

Sreenidhi University

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2024_28_CPP Programming Lab_CSE A

2028_SUH_CPP_COD_Cycle 4

Attempt : 1

Total Mark : 40

Marks Obtained : 40

Section 1 : Coding

1. Problem Statement

Write a program that prints the multiplication table for a given integer up to 10 using a while loop.

Answer

```
// You are using GCC
#include <iostream>
using namespace std;
int main() {
    int num;
    cin>>num;
    int i=1;
    while(i<=10)
    {
        cout<<num<<"x"<<i<<"="<<num*i<<endl;
```

```
        i++;  
    }  
    return 0;  
}
```

Status : Correct

Marks : 10/10

2. Problem Statement

You are given a positive integer x and a non-negative integer n . Your task is to compute the sum of the first n terms of a geometric series with the first term as 1 and common ratio x .

The geometric series can be expressed as follows:

$$1 + x + x^2 + x^3 + \dots + x^n.$$

If $x = 1$, then all terms in the series are equal to 1, so the sum of the first n terms is $n + 1$. If $x \neq 1$, the sum of the series is given by the formula: $\text{Sum} = \frac{x^{n+1} - 1}{x - 1}$.

Answer

```
// You are using GCC  
#include <iostream>  
#include <iomanip>  
#include <cmath>  
using namespace std;  
  
int main()  
{  
    double n,x;  
    cin>>x;  
    cin>>n;  
    double sum=0.0;  
    if(x==1)  
    {  
        sum=n+1.0;  
    }  
    else  
    {  
        sum=(pow(x,n+1)-1)/(x-1);  
    }  
}
```

```
}  
cout<<fixed<<setprecision(2)<<sum<<endl;  
return 0;  
}
```

Status : Correct

Marks : 10/10

3. Problem Statement

You are given a positive integer n . Your task is to compute the sum of factorials of all integers from 1 to n .

The factorial of a positive integer k is defined as:

$$k! = k \times (k-1) \times (k-2) \times \dots \times 1$$

For example, $4! = 4 \times 3 \times 2 \times 1 = 24$.

The result should be the sum of $1! + 2! + 3! + \dots + n!$.

Answer

```
// You are using GCC  
#include <iostream>  
using namespace std;  
int main()  
{  
    int n,i,fact=1,sum=0;  
    cin>>n;  
    for(i=1;i<=n;i++)  
    {  
        fact=fact*i;  
        sum=sum+fact;  
    }  
    cout<<sum<<endl;  
    return 0;  
}
```

Status : Correct

Marks : 10/10

4. Problem Statement

You are required to compute the value of a mathematical series up to a specified precision. The series is defined as follows:

The series continues until the absolute value of the term being added or subtracted becomes less than 0.0001. Your task is to write a program that calculates the sum of this series for a given input value x.

Answer

```
// to find sum of series for a given x
#include <iostream>
#include <iomanip>
#include <cmath>
using namespace std;
double calculateseries(double x)
{
    double term=1.0;
    double sum=term;
    int n=2;
    while(fabs(term)>=0.0001)
    {
        term*=-x*x/((n-1)*n);
        sum+=term;
        n+=2;
    }
    return sum;
}
int main()
{
    double x;
    cin>>x;
    double result=calculateseries(x);
    cout<<fixed<<setprecision(2)<<result<<endl;
    return 0;
}
```

Status : Correct

Marks : 10/10