S.No: 8	Exp. Name: ***Design an algorithm and implement using a C program which finds the sum of the infinite series***	Date:2023-04-03

Aim:

Design an algorithm and implement using a C program which finds the `sum` of the `infinite series`
$1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} + \ldots\ldots,$
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

```
#include<stdio.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