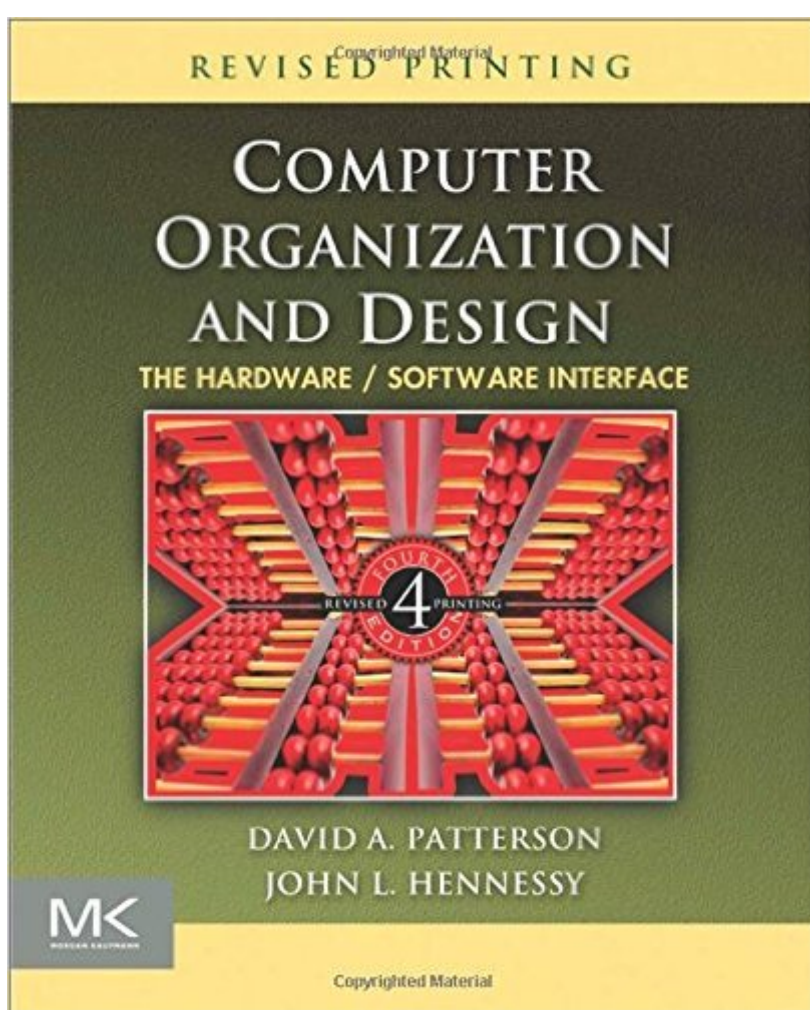


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# Computer Organization And Design, Fourth Edition: The Hardware/Software Interface (The Morgan Kaufmann Series In Computer Architecture And Design)



## Synopsis

This Fourth Revised Edition of Computer Organization and Design includes a complete set of updated and new exercises, along with improvements and changes suggested by instructors and students. Focusing on the revolutionary change taking place in industry today--the switch from uniprocessor to multicore microprocessors--this classic textbook has a modern and up-to-date focus on parallelism in all its forms. Examples highlighting multicore and GPU processor designs are supported with performance and benchmarking data. As with previous editions, a MIPS processor is the core used to present the fundamentals of hardware technologies, assembly language, computer arithmetic, pipelining, memory hierarchies and I/O. Sections on the ARM and x86 architectures are also included. All disc-based content for this title is now available on the Web. This Revised Fourth Edition of Computer Organization and Design has been updated with new exercises and improvements throughout suggested by instructors teaching from the book. Covers the revolutionary change from sequential to parallel computing, with a chapter on parallelism and sections in every chapter highlighting parallel hardware and software topics. Includes an appendix by the Chief Scientist and the Director of Architecture of NVIDIA covering the emergence and importance of the modern GPU, describing in detail for the first time the highly parallel, highly multithreaded multiprocessor optimized for visual computing. The companion CD provides a toolkit of simulators and compilers along with tutorials for using them, as well as advanced content for further study and a search utility for finding content on the CD and in the printed text. For the convenience of readers who have purchased an ebook edition or who may have misplaced the CD-ROM, all CD content is available as a download at [bit.ly/nFXcLq](http://bit.ly/nFXcLq)

## Book Information

Series: The Morgan Kaufmann Series in Computer Architecture and Design

Paperback: 914 pages

Publisher: Morgan Kaufmann; 4 edition (November 9, 2011)

Language: English

ISBN-10: 0123747503

ISBN-13: 978-0123747501

Product Dimensions: 9.3 x 7.5 x 1.4 inches

Shipping Weight: 3.2 pounds

Average Customer Review: 3.6 out of 5 stars [See all reviews](#) (107 customer reviews)

Best Sellers Rank: #191,891 in Books (See Top 100 in Books) #94 in [Books > Computers &](#)

Technology > Hardware & DIY > Design & Architecture #1016 inÂ Books > Computers & Technology > Computer Science #2428 inÂ Books > Textbooks > Computer Science

## Customer Reviews

This is a tough book to review. On one hand, it's got an amazing amount of information in it. On the other, it's got a lot of editing problems. It also suffers from a lack of focus on who its audience is. So, splitting the difference, I'm rating this book at 4 stars out of 5. Regarding the book's audience, it's vital that you pay attention to the chart on page xiii of the Preface. It maps your path through the book based on whether you're a software-type or a hardware-type. Assuming I was so brilliant that I could ignore such trivia, I attempted to plow my way through the whole book. Software-type that I am, I had some tough times in a couple of sections and then utterly failed to understand anything when I hit the core of Chapter 5. If I had paid attention to that chart, I would have known to skip that part of the book. However, even for the material that's within the path laid out for you by that chart, a lot of the work seems to assume knowledge on the part of the reader. For instance:- Chapter 2 is about the MIPS assembly language. In the exercises, you're supposed to write various code snippets. Many of these snippets assume far more familiarity with writing entire assembly programs than is presented.- The exercises at the end of each chapter are broken into three types: regular, "For More Practice," and "In More Depth." Those last two types require far more knowledge than is presented. It looks like the authors culled them from previous editions and, instead of trashing them, just stuck them on the CD and referenced them.- Exercise 3.9 is annotated as requiring Section 3.2.

I have the Second Edition of this text and think rather highly of it, despite some missteps here and there. When I first reviewed the Fourth Edition, I was a bit concerned about the reorganization of the topics because it didn't feel like a natural progression to me, but I was willing to concede that there are a number of ways to come at this material and allowed that what felt "natural" to me was almost certainly influenced by the Second Edition, so I was willing to go with the flow of the new text and see how it played out. Half way through a semester trying to teach from this edition I still feel that there is no coherent flow, but again I'm willing to chalk that up to personal subjective preference. The rest of my objections, however, are much more objective. First, there are TWO versions of The Revised Printing of the 4th Edition! They appear to be the same, including identical copyright pages right down to the printing history. Yet they are not the same. As an example, on page 182 problem 2.4.3 the code in row b is significantly different. As near as I can tell, the errata sheet that is on the publisher's website is the difference -- it's as if part way through the printing run they decided to stop

the presses, apply the errata, and then restart the presses and complete the run. This, on top of the fact that the exercises in the Revised Printing do not match those in the basic 4th Edition, makes it very difficult to assign problem sets to students since they are literally not reading from the same page. Second, the authors have taken significant amounts of material out of the text yet have kept many exercises that rely on the removed material.

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