Guidelines

To complete this assignment you must hand in a report including:

1. Title
   - The name of the homework assignment. Ex. “Bisection Method”

2. Description of Problem
   - Description of the problem with a discussion of relevant mathematics. Ex. Explain how and why the bisection method works. Be specific and include a few steps worked out by hand with explanations of each step.

3. Description of the Program
   - Description of your program which describes the algorithm you used and details your implementation. Ex. Explain how you implement the bisection method. You may also copy the relevant piece of code to help explain your implementation.

4. Results and Conclusions
   - Discussion of the results including any tables or figures needed. Ex. Tell me all the roots for the two equations with error bounds. You must also explain why you believe the answer is correct. The correct answer alone is not enough, you have to convince me that it is correct to get credit for it.

5. Program Listing
   - Include all your source code, makefiles and instructions on how to execute your code.

You must also email me your source code, makefiles and instructions on how to execute your code.

- Email me at mwillyar@math.fsu.edu
- Include [MAT5939] in the subject line of the email.
1 Compiling

Compile and execute a piece of code which outputs a ‘hello’ word along with the time it takes to print.

For this assignment, you will need:

- to download a c++ compiler: http://gcc.gnu.org/.
- The following piece of code is given below.

```c++
#include <iostream>
#include <sys/time.h>
#include <cmath>

using namespace std;

int main()
{
    double result = 0;
    // definition of time variables
    struct timeval startTime;
    struct timeval endTime;

    gettimeofday(&startTime, NULL);
    cout << "Bonjour comment ca va ?" << endl;
    for (int i = 0; i < 1000; i++){
        result = cos(M_PI);
    }
    gettimeofday(&endTime, NULL);

    // calculate time in microseconds
    double tS = startTime.tv_sec*1000000 + (startTime.tv_usec);
    double tE = endTime.tv_sec*1000000 + (endTime.tv_usec);
    cout << "It took " << tE-tS << " microseconds to loop!" << endl;

    return 0;
}
```