DIKESH

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Program:

```
echo "Enter a Number"
read n
i=1

while [ $i -le 10 ]
do
    echo "$n x $i = $((n * i))"
    i=$((i + 1))
done
```

Output:

```
Enter a Number
3
3 x 1 = 3
3 x 2 = 6
3 x 3 = 9
3 x 4 = 12
3 x 5 = 15
3 x 6 = 18
3 x 7 = 21
3 x 8 = 24
3 x 9 = 27
3 x 10 = 30
```

Method 1: Using Recursive

```
#!/bin/bash
# Recursive factorial function

factorial() {
    product=$1

    # Defining a function to calculate factorial using recursion
    if ((product <= 2)); then
        echo $product
    else
        f=$((product - 1))
        # Recursive call
        f=$(factorial $f)
        f=$((f * product))
        echo $f
    fi
}

# Main program
# Reading the input from user
echo "Enter the number:"
read num

# Defining a special case for 0! = 1
if ((num == 0)); then
    echo 1
```

```
else
    # Calling the function factorial
    factorial $num
fi
```

Output:

```
Enter the number
5
120

Enter the number
3
24

Enter the number
6
720
```

Method 2: Using for loop

```
#!/bin/bash

# Shell script for factorial of a number

# Factorial using for loop


echo "Enter a number:"


# Read the number

read num


fact=1


for ((i = 2; i <= num; i++)); do

    fact=$((fact * i))

done


echo $fact
```

Output:

```
Enter a number

5

120


Enter a number

7

5040
```

Method 3: using do-while loop

```
#!/bin/bash

# Shell script for factorial of a number

# Factorial using while loop


echo "Enter a number:"

# Read the number

read num

fact=1


# -gt is used for '>' Greater than sign

while [ $num -gt 1 ]; do

    fact=$((fact * num))

    num=$((num - 1))

done


# Printing the value of the factorial

echo $fact
```

Output:

```
Enter a number

10

3628800

Enter a number

2

2
```

To find greatest of three number :

Program :

```
#!/bin/bash

echo "Enter the value of 'a':"
read a
echo "Enter the value of 'b':"
read b
echo "Enter the value of 'c':"
read c

if [ $a -gt $b ] && [ $a -gt $c ]; then
    echo "a is greatest"
elif [ $b -gt $a ] && [ $b -gt $c ]; then
    echo "b is greatest"
else
    echo "c is greatest"
fi
```

Output 1

```
$ ./biggest-of-three-nested-
if.sh
Enter value of 'a': 6
Enter value of 'b': 3
Enter value of 'c': 2
a is greatest
```

Output 2

```
$ ./biggest-of-three-nested-if.sh
Enter value of 'a': 5
Enter value of 'b': 6
Enter value of 'c':
3
b is greatest
```

Output 3

```
$ ./biggest-of-three-nested-if.sh
Enter value of 'a': 3
Enter value of 'b': 5
Enter value of 'c': 9
c is greatest
```

Program:

To print given number in reverse order

```
 read -p "Enter a number: " number
temp=$number
reverse=""
while [ $temp -ne 0 ]; do
    reverse=$reverse$((temp%10))
    temp=$((temp/10))
done
echo "Reverse of $number is $reverse"
```

Output

```
Enter a number: 123
Reverse of 123 is 321
```

To find even and odd numbers from given array:

Program:

```
clear
echo "---- EVEN OR ODD IN SHELL SCRIPT -----"
echo -n "Enter a number:"
read n
echo -n "RESULT: "
if [ `expr $n % 2` -eq 0 ]; then
   echo "$n is even"
else
   echo "$n is odd"
fi
```

Output

Enter a number: 12

RESULT: 12 is even

PROGRAM:

```
clear
sum=0
i="y"

echo "Enter the first number:"
read n1
echo "Enter the second number:"
read n2

while [ $i = "y" ]
do
   echo "1. Addition"
   echo "2. Subtraction"
   echo "3. Multiplication"
   echo "4. Division"
   echo "Enter your choice:"
   read ch

   case $ch in
      1) sum=`expr $n1 + $n2`
        echo "Sum = $sum";;
      2) sum=`expr $n1 - $n2`
        echo "Sub = $sum";;
      3) sum=`expr $n1 \* $n2`
        echo "Mul = $sum";;
      4) if [ $n2 -eq 0 ]; then
            echo "Error: Division by zero!"
        else
            sum=`expr $n1 / $n2`
            echo "Div = $sum"
        fi;;
      *) echo "Invalid choice";;
   esac

   echo "Do you want to continue? (y/n)"
   read i
   if [ "$i" != "y" ]; then
      exit
   fi
done
```

Output:

Enter the first number:
10
Enter the second number:
5
1. Addition
2. Subtraction
3. Multiplication
4. Division
Enter your choice:
1
Sum = 15
Do you want to continue? (y/n)
y
1. Addition
2. Subtraction
3. Multiplication
4. Division
Enter your choice:
4
Div = 2
Do you want to continue? (y/n)
n

Program 1: Checking Command Line Arguments

```
if [ "$#" -eq "0" ]; then
    echo ""
    echo "Enter at least 5 arguments"
    echo "Ex, sh 2.sh vicky TechiCraze 1 2 3"
    echo ""
    exit
fi

echo ""
echo "Arguments passed:"
echo "$1 $2 $3 $4 $5"
echo ""
echo "Arguments passed in reversed order:"
echo "$5 $4 $3 $2 $1"
echo ""
```

Output:

```
# sh 2.sh
# Enter at least 5 arguments
# Ex, sh 2.sh vicky TechiCraze 1 2 3

# sh 2.sh vicky TechiCraze 1 2 3
# Arguments passed:
# vicky TechiCraze 1 2 3
# Arguments passed in reversed order:
# 3 2 1 TechiCraze vicky
```

Program 2: Menu Driven Program

```
ch=0
while [ $ch -ne 4 ]; do
    echo "Menu"
    echo "1. Factorial"
    echo "2. Greatest of 3 Numbers"
    echo "3. Reverse of a Number"
    echo "4. Exit"
    echo "Enter your choice: "
    read ch

    case $ch in
        1)
            echo "Enter the Number: "
            read num
            i=1
            fact=1
            while [ $i -le $num ]; do
                fact=$(expr $fact \* $i)
                i=$(expr $i + 1)
            done
            echo "Factorial of $num is: $fact"
            ;;
        2)
            echo "Enter 3 Numbers: "
            read n1
            read n2
            read n3
            if [ $n1 -gt $n2 -a $n1 -gt $n3 ]; then
                echo "$n1 is the greatest Number"
            else
                if [ $n2 -gt $n3 -a $n2 -gt $n1 ]; then
                    echo "$n2 is the greatest Number"
                else
                    echo "$n3 is the greatest Number"
                fi
            fi
            ;;
        3)
            echo "Enter a Number: "
            read num
            n=$num
```

```
        rev=0
        while [ $num -gt 0 ]; do
            s=$(expr $num % 10)
            rev=$(expr $rev \* 10 + $s)
            num=$(expr $num / 10)
        done
        echo "Reverse = $rev"
        ;;
    4)
        exit 0
        ;;
  esac
done
```

Output:

```
# sh 1b.sh
# Menu
# 1. Factorial
# 2. Greatest of 3 Numbers
# 3. Reverse of a Number
# 4. Exit
# Enter your choice:
# 1
# Enter the Number:
# 6
# Factorial of 6 is: 720
```