Lab Assignment – Week of March 17-18

Object Specification

This week's lab assignment is based upon exercise 9.6 from the text.

Design and implement a class named `StopWatch`, for use in tracking execution time of program components. This class should contain the following:

- Two data fields
  - `startTime`
  - `endTime`
- A single, no-argument constructor that initializes `startTime` with the program's current time.
- A method named `start()` that resets the `startTime` to the current time.
- A method named `stop()` that sets `endTime` to the current time.
- A method named `getElapsedTime()` that returns the elapsed time for the stopwatch in milliseconds.

Worth noting: Java has a built-in function - `System.currentTimeMillis()` – that returns the number of milliseconds elapsed since a known, fixed start time. Use this function to get the "current time" within your object.

Practical Application

The other component of this assignment – use instances of this object to time how long it takes two separate "sorting" techniques to complete – the Bubble Sort (as presented in 2/9/15's lecture) and Java's built-in array sorting method Arrays.sort(). You should randomly create arrays of size N and duplicate each, so that the same array is sorted by each technique. Note the behavior of the two functions as N is changed from 500 to 2500 to 12500, making sure to print out the elapsed time for each function for each N.