Chapter 07: Instruction–Level Parallelism—VLIW, Vector, Array and Multithreaded Processors …

Lesson 07:

Multi-core Processors

Objective

- To learn multicore processor

Multicore processor

Dual-core

- Two complete execution cores per physical processor CPU

- Two processors along with their caches and cache controllers onto a single IC

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Uses of Dual-core

- Multithreading and multitasking execution
- Each has an independent interface to the frontend bus
- Most compute intensive tasks in parallel

Multi-core

- Dual-core technology expanded to allow for more than two separate processors

Multi-core

- Two or more processing CPUs on the same chip

- A single physical processor contains core logic of two or more processors

- Refer to multiple dies packaged together

- Enables the system to perform more tasks with a greater overall system performance

Full potential of multi-core processors

- Utilized when software designed to take advantage of the power of multiple cores

Quad-core processors

- Twice the number of cores

- Like four CPUs on a single chip

- Intel Xeon multi-processor servers

- Virtualizes information access from anywhere in a system

- Processors have the capability to handle multiple tasks

Intel Quad Core Processors

- Twice the performance

- Three times the performance per watt

- Transition to energy efficient core micro-architecture

Summary

We Learnt

- Multicore in a single processor

- High performance

- Multitasking Multithreading

End of Lesson 07 on
Multi-core Processors