UNBC Laboratory Assignment
Computer Science 200—Fall 2003

Algorithm Analysis and Timing

Purpose:

To verify Θ-behaviour of programs by timing their performance and plotting the results.

Estimated Time:

Six hours. This laboratory exercise has not been assigned before, and so figure given is merely an estimate. It is your responsibility to find enough time to complete the assignment. I *expect* this to be much simpler than Laboratory Assignment 1.

Keep track of the time spent on this assignment and complete the attached workload sheet for a 5% bonus.

Dates:

This assignment was assigned Monday, 22 September, 2003. This assignment is due Friday, **26 September, 2003** at the beginning of class.

Assignment:

Use the `StopWatch` class from the previous assignment for this question. For the algorithms given in *Weiss* for this assignment there is no difference between worst-case and average-case time, so if a particular time is too small to measure, run the algorithm 10 000 times in a loop to get a measurable time, then divide by 10 000 to get an average time.

Weiss 2.7

Time each of the code segments in Problem 2.7 in *Weiss*, and plot your results on separate plots. Be sure to choose your data to get a good range of results, and be sure that the plots that you produce can be interpreted quantitatively.

In each case the running time of the algorithm is nearly a polynomial in n. You may find it helpful to plot the logarithm of the running time as a function of the logarithm of n, as this should be nearly a straight-line. The slope of the straight line gives you valuable information about the actual asymptotic behaviour of the algorithm.

⇒ Hand in your code (source and compilation and runs), your plots, your analysis, and brief comments for each on how your plots compare with your analysis.