1. What was the most useful technique you used to find the bugs? Why was it more useful than other techniques you tried?

The most useful technique is to directly display the result for each testing functions to find the bugs. Since this is a relatively small program and every function is small, directly displaying results simplifies debugging by immediately showing what each function output without complex of using debugging tools. This approach is very effective for finding out incorrect calculations in a straightforward manner. It is also helpful in making changes to the code until the expected results is achieved.

1. Look up answers to the following questions and report your findings:
   1. What are the largest integer and double values you can store?

The largest value for an integer value can store is 2,147,483,647, and for a double value is 1.7\*10^308.

* 1. Why is there a limit on the maximum value you can store in a variable?

The limit on the maximum value is due to the memory allocated to every variable. Each data type is assigned with a specific amount of memory in terms of bits. It determines how much the range of value it can store and represent.

* 1. If you exceed the maximum value an integer can hold, what happens? Explain why the format causes this to happen.

If a code exceeds the maximum value of an integer, it leads to integer overflow. Which means the value will wrap around to the negative range of the integer representation. This is because fixed number of bits are set and adding any positive integer causes the value to go back around.

* 1. What is the format for the storage of a floating point variable? How does this differ from the way an integer is stored?

Floating-point are stored using the IEEE 754. It allocates bits for sign, exponent. This is different from how an integer store the value. Due to this reason, floating-point allows for a vast range of value but it lose some precision.

1. What is the default amount of stack memory that is given to a program when Visual Studio starts a C or C++ program? What is the default heap size? Did you hit any of the limits? If so, which one(s)? If you hit a limit, would increasing the amount of memory allocated to the program fix the problem? Justify your answer. Why do they limit the stack and heap size for a program?

The default stack size in Visual Studio is 1MB. And the default heap size vary but is significantly larger. It can be several GBs. In the cod example, I didn’t find the program hit the limits. However, it is better to solve the issue by checking the memory usage and ensure the memory efficiency. A limit of stack and heap size is to ensure individual programs not consume too much system resources. It could affect the whole computer stability.