1. In your lab5, please exclude all source files from build, and add a new cpp file, named “quiz\_lab5.cpp”. This file contains just a program shell in which you will write all the programming statements needed to complete the program. Here is a copy of the current contents of quiz\_lab5.cpp.

// quiz\_lab5.cpp (2014/03/20)

// This program displays a series of terms and computes its sum.

//include the needed library

using namespace std;

int main()

{

int num, term, numTerm;

double sum = 0.0; //Accumulator that adds up all terms in the series

char again = 'y';

// Use while LOOP to ask the user if he or she wishes to compute another n, and which continues to iterate so long as the user enters ’y’ or ’Y’

{

cout << "This program sums the series \n"

<< "1 + 1/2! + 1/3! + ... + 1/n! \n";

cout << "What should n be in the final term (2 ~ 5)?\n";

// WRITE THE CODE TO START A FOR LOOP THAT LOOPS ONCE FOR EACH TERM.

// WRITE THE CODE TO PRINT THIS TERM.

// IF IT IS NOT THE LAST TERM, FOLLOW IT WITH A +

// IF IT IS THE LAST TERM, FOLLOW IT WITH A =

// WRITE THE CODE TO ADD THE VALUE OF THIS TERM TO THE ACCUMULATOR.

}

// WRITE A LINE OF CODE TO PRINT THE SUM.

cout << "Do you want to try another n ?(enter \'y\' or \'n\') \n";

}

return 0;

}

1. Design and implement the quiz\_lab5.cpp program to generate and print the terms and the sum of the following series: 1 + 1/2! + 1/3! + ... + 1/n!

**[Specifications]**

Your program need to generate and print the terms and the sum of this series up through the nth term, where the user enters a value for n between 2 and 5.

For example, if the user enters 5, the program will display the terms and compute and print the summation of the following terms: 1 + 1/(2!) + 1/(3!) + 1/(4!) + 1/(5!)

**[Sample Run]**

This program sums the series

1 + 1/2! + 1/3! + ... + 1/n!

What should n be in the final term (2 ~ 5)?

**2**

1/1! + 1/2! = 1.5

Do you want to try another n ?(enter 'y' or 'n') **y**

This program sums the series

1 + 1/2! + 1/3! + ... + 1/n!

What should n be in the final term (2 ~ 5)?

**3**

1/1! + 1/2! + 1/3! = 1.66667

Do you want to try another n ?(enter 'y' or 'n') **y**

This program sums the series

1 + 1/2! + 1/3! + ... + 1/n!

What should n be in the final term (2 ~ 5)?

**4**

1/1! + 1/2! + 1/3! + 1/4! = 1.70833

Do you want to try another n ?(enter 'y' or 'n') **y**

This program sums the series

1 + 1/2! + 1/3! + ... + 1/n!

What should n be in the final term (2 ~ 5)?

**5**

1/1! + 1/2! + 1/3! + 1/4! + 1/5! = 1.71667

Do you want to try another n ?(enter 'y' or 'n') **n**

1. Once you have your program working, test it with several data, and ask TAs to check your results.
2. Copy the codes and your test output to your answer file. Upload your “quiz\_lab5.cpp” and the answer file to the “online\_quiz\_lab5” section on iLMS.

**[Reference Code] (ONLY for TAs)**

// quiz\_lab5.cpp (2014/03/20)

// This program displays a series of terms and computes its sum.

#include <iostream>

#include <cmath>

using namespace std;

int main()

{

int num, term, numTerm;

double sum = 0.0; //Accumulator that adds up all terms in the series

char again = 'y';

while(again=='y'||again=='Y'){

cout << "This program sums the series \n"

<< "1 + 1/2! + 1/3! + ... + 1/n! \n";

cout << "What should n be in the final term (2 ~ 5)?\n";

cin >> numTerm;

// WRITE THE CODE TO START A FOR LOOP THAT LOOPS ONCE FOR EACH TERM.

for(num=1, term=1; num<=numTerm; num++){

// WRITE THE CODE TO PRINT THIS TERM.

cout<<"1/"<<num<<"!";

// IF IT IS NOT THE LAST TERM, FOLLOW IT WITH A +.

// IF IT IS THE LAST TERM, FOLLOW IT WITH A =.

if(num==numTerm){

cout<<" = ";

}

else{

cout<<" + ";

}

// WRITE THE CODE TO ADD THE VALUE OF THIS TERM TO THE ACCUMULATOR.

term \*= num;

sum += 1.0/term;

}

// WRITE A LINE OF CODE TO PRINT THE SUM.

cout<<sum<<endl;

sum = 0.0;

cout << "Do you want to try another n ?(enter \'y\' or \'n\') ";

cin >> again;

}

return 0;

}