CSE 165: Object Oriented Programming
Spring 2022
Lab 1 (100 points)

For the following lab assignment, complete each item as instructed using the provided materials in the folder corresponding to the item. For example, to complete item 1, modify hello.cpp in the folder /1.

1 Hello World (10 points)

Write a program that prints out:

Hi, my name is [Your Name]!

2 Area of a Circle (10 points)

Create a program that asks for the radius of a circle and prints the area of that circle.

3 Counting Words (20 points)

Create a program that opens a file named words.txt and counts the whitespace-separated words in that file.

```
—— words.txt
This is a file that contains many words.
Yes it does have so many words. Many, many words.
Well, maybe it is not that many after all.
So, just how many is MANY?
——
```

4 Word Occurrences (20 points)

Create a program that reads in a word from the user and counts the number of occurrences of that word in a file called words.txt.

```
—— words.txt
This is a file that contains many words.
Yes it does have so many words. Many, many words.
Well, maybe it is not that many after all.
So, just how many is MANY?
——
```

5 Reversing a File (20 points)

The FillVector.cpp program prints its own lines with numbers at the beginning of each line. Modify this program in the following ways. First, make it read and print the lines of a file called "code.cpp". Second, print the same content with the line numbers reversed (i.e. starting with the highest number and counting down).

```cpp
— Fillvector.cpp
#include <string>
#include <iostream>
#include <fstream>
#include <vector>
using namespace std;

int main()
{
vector<string> v;
ifstream in("file.txt");
string line;
while (getline(in, line)) //getline returns true if read successfully
    v.push_back(line); // Add the line to the end of v
// Add line numbers:
for(int i = 0; i < v.size(); i++)
    cout << i << ": " << v[i] << endl;
}

— code.cpp
#include <iostream>
#include <math.h>
using namespace std;

int main(int argc, char *argv[]) {
        double a, b, c;

        cin >> a;
        cin >> b;
        cin >> c;

        cout << (-b + (sqrt((b * b) - (4 * a * c)))) / (2 * a) << endl;
        cout << (-b - (sqrt((b*b) - (4 * a * c)))) / (2 * a) << endl;
}
—
```

6 Reversing a File (20 points)

Change Fillvector.cpp so that it concatenates all the elements in the vector into a single string before printing it out, but do not try to add line numbering. Again, read the file named "code.cpp" as in the previous exercise.