1) Write shell script to display output using for loop and while loop
```
0
1 0
2 1 0
3 2 1 0
```

```
a=0
 while [ "$a" -lt 4 ]
 do
 b="$a"
 while [ "$b" -ge 0 ]
do
echo -n "$b "
b=`expr $b - 1`
done
echo
a=`expr $a + 1`
done
```

OUTPUT:

```
shhjb@shhjb-Vostro-2520:~$ sh number.sh
0
1 0
2 1 0
3 2 1 0
shhjb@shhjb-Vostro-2520:~$
```

---

2) Write shell script to display output using for loop and while loop

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

```
for i in 1 2 3 4 5
do
j=0;
while [ $j -lt $i ]
do
echo "$i \c"
j=$((j+1))
done
echo " "
done
```

```
shhjb@shhjb-Vostro-2520:~$ sh pyramid.sh
1
2 2
3 3 3
4 4 4 4
5 5 5 5 5
shhjb@shhjb-Vostro-2520:~$
```

---

3) Write shell script to display output using for loop and while loop
```
1
12
123
```

```
for i in 1 2 3 4
do
j=1;
while [ $j -lt $i ]
do
echo    "$j\c"
j=$(( j + 1 ))
done
echo " "
done
```

OUTPUT:

```
shhjb@shhjb-Vostro-2520:~$ sh pyr3.sh

1
12
123
shhjb@shhjb-Vostro-2520:~$
```

---

4) Write shell script to display output using for loop
```
*
* *
* * *
* * * *
* * * * *
```

```
for i in 1 2 3 4 5

do

j=0;

while [ $j -lt $i ]
do
echo "* \c"
j=$((j+1))

done

echo " "

done
```
```
shhjb@shhjb-Vostro-2520:~$ sh star.sh
*
* *
* * *
* * * *
* * * * *
shhjb@shhjb-Vostro-2520:~$
```

5) Write shell script to display output using for loop

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

for i in 1 2 3 4 5
do
j=5;
while [ $j -gt $i ]
do

echo "* \c"
j=$(( j - 1 ))
done
echo " "
done

shhjb@shhjb-Vostro-2520:~$ sh revstar.sh
*  *  *  *
*  *  *
*  *
*
```

6) Write shell script to generate multiplication table.

```
echo "Enter The Number:"

read no

for i in 1 2 3 4 5 6 7 8 9 10

do

echo "$no * $i = `expr $i \* $no`"

done
```

 Output:

```
     sagar@sagar-ThinkPad-SL500:~/Desktop$ sh Exp8.sh

     Enter The Number:
         5

     5 * 1 = 5

     5 * 2 = 10

     5 * 3 = 15

     5 * 4 = 20

     5 * 5 = 25
```

```
        5 * 6 = 30

        5 * 7 = 35

        5 * 8 = 40

        5 * 9 = 45

        5 * 10 = 50
```

7) Write shell script to print the numbers in ascending order using while loop.

```
echo "the no. in ascending order are:"
 a=0
 while [ $a -lt 10 ]
do
 echo $a
a=`expr $a + 1`
done

OUTPUT:

shhjb@shhjb-Vostro-2520:~$ sh asc.sh
the no. in ascending order are:
0
1
2
3
4
5
6
7
8
9
shhjb@shhjb-Vostro-2520:~$
```

8) Write shell script to print Fibonacci series.

```
echo enter number
read n
i=0
n1=0
echo Fibonacci series:
while [ $i -le $n ]
do
n3=`expr $n1 + $i`
n1=$n3
echo $n3
i=`expr $i + 1`
done

OUTPUT:
shhjb@shhjb-Vostro-2520:~$ sh fibo.sh
enter number
5
```

```
Fibonacci series:
0
1
3
6
10
15
shhjb@shhjb-Vostro-2520:~$
```

9) Write shell script for checking entered number is odd or even no.

```
echo " Enter the no. "
read m
rem=$(( $m % 2 ))
if [ $rem -eq 0 ]
then
echo "Number is even"
else
echo "Numner is odd"
fi
```

OUTPUT:

```
shhjb@shhjb-Vostro-2520:~$ sh oddeven.sh
 Enter the no.
4
Number is even
shhjb@shhjb-Vostro-2520:~$ sh oddeven.sh
 Enter the no.
7
Numner is odd
shhjb@shhjb-Vostro-2520:~$
```

10) Write shell script to demonstrate whether given no is Positive or not.

```
echo "Enter The Number:"
read number
if [ $number -gt 0 ]
then
echo "Number is Positive."
else
echo "Number is Negative."
fi
```

OUTPUT:

```
shhjb@shhjb-Vostro-2520:~$ sh posneg.sh
Enter The Number:
6
Number is Positive.
shhjb@shhjb-Vostro-2520:~$ sh posneg.sh
Enter The Number:
-9
Number is Negative.
shhjb@shhjb-Vostro-2520:~$
```

11) write shell script to find greatest number using if-then –else loop.

```
echo "Enter The First Number:"
read no1
echo "Enter The Second Number:"
read no2
if [ $no1 -gt $no2 ]
then
echo "No1 is Greater."
else
echo "No2 is Greater."
fi
```

OUTPUT:

```
shhjb@shhjb-Vostro-2520:~$ sh sgr.sh
Enter The First Number:
5
Enter The Second Number:
8
No2 is Greater.
shhjb@shhjb-Vostro-2520:~$
```

12) Write shell script to print given no in reverse order.

```
echo "enter the no"
read n
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 no. is $rev"
```

OUTPUT:

```
shhjb@shhjb-Vostro-2520:~$ sh revnum.sh
enter the no
12345
Reverse no. is 54321
shhjb@shhjb-Vostro-2520:~$
```

13) Write shell script to print Sum of digit of given no.

```
#Sumof Digits
echo enter no
read n
n3=0
while [ $n -gt 0 ]
do
n1=$(( $n % 10 ))
n3=$(( $n1 + $n3 ))
n=$(( $n \/ 10))
done
echo $n3
```

output:

```
shhjb@shhjb-Vostro-2520:~$ sh sumofdigit.sh
enter no
4567
22
shhjb@shhjb-Vostro-2520:~$
```

---

14) write shell script for checking string is palindrome or not.

```
#Palindrome
echo enter string
read n
a=$n
s=`echo $n | wc -c`
while [ $s -gt 0 ]
do
temp=`echo $n | cut -c $s`
s=`expr $s - 1`
temp1="$temp1$temp"
done
echo "reverse string is $temp1"
if [ $a = $temp1 ]
then
echo String is palindrome
else
echo String is not palindrome
fi

OUTPUT:
shhjb@shhjb-Vostro-2520:~$ sh pal.sh
enter string
madam
reverse string is madam
String is palindrome
shhjb@shhjb-Vostro-2520:~$ sh pal.sh
enter string
abc
reverse string is cba
String is not palindrome
shhjb@shhjb-Vostro-2520:~$
```

---

15) write shell script to print String in Reverse form

```
#String reverse
echo enter string
read n
s=`echo $n | wc -c`
while [ $s -gt 0 ]
do
temp=`echo $n | cut -c $s`
s=`expr $s - 1`
temp1="$temp1$temp"
done
```

```
echo "reverse string is $temp1"
```

output:

```
shhjb@shhjb-Vostro-2520:~$ sh strr.sh
enter string
abc
reverse string is cba
shhjb@shhjb-Vostro-2520:~$
```

---

16) write shell script for checking number is prime or not

```
#Prime number
echo Enter no
read n
i=2
while [ $i -lt $n ]
do
n1=$(( $n % $i ))
if [ $n1 -eq 0 ]
then
break
fi
i=`expr $i + 1 `
done
if [ $n1 -eq 0 ]
then
echo Number is not prime
else
echo Number is prime
fi


OUTPUT:
shhjb@shhjb-Vostro-2520:~$ sh prime.sh
Enter no
4
Number is not prime
shhjb@shhjb-Vostro-2520:~$ sh prime.sh
Enter no
5
Number is prime
shhjb@shhjb-Vostro-2520:~$
```

17) write shell script to perform mathematical operation using switch case
```
#Switch Case
echo "Enter a:"
read a
echo "Enter b:"
read b
echo "Enter your choice:"
echo "1.Add 2.Sub\n"
echo "3.Mul 4.Div\n"
read ch
case $ch in
1) expr $a + $b ;;
2) expr $a - $b ;;
3) expr $a \* $b ;;
```

```
4) expr $a \/ $b ;;
*) echo "Wrong Choice."
esac

OUTPUT:
shhjb@shhjb-Vostro-2520:~$ sh choice.sh
Enter a:
5
Enter b:
6
Enter your choice:
1.Add 2.Sub

3.Mul 4.Div

3
30
shhjb@shhjb-Vostro-2520:~$
```

---

18) write shell script for command line arguments

```
echo "enter first no "$1

echo "enter second no "$2

sum=$[ $1 +$2 ]

echo "Addition is "$sum

OUTPUT:

shhjb@shhjb-Vostro-2520:~$ ./commandline.sh 10 10
enter first no 10
enter second no 10
Addition is 20
shhjb@shhjb-Vostro-2520:~$
```

---

19) Write shell script using function for calculating mathematical operation.

```
add()
{
    echo "Enter 1 Number:"
    read val
    echo "Enter 2 no"
    read val1
}
add
echo "Addition is `expr $val + $val1`"
sub()
{
    echo "Enter 1 Number:"
    read val
    echo "Enter 2 no"
```

```
    read val1
}
sub
echo "substraction is `expr $val - $val1`"
mul()
{
    echo "Enter 1 Number:"
    read val
    echo "Enter 2 no"
    read val1
}
mul
echo "multiplication is `expr $val \* $val1`"
div()
{
    echo "Enter 1 Number:"
    read val
    echo "Enter 2 no"
    read val1
}
div
echo "Division is `expr $val \/ $val1 | bc`"
OUTPUT:
shhjb@shhjb-Vostro-2520:~$ sh fun.sh
Enter 1 Number:
5
Enter 2 no
8
Addition is 13
Enter 1 Number:
7
Enter 2 no
5
substraction is 2
Enter 1 Number:
5
Enter 2 no
8
multiplication is 40
Enter 1 Number:
10
Enter 2 no
2
Division is 5
shhjb@shhjb-Vostro-2520:~$
```

20) Program to perform swapping two number using function

```
swap()
{

temp=$a
a=$b
b=$temp
}
a=10
b=20
echo "before swapping $a and $b"
```

```
swap
echo "After swapping $a and $b"

OUTPUT:

shhjb@shhjb-Vostro-2520:~$ ./swap.sh
before swapping 10 and 20
After swapping 20 and 10
shhjb@shhjb-Vostro-2520:~$
```

21) Write shell script to display simple array .

```
array1=( 1 2 3 4 5 )
echo "Array Items: ${array1[*]}"
echo "Array Size: ${#array1[*]}"
echo "Third Position Element: ${array1[3]}"

OUTPUT:

shhjb@shhjb-Vostro-2520:~$ chmod u+x simplearr.sh
shhjb@shhjb-Vostro-2520:~$ ./simplearr.sh
Array Items: 1 2 3 4 5
Array Size: 5
Third Position Element: 4
shhjb@shhjb-Vostro-2520:~$
```

22) Write shell script to print index and item in array using for loop

```
tarray1=( 99 88 77 66 55 )

echo "Array Items"

for item in ${array1[*]}

do

printf "   %s\n" $item

done

echo "Array Indexes:"
for index in ${!array1[*]}

do
   printf "  %d\n" $index

done


echo "Array items and Indexes:"

for index in ${!array1[*]}

do
```

```
    printf "%4d: %s\n" $index ${array1[$index]}

done
```

OUTPUT:
```
shhjb@shhjb-Vostro-2520:~$chmod u+x arr.sh
shhjb@shhjb-Vostro-2520:~$ ./arr.sh
Array Items
    99
    88
    77
    66
    55
Array Indexes:
   0
   1
   2
   3
   4
Array items and Indexes:
    0: 99
    1: 88
    2: 77
    3: 66
    4: 55
shhjb@shhjb-Vostro-2520:~$
```

LPR PROGRAM LIST

1) Write shell script to display output using for loop and while loop
0
1 0
2 1 0
3 2 1 0
2) Write shell script to display output using for loop and while loop
1
2 2
3 3 3
4 4 4 4
5 5 5 5 5
3) Write shell script to display output using for loop and while loop
1
12
123
4) Write shell script to display output using for loop
*
* *
* * *
* * * *
* * * * *

5) Write shell script to display output using for loop
* * * *
* * *
* *
*

6) Write shell script to generate multiplication table.

7) Write shell script to print the numbers in ascending order using while loop.

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9) Write shell script for checking entered number is odd or even no.
10) Write shell script to demonstrate whether given no is Positive or not.
11) write shell script to find greatest number using if-then –else loop.
12) Write shell script to print given no in reverse order.
13) Write shell script to print Sum of digit of given no.

14) write shell script for checking string is palindrome or not.

15)write shell script to print String in Reverse form

16) write shell script for checking number is prime or not

17) write shell script to perform mathematical operation using switch case

18) write shell script for command line arguments

19) Write shell script using function for calculating mathematical operation.

20) Program to perform swapping two number using functions

21) Write shell script to display simple array.

22) Write shell script to print index and item in array using for loop.