CS 120 Project 5

Due on Blackboard by Friday, March 23rd

For this project you will design, implement, test, and use C++ class inheritance with components.

Design

You will need to have at least four classes: a parent class, a child class, a component class, and an unrelated class. The component object can be included as a field in any of the other three classes. Think about what each of the classes will represent. What added or modified methods will the child class have? What added fields will the child class have? Where does the component belong? How will the unrelated class interact with the others?

An example (do not use):

- A Saxophone class that extends Musical_Instrument and has a Reed component. A Musician class that has a level of expertise in sight reading and a level of experience playing types of instruments. The Musician instance can play a Saxophone object and, depending on the attributes of the musician and the reed, can output a range of reactions from standing ovation to cringing and covering the ears.

Implement

Your classes should be declared in header file(s) (with RMEs and other comments) and defined in corresponding .cpp file(s).

You may reuse classes from previous projects if appropriate.

Test

To make sure your classes are working the way you designed, include a testing.cpp file that has a main function and tests all of your classes thoroughly.

Use

Use your classes to have a fully-functioning program in main.cpp. The program should be interactive. The more effort you put in, the more you will impress the graders and get a good grade.

Grading

The project is out of 75 points.

Design and Style

- 4 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?
- 6 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?
- 20 pts Are there four classes: a parent class, a child class, a component class, and an unrelated class?
- 5 pts Does the child add fields and add/override methods when appropriate?
- 5 pts Does the component class make sense in the context of the program?

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? Is it interactive?