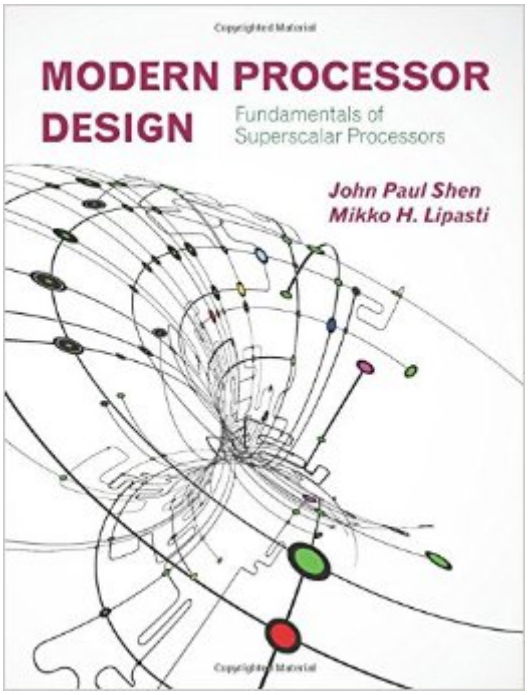
Modern Processor Design: Fundamentals Of Superscalar Processors



Synopsis

Conceptual and precise, Modern Processor Design brings together numerous microarchitectural techniques in a clear, understandable framework that is easily accessible to both graduate and undergraduate students. Complex practices are distilled into foundational principles to reveal the authors' insights and hands-on experience in the effective design of contemporary high-performance micro-processors for mobile, desktop, and server markets. Key theoretical and foundational principles are presented in a systematic way to ensure comprehension of important implementation issues. The text presents fundamental concepts and foundational techniques such as processor design, pipelined processors, memory and I/O systems, and especially superscalar organization and implementations. Two case studies and an extensive survey of actual commercial superscalar processors reveal real-world developments in processor design and performance. A thorough overview of advanced instruction flow techniques, including developments in advanced branch predictors, is incorporated. Each chapter concludes with homework problems that will institute the groundwork for emerging techniques in the field and an introduction to multiprocessor systems. Not-for-sale instructor resource material available to college and university faculty only; contact publisher directly.

Book Information

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Customer Reviews

This is a well written book on the concepts of high-end microprocessor architecture, from OOO-issue, Register-renaming, Branches, Load/Store processing, and much more. Not very much on the Memory Consistency models. I think this would be great book for those who already know

the basics of computer architecture, but want something more concise than say, the Hennesy & Patterson, as a second/reference read.

As with most Computer Architecture books, this book covers a wide range of topics in superscalar out-of-order processor design. But what made this book stand out is a chapter dedicated to discussing advanced instruction flow techniques. The book had a very thorough review of many branch prediction algorithm, various types of target predictors as well as high bandwidth fetching mechanism. The book also has a very thorough coverage on the P6 micro-architecture.

I would recommend this book to anyone eager to learn modern processor design to an experience processor designer who wants to understand the trade off in superscalar design techniques. I like the way this book is organized; starting with simple single issue to building complex multi-issue processors. Finally comparisons of state of the art superscalar processors are excellent.

I’m reading this one for a course in computer architecture, and at the same time I’m reading Computer Architecture: A quantitative approach by Hennesy and Patterson. I personally recommend the other one over this book, it’s better explained and has more developed exercises.

It is a really good book to understand the modern processor design. I strongly recommend that to any computer engineering students.

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