DATE:14.11.14

**ASSIGNMENT NO.4**

->PROBLEM STATEMENT:

Write a program in C to find the sum of the following series,where x and number of terms are inputed from the user

**->ALGORITHM:**

**Step 1:**Input the number of terms we want to add,*t*

**Step 2:-** Do

1. Input the value of x where 0<x<=2

[End of Do…]

**Step 3:-** While(*x<=0* OR *x>2*)

[End of do while loop ]

**Step 4:**Input the number of terms we want to add,*n*

**Step 5:-** Initialise *sum←1,var←1,term←1,c←1,c1←1*

**Step 6:-** While *c1<=t*

1. *fact=1*
2. For *i=1 to var*
3. *fact←fact\*i*

[End of For loop]

1. *numerator←pow(x,c)*
2. Increment *var* by 1
3. Increment *c* by 1
4. Increment *c1* by*1*
5. *sum←sum+(numerator/fact)*
6. [End of while loop]

**Step 7:-**Print sum

**Step 8:-** End

->CODE:

/\*\*\*\*\*\*\*TO FIND THE SUM OF GIVEN SERIES\*\*\*\*\*\*\*\*\*/

#include<stdio.h>

#include<conio.h>

#include<math.h>

void main()

{

/\*Declaration of variables\*/

int var,n,fact=1,c1=1,c=1,i;

float sum=1,numerator,x;

clrscr();

/\*Check and input the value of x and n\*/

do

{

printf("\n enter the value of x where 0 < x <=2 \n");

scanf("%f",&x);

}

while(x<=0||x>2);

printf("\n enter the number of times we want to add the terms \n");

scanf("%d",&n);

var=1;

/\*Find the sum of the given series\*/

while(c1<=n-1)

{

fact=1;

for(i=1;i<=var;i++)

{

fact=fact\*i;

}

numerator=pow(x,c);

c=c+1;

c1=c1+1;

var=var+1;

sum=sum+(numerator/fact);

}

printf("\n the sum of the series is\n");

printf("%f",sum);

getch();

}

**->OUTPUT**

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*OUTPUT\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*1ST RUN\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

enter the value of x where 0 < x <=2

3

enter the value of x where 0 < x <=2

-5

enter the value of x where 0 < x <=2

.4

enter the number of times we want to add the terms

3

the sum of the series is

1.480000

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*2ND RUN\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

enter the value of x where 0 < x <=2

2

enter the number of times we want to add the terms

3

the sum of the series is

5.000000

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

**->DISCUSSION:**

A loop statement allows us to execute a statement or group of statements multiple times and following is the general form of a loop statement in most of the programming languages:There are two types of loops. These are “Entry-controlled” loop and “Exit-Controlled” loop. “for” loop and “while” loop are “Entry-controlled” loop while “do-while” loop is “Exit-controlled” loop.

**FOR LOOP:**

The “for loop” loops from one number to another number and increases by a specified value each time

The syntax of for loop is-

for ( variable initialization; condition; variable update )

{

Code to execute while the condition is true

}

**DO WHILE LOOP**

The “do while loop” is almost the same as the while loop.The syntax of do while loop is-

do

{

}

while ( condition );