

Comparing Performance

Tom Kelliher, CS 220

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1 Administrivia

Announcements

Assignment

Read 5.1–3.

From Last Time

Measuring performance.

Outline

1. More definitions and terms.
2. Practice.

Coming Up

Building a simple MIPS datapath.

2 More Definitions and Terms

1. How should we summarize several benchmarks?
 - (a) Should we summarize?
 - (b) Use sum of execution times.
 - (c) Arithmetic mean is proportional.
 - (d) See the CD (In More Depth) for an interesting discussion of the use of geometric means.

Example:

	Machine A	Machine B
Program 1 (seconds)	1	10
Program 2	1000	100
Total time	1001	110

- (a) Which machine is faster on Program 1? Program 2? Combined?

Suppose we treat Machine A as a reference machine and normalize the run times to Machine A's performance. What happens?

- (b) Would your answer vary depending on execution frequency? How could we account for this? (Weighted average.)

2. *Native* MIPS:

$$\text{MIPS} = \frac{\text{Instruction Count}}{\text{Execution time} \times 10^6}$$

As opposed to peak MIPS or relative MIPS.

Native MIPS can vary inversely with CPU time!

3. Useful design principle: Make the common case fast.

3 Practice

Problems 4.38–4.44.