

Segundo parcial – Primera fecha 3/12/2009

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Problema 1

Presente las motivaciones y el contexto en el cual se diseñaron las extensiones multimedia de los procesadores actuales de propósitos generales. Comente brevemente su impacto en la arquitectura y sus principales aplicaciones.

Problema 2

Presente dos ejemplos de arquitecturas paralelas con las siguientes características:

- i. Escalable en costo pero no escalable en performance.
- ii. Escalable en performance pero no escalable en costo.

Cuantifique.

Problema 3

Muestre las limitaciones del análisis de los sistemas paralelos utilizando la ley de Amdhal con sección serie. Presente los fundamentos de un análisis más apropiado para los grandes sistemas (Gustafson-Barsis). Introduzca en el análisis los efectos del tiempo de comunicación.

Problema 4

Entregar el análisis del Product Brief de un procesador moderno, o analizar cada una de las siguientes características del nuevo i7 de Intel.

Intel® Core™ i7 Desktop Processor Feature Benefit
Quad-Core Processing Provides four complete execution cores in a single processor package. Four dedicated physical cores help operating systems and applications deliver additional performance, so users can experience better multitasking and multithreaded performance across many types of applications and workloads.
Intel® Hyper-Threading Technology (Intel® HT Technology) Delivers two processing threads per physical core for a total of eight threads for massive computational throughput. With Intel® HT Technology, highly threaded applications can get more work done in parallel, completing tasks sooner. With more threads available to the operating system, multitasking becomes even easier. This amazing processor can handle multiple applications working simultaneously, allowing you to do more with less wait time.
8 MB Intel® Smart Cache This large last-level cache enables dynamic and efficient allocation of shared cache to all four cores to match the needs of various applications for ultraefficient data storage and manipulation.
Integrated Memory Controller An integrated memory controller offers stunning memory read/write performance through efficient prefetching algorithms, lower latency, and higher memory bandwidth making the Intel® Core™ i7 processor family ideal for data-intensive applications.
Intel® HD Boost Includes the full SSE4 instruction set, significantly improving a broad range of multimedia and computeintensive applications. The 128-bit SSE instructions are issued at a throughput rate of one per clock cycle, allowing a new level of processing efficiency with SSE4-optimized applications.
Intel® QuickPath Interconnect (Intel® QPI) For the Intel® Core™ i7-900 processor series, Intel® QPI increases bandwidth and lowers latency, while achieving data transfer speeds as high as 25.6 GB/s.