CS 120 Project 3

Due on Blackboard by Friday, February 16

For this project, you will design, implement, use, and test two C++ classes, where a vector of objects of one class (the component class) is a field of the other class.

Design

Think about what your classes will represent. What data do they hold and what data types? How will you store the vector of objects in a file? What goes in the component class and what goes in the other class? Does the data have restrictions on their values? What functionalities can they perform? What will your program do with the class objects?

Some examples (do not use):

- A Library class that contains a vector of Books read in from a file. Give options for the user to display the books available, add a new book, check out a book, and return a book. Loop with those options until the user decides to exit the program.
- A Song class that contains a vector of Notes read in from a file. Give options for the user to display the song, add notes, remove notes, and change the pitch/length of notes. Loop with those options until the user decides to exit the program.

Implement

Your program should be able to read a vector of objects from a file. Your class must have functionality to add and delete elements from the vector of components. You should have a method to display/print the vector of components. If appropriate, you should also be able to search/find an element with a specific property from the vector. At least one public method of the component class must be called in a public method of the other class.

Your classes should be declared in one or two header file(s) (with RMEs and other comments) and defined in corresponding .cpp file(s). Your testing should be in testing.cpp and your program should be in main.cpp.

You should submit your class files, testing.cpp, main.cpp, and the file that you read into your program on Blackboard by midnight on the due date.

You may reuse your code from previous projects if appropriate.

Grading

The project is out of 70 points.

Design and Style

2 pts	Are there at least four files and does each file have the correct code?
5 pts	Are there sufficient comments and/or writings to explain what each method accomplishes and what each field represents?
5 pts	Do the files follow the style guidelines from class? Are they readable? Do the names make sense for the theme of the project?
10 pts	Is there evidence of a well-thought-out design? Does each method have a clear purpose? Is this the best way to implement the class given the functionality goals?

Implementation

5 pts	Does the code compile and run?
8 pts	Are there two classes, with a vector of objects of one class included as a property of the other class?
6 pts	Are there methods to add and delete elements of the vector?
3 pts	Are public methods of the component class called in methods of the other class?
6 pts	Does the program read a vector of objects from a file?

Testing

5 pts	Is every method tested (directly or indirectly)?
5 pts	Does testing cover all possible cases?

Program

10 pts	Is the program fully functional? Does the functionality make sense to use with the classes?