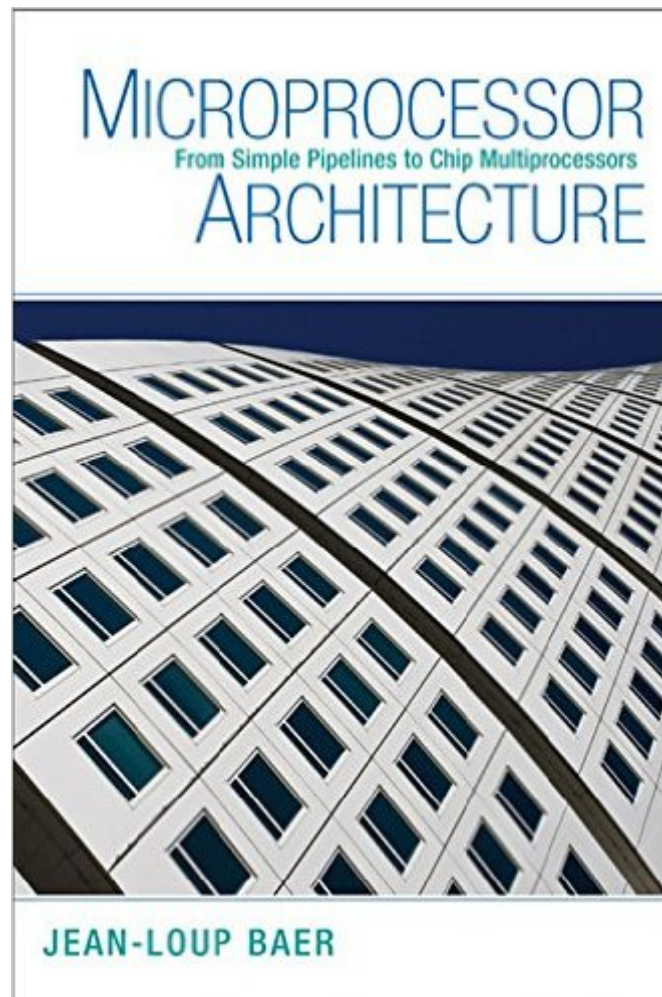# Microprocessor Architecture: From Simple Pipelines To Chip Multiprocessors

Synopsis

This book gives a comprehensive description of the architecture of microprocessors from simple in-order short pipeline designs to out-of-order superscalars. It discusses topics such as - the policies and mechanisms needed for out-of-order processing such as register renaming, reservation stations, and reorder buffers - optimizations for high performance such as branch predictors, instruction scheduling, and load-store speculations - design choices and enhancements to tolerate latency in the cache hierarchy of single and multiple processors - state-of-the-art multithreading and multiprocessing emphasizing single chip implementations Topics are presented as conceptual ideas, with metrics to assess the performance impact, if appropriate, and examples of realization. The emphasis is on how things work at a black box and algorithmic level. The author also provides sufficient detail at the register transfer level so that readers can appreciate how design features enhance performance as well as complexity.

Book Information

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Customer Reviews

I picked up the kindle version, after seeing the physical version on a colleague's desk. The book covers the entire process for modern processors, from instruction fetch to internal queuing to execution. I haven't found a better text yet.

This book present clearly the technological development in the area of microprocessor, illustrating

the pros and cons of the alternatives. In my opinion this book is a strong contribution in the Microprocessor Architecture field.Rafael GarcÃa

Finally, a book with more up to date cpu architectural details.

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