CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY

Name(s)

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Project Number

S1214

Project Title

The Battle of the Titans: Empirical Comparison of Sorting Algorithm Processing on Major Operating Systems

Abstract

Objectives/Goals

To compare the running times of sorting algorithms based on the operating system

Methods/Materials

Materials: Personal Computer, Distribution CD's of operating systems (Windows 98, Windows 2000, Windows XP, RedHat Linux, Mandrake Linux, and SuSE Linux), different C++ Compilers

Methods: - write C++ programs to perform Bubble, Selection, and Insertion integer sorts
- write C++ program to generate sets of numbers to be tested in the experiment
- create initial sets of numbers using above-mentioned program
- install the operating system to be tested
- compile the C++ source code for the sorting programs on OS that is currently analyzed
- run Bubble, Selection, and Insertion sorts on the generated sets of numbers for 5 times and record the running times required
- repeat the experiment for other operating systems
- analyze the results

Results

Results varied significantly for the different test cases. Linux and Windows operating systems performed about the same in the Bubble sort; Insertion sort was more in favor of Windows, and in Selection sort, Linux was the faster operating system.

Conclusions/Discussion

Efficiency of the OS is not its absolute quality; it is the application of OS and the process load that matters. Systems are designed to perform some tasks better than the others, but still can be beaten by the others in certain applications.

Summary Statement

I performed runtime analysis of classic sorting algorithm efficiency on major operating systems and examined the results to show how OS performance depended on the type of task chosen.

Help Received

Brother provided the distribution CDs of operating systems