Lab 7: Removing Globals

1. Getting rid of global variables

1. Copy the `lab7_reVariable.cpp` file provided on the course website into your project.
   - **Rename the file to be `lab7.cpp`**
   - This file contains a small program which reads some information in from the user and displays it in a summary.
   - It works fine; however, the problem is it's written using a number of global variables. Read through the code and understand where each variable is used, and what it does.
2. Change the `lab7.cpp` program to get rid of **all** global variables.
   - You may need to change the parameters and/or return types of functions.
   - Do not remove any of the current functions.
   - The program should seem identical to the user (same functionality).
   - Do not remove any of the global constants; they are fine.
   - Global constants are fine.
   - Hints:
     - Any function which changes the value of a global variable should instead *return* that value.
       - When changing a function to return a value, you'll have to change all code which calls that function to “catch” the returned value and do something with it. This will likely be storing the returned value in a local variable (instead of a global variable).
     - Any function which requires the value from a global variable should instead be *passed* that value as a parameter.
     - In the end, each of the global variables will likely become a local variable inside some function. You might set it with the return value from a function, and then pass it as an argument into other functions.
     - If stuck, first look for global variables which are only used inside a single function. Switch those to local variables first.
3. **Understanding**
   - What is the advantage of removing global variables?
   - [Optional] Did you have any functions which accept no parameters? Which one(s)? What does this tell you about how the data flows into or out-of this function?
   - [Optional] Did you have any functions which accepted multiple parameters? Which one(s)? What does this tell you about how the data flows into or out-of this function?
   - [Optional] What technique did you use when a function was writing to a global variable?

4. **Optional**
   - Change the program to use prototypes and put the functions below `main()`.
   - Vectors (which we'll learn next week) can be used to store numerous values in one variable, such as storing the shoe size of everyone in the class in one vector:
     `vector<int> shoeSizes;`
     Change the program's `main()` to first read in all the user data (height and age) and store those into two vectors. Then change the `printCustomerInfo()` function to loop through both vectors printing the summary. You may need to look up how to use vectors, such as this vector tutorial.

2. Lab credit

- Complete above steps in one file. OK to skip any "optional" sections.
- Comment your code correctly: comment for every ~2-5 lines of code.
- Submit your code to CourSys.

