Related but distinct concepts

• Parallelism: Trying to run faster by using more resources to perform more than one part of an operation simultaneously

• Concurrency: Maintaining logical correctness in the presence of simultaneous operations
Which of the following is NOT correct?

A. Concurrency issues can exist in serial systems
B. Parallelism requires splitting an operation into parts that can be performed simultaneously
C. Load balancing is a concern for parallelism more than concurrency
D. Race conditions are a concern for parallelism more than concurrency
E. Not exactly one of the above
Which of the following is NOT correct?

A. Concurrency issues can exist in serial systems
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Identify which of the terms below primarily relate to parallelism and which primarily to concurrency

- tasks
- granularity
- synchronization
- barrier operations
- parallel execution time
- speedup
Levels of parallelism

• Bit level parallelism
• Parallelism by pipelining
• Parallelism by multiple functional units
• Parallelism at process or thread level
Which of the following is the meaning of the acronym SIMD?

A. Serial Implementation, Many Duplicates
B. Single Instruction, Multiple Data
C. Simple Iteration, Multiple Depth
D. Silly Instructor Must Dine
E. Not exactly one of the above
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Types of programs or machines

• Shared memory: Single memory address space

• Distributed memory: Address space split between nodes connected by a network
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- Shared memory and message passing programming models are related to, but distinct from, these memory organizations
Levels of abstraction

• Computational model: Model of the machine executing the program

• Programming model: Primitives provided for expressing a program