

CS456 Homework Assignment 8

Due date: _____

In the real world, your ideas and your work must be communicated effectively to your boss, to your client, and to potential investors.

Therefore, **please use clear and well-written English for your answers (as if I was your boss). Incidentally, your boss expects typewritten reports, and so do I.** Drawings should be neatly done with an appropriate software program.

Problem #1: Consider a program that checks the numbers 1 to 100 to see if they are prime. Each number that is not prime is printed with `System.out.println()`. Each prime number is printed with a `JOptionPane`. Later I may decide to print perfect numbers to a file. Use an appropriate design pattern to create a reasonable UML solution.

Hint 1: If you are uncertain how to proceed, try writing some simple code that would solve this problem. Now look and see how your code could be improved using design patterns.

Hint 2: Think VERY carefully about what needs encapsulation. What is it that is changing? What needs encapsulation? Is it a class or a method that needs encapsulation? I'm giving you a set of numbers. Now one by one you are going to print those numbers. Are the numbers changing, or is the printing changing? Encapsulate the thing that is changing!

Problem #2: Translate your UML solution (to problem #1) into code. Your code must correspond to your UML, and your code must work! You will not receive full credit if I cannot compile and run your code.