Stony Brook University
ESE 224: Computer Techniques for Electronic Design II
Spring 2017

Assignment 3
Class Inheritance, Copy Constructor and Assignment Operator

Total Score: 12 points

1 Assignment

1. Write an algorithm to print different ways of arranging 8 rooks on a chess board, so that none of them share the same row or column. Generate and display a few cases. You will be utilizing a two-dimensional array of size 8×8. **(3 points)**

2. Design and implement a class for a deck of cards, named `DeckOfCards`. It will have `suit` and `rank` as its private data members. It will also have the necessary method to return a card with a random `suit` and `rank`. Then, use this class to deal the cards to N players. As an example, you can deal 13 cards each to 4 players. The dealt cards will be stored outside the class. You will utilize the function `rand()` to generate a pseudo random number and the function `srand()` to seed the random number generator. Remember that you are drawing from the deck, without replacement. **(3 points)**

3. You have implemented a `Complex` class in the previous homework. In this problem, you will be implementing an `Array` class, with some additional features, such as *dynamic memory* allocation and defining the *copy constructor* and the *assignment operator*. Please refer to Stephen Prata, Chapter 12 for details.

   (a) The class must have the following data members:
   - An int for the array size.
   - A pointer to an int for the array elements.

   (b) Memory management should be done dynamically using the appropriate `new` operator in the constructor and the `delete` operator in the destructor.

   (c) The class must also define the following:
   - A constructor
   - A copy constructor
   - Assignment operator
   - Addition operator
   - A method to sort the array
   - A method to display the array elements

   Test the code for all of the above functionality. **(3 points)**

4. Stephen Prata, Chapter 13, Programming Exercise 1 on *base class Cd* and *derived class Classic*. **(3 points)**

2 Grading

In addition to code functionality, there will be points for optimized algorithm, coding style and comments. A few useful comments would be sufficient.

3 Assignment Submission

The Assignments **must** be submitted on the Blackboard, and should include the following:

1. The C++ source code, with **one file per problem**.
2. Screen shots which show each program executing. All the screen shots maybe in a single .pdf or .jpg file.