Week 4 Programming Assignment 1

Due on 2020-02-26, 23:59 IST

Write a program that takes as input two numbers n (integer) and x (double), and prints \( \cos(x) \) evaluated by taking n terms of the Taylor series (using \( x_0 = 0 \)):

\[
\cos(x) = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} + \ldots
\]

Sample Test Cases

<table>
<thead>
<tr>
<th>Input</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Case 1</td>
<td>100 1.3</td>
</tr>
<tr>
<td>Test Case 2</td>
<td>10 1</td>
</tr>
<tr>
<td>Test Case 3</td>
<td>100 1.8</td>
</tr>
</tbody>
</table>

The due date for submitting this assignment has passed.

As per our records you have not submitted this assignment.

Sample solutions (Provided by instructor)

```cpp
#include <iostream>
#define repeat(x) for(int _iterator_i = 0, _iterator_limit = x; _iterator_i < _iterator_limit; _iterator_i++)
#define main_program int main()

#include <cmath>
using namespace std;

main_program
{
  int n;
  double x;
  cin >> n >> x;
  double sum = 1, term = 1;
  for(int i=0; i<n-1; i++)
  {
    // sum : of terms 0 through i
    // term : ith term, counting from 0.
```
16    term = - term * x * x/(2*i+2)/(2*i+1);
17    sum = sum + term;
18    }
19    cout << sum << endl;
20    }
21    }