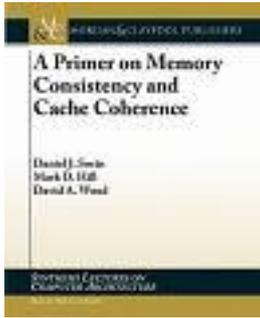


A Primer on Memory Consistency and Cache Coherence



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Many modern computer systems and most multicore chips (chip multiprocessors) support shared memory in hardware. In a shared memory system, each of the processor cores may read and write to a single shared address space. For a shared memory machine, the memory consistency model defines the architecturally visible behavior of its memory system. Consistency definitions provide rules about loads and stores (or memory reads and writes) and how they act upon memory. As part of supporting a memory consistency model, many machines also provide cache coherence protocols that ensure that multiple cached copies of data are kept up-to-date. The goal of this primer is to provide readers with a basic understanding of consistency and coherence. This understanding includes both the issues that must be solved as well as a variety of solutions. We present both highlevel concepts as well as specific, concrete examples from real-world systems.

作者介绍:

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标签

计算机体系结构

计算机

体系结构

memory

计算机科学

计算机技术

编程

architecture

评论

真棒...

虽然叫Primer，但讲得比较深入

浅显易懂，读完以后就基本对并行计算机体系结构的memory模型有初步认识了。

Coherence, consistency, atomicity, causality. 顺便提一下，之前想了半天的 x86 store load 乱序在书里有很好复现的例子。

想了解 memory model
就绕不开体系结构，感觉浓缩的比较多，要是有其他书辅助理解就更好了。感觉发现了新大陆，平时说什么 thread safe / atomic，都太笼统了

Cache
Coherence是硬件提供的功能，所以这部分软件开发者可以当黑盒跳过，这本书重点看3, 4, 5章即可，这三章是重点讲三种内存模型的内容。

详细的解释了consistency和coherence的区别，并深入介绍了各种consistency模型。

后半本cache设计没读完，不过仅前半部分就受益匪浅了。

看了一半，感觉已经失去对底层或硬件层的兴趣

纯属支持我男神

好书，memory model和cc细节讲的很清楚，2020年2月出了第二版，添加了consistency-agnostic coherence和部分模型验证内容。

很厉害

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书评

入门读物推荐！ 1) 便宜！要是你们图书馆买了数据库，这本书是可以免费下载的。
2) 分类讲解，比较细致，深入浅出。缺点：难点问题，都用the content will not be covered in this primer带过。
总体，想学习存储模型和cache一致性的，是本不错的书。前提，对体系结构有所了...

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