Performance analysis

1/27/16
How can the choice of compiler affect program running times?

I. Changing the number of instructions in the compiled code
II. Changing the types of instructions used
III. Changing the memory performance

A. I
B. II
C. I and II
D. I and III
E. I, II, and III
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Which of the following is the key part of a program used to measure performance?

A. A synthetic benchmark  
B. A kernel benchmark  
C. A benchmark suite  
D. A SPEC benchmark  
E. Not exactly one of the above
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Amdahl’s Law

\[ S_p(n) = f S_1(n) + (1-f) S_1(n) / p \]

where

- \( S_p(n) \) = Running time w/ input size \( n \) on \( p \) processors
- \( f \) = fraction of program the must execute sequentially
According to Amdahl’s Law, what speedup will be achieved on 3 processors running a program that is one fourth inherently sequential?

A. 1.5
B. 2
C. 2.5
D. 2.75
E. None of these
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A. Being able to use more efficient instructions
B. Beneficial interactions between processors
C. A network supporting fine-grained tasks
D. Improved memory performance
E. Superlinear speedup does not occur in practice
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