Quest 13

300 EXP

CPSC121 SI

Erin: Hello. Today will be the day you learn how to read from and write to files.

Erin: This is some exciting stuff. In order to read/write to files, you will need to include the fstream library. There are two stream objects that we will be focusing on, ifstream and ofstream. Ifstream is for input file streams and ofstream is for output file streams.

Erin: ofstream is simpler so we'll start with that. You can create an ofstream object to write to files. For example:

```
ofstream fout;
fout.open("data.txt");
fout << Hello World!";
fout.close();
```

Erin: You can name your ofstream object whatever you would like (as long as it doesn't conflict with already defined keywords). It can be fout, myFile, outputFile, etc. Once you name it, you must use that name from then on. After you name it, you need to tell it what file it needs to open. In this case, we open data.txt. The filename is passed as a parameter in a string format. In this case, data.txt is in the current directory. If you would like to open a file elsewhere in your computer, you would have to send the file path as a parameter.

Erin: If data.txt does not exist at the specified location, then ofstream objects will create a new file with that name and write to it. When you write to the file, treat your object like a cout object. In this case I simply substituted cout with fout (my ofstream object name) in order to replicate cout like results in the file.

Erin: Finally, close your connection to the file once you are done with it. Although I believe visual studios will automatically close the connection for you, it is good practice to close it manually in case your code is run elsewhere.

Erin: ifstream objects are different than ofstream objects. They take in input, but what makes them different is that the file needs to open properly and you need to read the file as if everything in the file is in the input buffer.

Erin: Here's an example of ifstream in action:

```
char c;
ifstream fin;
fin.open("mydata.txt");
if(!fin)
{
   cout << "Unable to open file properly.\n";
   return 0;
}
while(fin >> c)
{
   cout << "I just grabbed " << c << " from the file.\n";
}
fin.close();
```

Erin: In this example, we created an ifstream object named fin. Again you can name this object whatever you would like. Then after "opening" mydata.txt I checked if not fin. I am checking if the ifstream object fin did not open. If fin did not open mydata.txt then I display the error and exit. If fin did open mydata.txt, then I loop through the content of the file.

Erin: Remember that the way I looped in the example is the "better" way of going through a file. The other way is using eof(). This checks for the end of file, but should we have whitespace at the end of the file, this could result in buggy code. So go with what is shown in the example.

Erin: Now that you know how to read and write to files, I would like you read the txt file in the Quest Items/Quest 13 folder. The txt file will be called mydata.txt and it contains a bunch of integers. What you must do is read each integer from the file, and keep a running sum of those integers. I want you to write to another file (one of your choosing, like result.txt) every time you read in a new integer. So if mydata.txt has the contents: 1 2 3 4 5, I expect the output to be the following:

New integer = 1. New Sum = 1.
New integer = 2. New Sum = 3.
New integer = 3. New Sum = 6.
New integer = 4. New Sum = 10.
New integer = 5. New Sum = 15.

Erin: Good luck on your quest. Please show your SI Leader once you have completed it.