

HW08 Problem Set

CS-3160

Assignment

HW08: Sebesta: Problem Set: 11.(7,8,12,15), Programming Exercises: 11.(1,2,5,10)

HANDWRITTEN – Due at beginning of class on due date.

PROGRAM – Due at midnight, via Blackboard, at midnight on day prior to due date.

Handwritten Portion

7. Explain the dangers of C's approach to encapsulation.
8. Why didn't C++ eliminate the problems discussed in Problem 7?
12. Why are destructors rarely used in Java but essential in C++?
15. Explain why naming encapsulations are important for developing large programs.

Programming Portion

NOTE: For ALL of these programs, you are to use PYTHON (v3.3 or later)

1. Design an abstract data type for a matrix with integer elements in a language that you know, including operations for addition, subtraction, and matrix multiplication.
2. Design a queue abstract data type for float elements in a language that you know, including operations for enqueue, dequeue, and empty. The dequeue operation removes the element and returns its value.
5. Write an abstract data type for complex numbers, including operations for addition, subtraction, multiplication, division, extraction of each of the parts of a complex number, and construction of a complex number from two floating-point constants, variables, or expressions. Use Ada, C++, Java, C#, or Ruby.
10. Write an abstract data type for rational numbers (a numerator and a denominator). Include a constructor and methods for getting the numerator, getting the denominator, addition, subtraction, multiplication, division, equality testing, and display. Use Java, C#, C++, Ada, or Ruby.

Grading Rubric

The assignment is worth 25 pts (as a whole) and the score will be recorded as a percentage of that amount.

	Handwritten				Programming			
Problem	7	8	12	15	1	2	5	10
Points	2	2	2	2	4	4	5	4

10% Physical Format

50% Answers correct (and supported by work)

40% Effort evidenced by the submitted work