chmod +x 7.sh
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ ./7.sh
Enter the year: 2024

2024 year is leap year

pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ ./7.sh
Enter the year: 2020

2020 year is leap year
```

7. Write a shell script to print the factorial of a user given number.

Bash Script

```
echo -n "Enter a number: "
read num
fact=1
for (( i=1; i<=num; i++ ))
do
  fact=$((fact * i))
done

echo "Factorial of $num is $fact"
```

Output

```
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ chmod +x 6.sh
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ ./6.sh
Enter a number: 5
Factorial of 5 is 120
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ ./6.sh
Enter a number: 8
Factorial of 8 is 40320
```

8. Write a shell scrip to print the Fibonacci series:

0, 1, 1, 2, 3, 5, ….Nth term.

Bash Script

```
read -p "Enter the limit:" f
i=0
a=0
b=1
echo -n "The series is:" $a $b
while [ $i -le `expr $f - 2` ]
do
c=`expr $a + $b`
a=$b
b=$c
echo -n " "$c
i=`expr $i + 1`
done
```

Output

```
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ sh 8.sh
Enter the limit:5
The series is: 0 1 1 2 3 5

pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ sh 8.sh
Enter the limit:10
The series is: 0 1 1 2 3 5 8 13 21 34 55
```

9. Write shell script to check the number is prime or not.

Bash Script

```
echo -n "Enter a number: "
read num
if [ $num -lt 2 ]; then
   echo "$num is not a prime number."
   exit 0
fi
is_prime=1
for ((i = 2; i <= $num; i++)); do
   if [ $((num % i)) -eq 0 ]; then
      is_prime=0
      break
   fi
done
if [ $is_prime -eq 1 ]; then
   echo "$num is a prime number."
else
   echo "$num is not a prime number."
fi
```

Output

```
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ chmod +x 9.sh
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ ./9.sh
Enter a number: 25
25 is not a prime number.
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ ./9.sh
Enter a number: 7
7 is not a prime number.
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ ./9.sh
Enter a number: 1
1 is not a prime number.
```

10. Write a shell script to display all prime numbers from 1 to N.

Bash Script

```
read -p "Enter the limit: " limit
if ((limit <= 0)); then
   echo -e "\n\tInvalid input\n"
   exit
fi
echo -n "The prime numbers up to $limit are: "
for ((i = 1; i <= limit; i++)); do
   count=0
   for ((j = 2; j <= i / 2; j++)); do
      if ((i % j == 0)); then
         ((count++))
      fi
   done
   if ((!count)); then
      echo -n "$i "
   fi
done
echo
```

Output

```
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ chmod +x 10.sh
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ ./10.sh
Enter the limit: 10
The prime numbers up to 10 are: 1 2 3 5 7
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ ./10.sh
Enter the limit: 30
The prime numbers up to 30 are: 1 2 3 5 7 11 13 17 19 23 29
```

11. Write a shell script to print the GCD & LCM of two numbers.

Bash Script

```
read -p "Enter the 1st number:" n1
read -p "Enter the 1st number:" n2
if [ $n1 -gt $n2 ]
then
num=$n1
den=$n2
else
num=$n2
den=$n1
fi
rem=`expr $num % $den`
while [ $rem -ne 0 ]
do
num=$den
den=$rem
rem=`expr $num % $den`
done
gcd=$den
lcm=`expr $n1 \* $n2 / $gcd`
echo "The GCD is:" $gcd
echo "The LCM is:" $lcm
```

Output

```
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ sh 11.sh
Enter the 1st number:24
Enter the 1st number:36
The GCD is: 12
The LCM is: 72
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ sh 11.sh
Enter the 1st number:25
Enter the 1st number:35
The GCD is: 5
The LCM is: 175
```

12. Write a shell program to convert Centigrade to Fahrenheit.

Bash Script

```
echo "Enter the centigrade value"
read c
F=`expr $c \* 9 / 5 + 32`
echo "The Fahrenheit value is:"$F
```

Output

```
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ sh 12.sh
Enter the centigrade value
37
The Fahrenheit value is:98
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ sh 12.sh
Enter the centigrade value
-5
The Fahrenheit value is:23
```

13. Write a shell script to calculate simple interest.

Bash Script

```
echo "Ente the principal ammount"
read p
echo "Enter the time period"
read t
echo "Enter the rate of interest"
read r
I=`expr $p \* $t \* $r / 100`
echo "The simple interest is:"$I
```

Output

```
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ sh 13.sh
Ente the principal ammount
12000
Enter the time period
2
Enter the rate of interest
2
The simple interest is:480
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ sh 13.sh
Ente the principal ammount
100000
Enter the time period
3
Enter the rate of interest
5
The simple interest is:15000
```

14. Write a shell script to swapping of two numbers.

Bash Script

```
echo "Enter the 1st number"
read a
echo "Enter the 2nd number"
read b
echo "\nThe values before swap\n" $a $b
c=$a
a=$b
b=$c
echo "\nThe values after swap\n" $a $b
```

Output

```
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ sh 14.sh
Enter the 1st number
35
Enter the 2nd number
96

The values before swap
 35 96

The values after swap
 96 35
```

15. Write a shell script to print left pyramid pattern:

```
*
* *
* * *
```

Bash Script

```
read -p "Enter the number of line:" n
i=1
j=1
echo ""
while [ $i -le $n ]
do
    j=1
    while [ $j -le $i ]
    do
            echo -n " *"
            j=`expr $j + 1`
    done
    echo ""
    i=`expr $i + 1`
done
```

Output

```
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ sh 15.sh
Enter the number of line:4

 *
 * *
 * * *
 * * * *
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ sh 15.sh
Enter the number of line:3

 *
 * *
 * * *
```

16. Write a shell script to print this pattern:

```
1
1 2
1 2 3
1 2 3 4
```

Bash Script

```
read -p "Enter the number of line:" n
i=1
j=1
echo ""
while [ $i -le $n ]
do
    j=1
    while [ $j -le $i ]
    do
            echo -n " "$j
            j=`expr $j + 1`
    done
    echo ""
    i=`expr $i + 1`
done
```

Output

```
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ sh 16.sh
Enter the number of line:4

 1
 1 2
 1 2 3
 1 2 3 4
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ sh 16.sh
Enter the number of line:5

 1
 1 2
 1 2 3
 1 2 3 4
 1 2 3 4 5
```

17. Write a shell script to print left pyramid pattern:

```
*
* * *
* * * * *
```

Bash Script

```
read -p "Enter the number of rows for the
pyramid: " rows
for (( i=1; i<=rows; i++ ))
do
 # Print spaces
 for (( j=rows; j>i; j-- ))
 do
  echo -n " "
 done
 # Print stars
 for (( k=1; k<=((2*i-1)); k++ ))
 do
  echo -n "*"
 done
 # Move to the next line
 echo
done
```

Output

```
root@ip-172-31-14-18:/home# ./process_management.sh

Process Management Options:
1. Create a process
2. Kill a process
3. Display process scheduling information
4. Change process priority
5. Display currently running processes
6. Show background processes
7. Display all process information
8. Exit
Choose an option (1-8):1
Creating a process...
Process created with PID: 5784
```

18. Write a shell script to print left pyramid pattern:

```
*
* *
* * *
```

Bash Script

```
echo -n "Enter number of rows: "
read rows
for ((i=1; i<=rows; i++))
do
 for ((j=i; j<rows; j++))
 do
  echo -n " "
 done
 for ((k=1; k<=i; k++))
 do
  echo -n "* "
 done
 echo
done
```

Output

```
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ chmod +x 18.sh
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ ./18.sh
Enter number of rows: 4
   *
  * *
 * * *
* * * *
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ ./18.sh
Enter number of rows: 5
    *
   * *
  * * *
 * * * *
* * * * *
```

19. Write a shell script to print left pyramid pattern:

```
1
2 3
4 5 6
7 8 9 10
```

Bash Script

```
read -p "Enter the number of rows for the
pattern: " rows
number=1
for (( i=1; i<=rows; i++ ))
do
 # Print numbers in the required pattern
 for (( j=1; j<=i; j++ ))
 do
  echo -n "$number "
  ((number++))
 done
 # Move to the next line
 echo
done
```

Output

```
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ chmod +x 19.sh
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ ./19.sh
Enter the number of rows for the pattern: 4
1
2 3
4 5 6
7 8 9 10
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ ./19.sh
Enter the number of rows for the pattern: 5
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15
```

20. Write a shell script to print left pyramid pattern:

```
* * * *
* * *
* *
*
```

Bash Script

```
read -p "Enter the number of rows for the
pattern: " rows

for (( i=rows; i>=1; i-- ))
do
  # Print stars in decreasing order
  for (( j=1; j<=i; j++ ))
  do
    echo -n "*"
  done
  # Move to the next line
  echo
done
```

Output

```
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ chmod +x 20.sh
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ ./20.sh
Enter the number of rows for the pattern: 4
****
***
**
*
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ ./20.sh
Enter the number of rows for the pattern: 5
*****
****
***
**
*
```

21. Write a shell script to print the series: 1! + 2! + 3! + …….. + N!

Bash Script

```
# Prompt user for input
read -p "Enter the value of N: " N
# Initialize sum variable
sum=0
# Loop through numbers from 1 to N
for ((j=1; j<=N; j++)); do
   # Calculate factorial of the current number
   fact=1
   for ((k=1; k<=j; k++)); do
      fact=$((fact * k))
   done
   # Add the factorial to the sum
   sum=$((sum + fact))
   # Print the addition step
   if [[ $j -eq 1 ]]; then
      echo -n "$fact"
   else
      echo -n " + $fact"
   fi
done
# Print the final sum
echo " = $sum"
```

Output

```
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ chmod +x 21.sh
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ ./21.sh
Enter the value of N: 5
1 + 2 + 6 + 24 + 120 = 153
pralay@pralay-mint:/media/pralay/PROG/Programs/SH/anit$ ./21.sh
Enter the value of N: 7
1 + 2 + 6 + 24 + 120 + 720 + 5040 = 5913
```