Operating Systems Lecture Notes
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Contents

Operating Systems Lecture 3: OS Introduction (Part 3): Computer System Review

Storage Structures – FROM FASTEST TO SLOWEST

- Register
- Cache
- Main memory
- Solid-state disk
- Hard disk
- Optical disk
- Magnetic tapes

In this course we will talk about memory management and then we will talk about disk management later.

Caching

It is storing a subset of the data that we have in a slow and a large device. And what you store in the cache is what you expect to need more frequently. Caching happens at multiple levels in a computer system. It even happens in the web browsers, where you cache the web pages that the user accesses most frequently. You make it more easily accessible by putting them in a faster storage device or by putting them in an easy access place. Cache management is an important design problem. Cache size and replacement policy.

Multiprocessor Systems

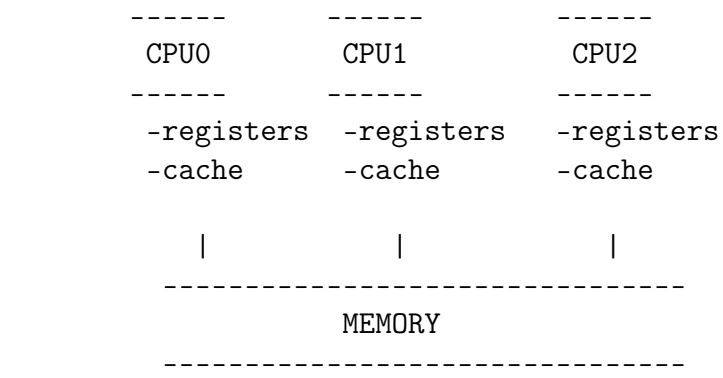
We will talk about multiprocessor scheduling when we get to scheduling (which is chapter 6: CPU Scheduling). Most systems use a single general purpose processor. Most systems have special purpose processors as well (such as multiprocessor). Multiprocessor systems growing in use and importance. Multiprocessor systems are also known as "parallel systems" or "TIGHTLY COUPLED systems". Advantages include:

1. Increased throughput
2. Economy of scale
3. Increased reliability - graceful degradation or fault tolerance

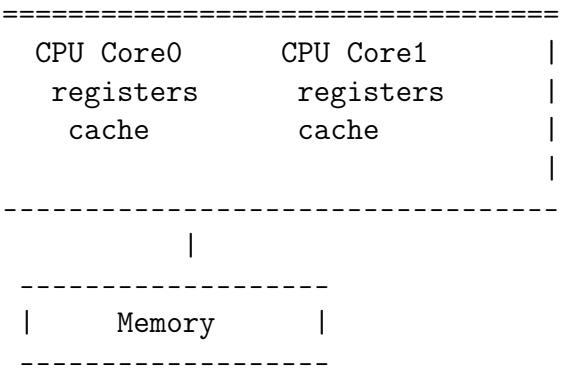
Types of Multiprocessors

1. Asymmetric multiprocessing – each processor is assigned a specific task.
2. Symmetric multiprocessing – each processor performs all tasks.

Classical Multiprocessor System



So here is a classical example of a multiprocessor system where we have 3 CPUs and each CPU has its own register and its own cache but they are all sharing the same memory. And this can be done on a same chip on a multicore system.



So above, you have one chip that has two CPUs on it. Core0 and Core1 sharing same memory.