1. SHELL PROGRAMMING I

Aim:

To write simple programs using shell programming constructs.

Algorithm:

a) ADDITION OF TWO NUMBERS.

Step1: Start the program.
Step2: Read the values of a and b.
Step3: Add the two values.
Step4: Display the result.
Step5: Stop the program.

b) FACTORIAL OF A NUMBER

Step1: Start the program.
Step2: Read the value from the user
Step3: Initialize the value of fact=1.
Step4: Compute the factorial using for loop.
Step5:Display the factorial.
Step6:Stop the program.

c) GREATEST OF THREE NUMBERS

Step1: Strat the program
Step 2: Read the values of a,b,c from the user.
Step3: Compare all three values using if else condition
Step4: Run the program.
Step5: Display the reuslt.
Step6: Stop the program.

d) FIBONACCI SERIES

Step1: Start the program.
Step2: Get the value of n from the user.
Step3: Add the values repeatedly using for loop.
Step4: Assign the value of b to c and a to b respectively.
Step5: Display the series.
Step6: Stop the program.

e) CHECK WHETHER A NUMBER IS ARMSTRONG OR NOT

Step1: Start the program.
Step2: Get a number form the user.
Step3: Assign the number to another variable and initialize value of sum=0.
Step4: Perform modulo operation and sum operation using for loop.
Step5: Display the result.
Step6: Stop the program.

f) MENU DRIVEN CALCULATOR

Step1: Start the program.
Step2: Get the value of a and b form the user.
Step3: Get the choice from the user to perform needed arithmetic operation.
Step4: Depending upon the entered choice, perform the desired arithmetic operation.
Step5: Display the result.
Step6: Stop the program.

g) 1!+2!+3!+…+n!.

Step1: Start the program.

Step2: Initialize the value of sum=0 and fact=1.
Step3: Execute the factorial using nested for loop.
Step4: Calculate the sum using for loop.
Step5: Display the output.
Step6: Stop the program.

h) $1+x+x^2+x^3+\ldots x^n$
Step1: Start the program.
Step2: Read the value of x and n.
Step3: Initialize the value of sum=1.
Step4: Evaluate the series using nested for loop.
Step5: Display the output.
Step6: Stop the program.

i) Reverse of a Number.
Step1: Start the program.
Step2: Read the value from the user.
Step3: Initialize the value of no, temp and t.
Step4: Using for loop, perform modulo operation to get the reverse of a number.
Step5: Display the output.
Step6: Stop the program.

Program:

a)
```
#ADDITION OF TWO NUMBERS
echo  enter  the  2  numbers
read  a
read  b
c=`expr  $a +  $b`
echo  sum  of  two  numbers =  $c
d=`expr  $a - $b`
echo  subtraction of two numbers= $d
e=`expr $a \* $b`
echo multiplication of two numbers= $e
f=`expr $a / $b`
echo division of two numbers= $f
```

OUTPUT:

```
enter the two numbers
10
5
sum of two numbers =15
difference of two numbers =5
multiplication of two numbers=50
division of two numbers=2
```

b)
```
#FACTORIAL OF A NUMBER
echo "enter the no to find the factorial"
read n
f=1
```

```
for((i=1;i<=n;i++))
do
f=`expr $f \* $i`
done
echo "the factorial is  of" $n “is “ $f
```

OUTPUT:

```
Enter the no to find the factorial
5
The factorial is  5 is 120
```

c) #MAXIMUM OF 3 NUMBERS

```
echo "enter 3 values"
read a
read b
read c
if [ $a -gt $b -a $a -gt $c ]
then
    echo "the greatest value is" $a
elif [ $b -gt $c ]
then
    echo "the greatest value is" $b
else
    echo "the greatest value is" $c
fi
```

OUTPUT:

```
enter 3 values
4
8
6
the greatest value is 8
```

d) #FIBONACCI SERIES

```
echo "enter the number of terms"
read n
a=1
b=0
c=0
echo Fibonacci Series :
for((i=1;i<=n;i++))
do
  echo $c
  c=`expr $a + $b`
```

```
  a=$b
  b=$c
done
```

OUTPUT:

```
enter the number of terms :
8
Fibonacci Series

0    1         1         2         3         5         8         13
```

e) #ARMSTRONG NUMBER OR NOT

```
echo "enter the number to check armstrong"
read n
a=$n
s=0
while((n!=0))
do
 x=`expr $n % 10`
 y=`expr $x \* $x \* $x`
 s=`expr $s + $y`
 n=`expr $n / 10`
done
if [ $a == $s ]
then
echo "it is armstrong"
else
echo "it is not armstrong"
fi
```

OUTPUT:

```
enter the number to check Armstrong
153
it is armstrong

enter the number to check Armstrong
191
it is not Armstrong
```

f) #MENU DRIVEN CALCULATOR

```
echo  enter  the  2  values
read  a
read  b
echo  1. Addition    2.Subtraction  3.Multiplication    4.Division
echo  Enter your choice
read  ch
```

```
case $ch in
1)c=`expr  $a +  $b`
  echo  sum  of  two  numbers =  $c
 ;;
2)c=`expr  $a - $b`
  echo  subtraction of two numbers= $c
  ;;
3)c=`expr $a \* $b`
  echo multiplication of two numbers= $c
  ;;
4)c=`expr $a / $b`
  echo division of two numbers= $c
   ;;
*)echo  Invalid choice
  ;;
esac
```

OUTPUT:

```
enter the two numbers
10
5
1. Addition    2.Subtraction  3.Multiplication    4.Division
Enter your choice : 3
multiplication of two numbers=50
```

g) #1!+2!+3!+…+n!

```
echo “Enter the range”
read n;
sum=0;
fact=1;
for(i=0;i<$n;i++)
do
fact=’expr $fact \* $j’
done
sum=’expr $fact + $sum’
done
echo “Sum of factorial series ”$sum
```

OUTPUT

```
Enter the range
3
Sum of factorial series 9
```

h) #1+x+x^2+x^3+….+x^n

```
echo “Enter the range”
```

```
read n;
echo “Enter value”
read x
p=1;sum=1;
for((i=1;i<=$n;i++))
do
for((j=1;j<=1;j++))
do
p=’expr $x \* $p’
done
sum=’expr $sum + $p’
done
echo “Sum of the given series” $sum
```

OUTPUT

```
Enter the range
3
Enter the value
2
```

i) #REVERSE OF A NUMBER

```
Sum of the given series 15.
echo enter a number
read n
sum=0
while((  n!=0  ))
do
   a=`expr $a % 10`
   n=`expr $n / 10`
   sum=`expr 10 \* sum + $a`
done
echo the reverse of the number is $sum
```

OUTPUT:

```
enter the number
1234
the reverse of the number is 4321.
```