S.No: 8	Exp. Name: ***Design an algorithm and implement using a C program which finds the sum of the infinite series***	Date:2023-04-01

Aim:

Design an algorithm and implement using a C program which finds the $\boxed{\text{sum}}$ of the $\boxed{\text{infinite series}}$
$1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} + \ldots,$
Print the result as shown in the example.

Sample Input and Output:

```
Enter the value of x and n: 4 5
sum = 3.666667
```

Source Code:

infinite.c

```c
#include<stdio.h>
#include<math.h>
int main()
{
    int x,n,m,i=0,fact=1;
    float k,sum=0;
    printf("Enter the value of x and n: ");
    scanf("%d%d",&x,&n);
    while(i<=n)
    {
        if(i%2==0)
        {
        fact=1;
        for(m=1;m<=i;m++)
        {
        fact=fact*m;
        }
        k=(pow(x,i))/fact;
        }
        if(i%4!=0)
        {
        fact=1;
        for(m=1;m<=i;m++)
        {
        fact=fact*m;
        }
        k=-(pow(x,i))/fact;
        }
        sum=sum+k;
        i=i+2;
    }
    printf("sum = %f",sum);
}
```

Execution Results - All test cases have succeeded!

Test Case - 1
User Output
Enter the value of x and n: 4 5
sum = 3.666667

Test Case - 2
User Output
Enter the value of x and n: 12 5
sum = 793.000000