Comparing Performance

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1 Administrivia

Announcements

Assignment

Read 5.1–3.

Homework due Nov. 9: 3.9, 3.30, 4.10, 4.14, 4.15.

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 CD (In More Depth) for interesting discussion of 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?

   (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.