Computer Science 241
Spring 2010
Programming Assignment 4
Due: Friday, June 11
Contribution to your grade: 50 points

In this assignment you will do an empirical study of binary search trees. Specifically, the assignment calls for a

> Generic binary search tree package instrumented so as to determine, as a function of the number of elements stored in a tree,
>
> a. The average length of a path from the root to a leaf.
> b. The difference between the maximum and the minimum paths from roots to leaves.
> c. Whatever other revealing statistics you might discern.

What you turn in: Analysis. You will submit data and analysis that draws conclusions from a well-designed experiment which uses as input randomly generated integers. Needless to say, your experiments should be run on data collections of various sizes so as to derive useful results about the asymptotic balance of a binary search tree. Note, of course, that your experimental results need not access an external file since data to be input can be generated inside your program. This is a decision you make and the wise thing is to choose the design that minimizes development time.

What you turn in: Implementation. *Via* email, you will submit a program contained in a single file containing a package body that will enable the two Ada95 files to compile, link and properly execute. I will test this program by running it on files I have generated. They will be a reasonable size.

Grading Criteria. This assignment will be assessed for (1) functionality, (2) accuracy and (3) professionalism and maturity of presentation.

Submission. The written analysis should be submitted to my office or to the office manager (or, in the worst case, under my door) and the source code should be emailed to

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