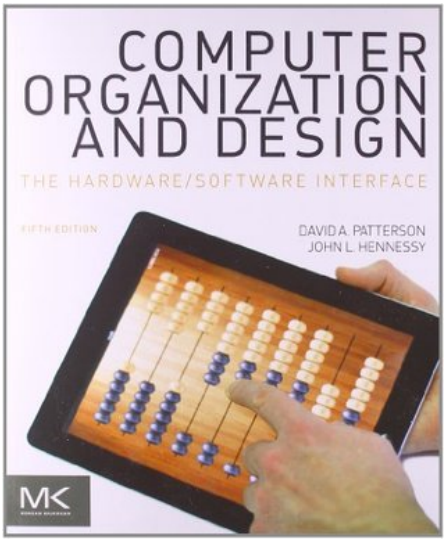

Computer Organization and Design MIPS Edition: The Hardware/Software Interface

David A. Patterson , John L. Hennessy

Computer Organization and Design MIPS Edition: The Hardware/Software Interface

David A. Patterson , John L. Hennessy

Computer Organization and Design MIPS Edition: The Hardware/Software Interface David A. Patterson , John L. Hennessy
The 5th edition of "Computer Organization and Design" moves forward into the post-PC era with new examples, exercises, and material highlighting the emergence of mobile computing and the cloud. This generational change is emphasized and explored with updated content featuring tablet computers, cloud infrastructure, and the ARM (mobile computing devices) and x86 (cloud computing) architectures.

Because an understanding of modern hardware is essential to achieving good performance and energy efficiency, this edition adds a new concrete example, "Going Faster," used throughout the text to demonstrate extremely effective optimization techniques. Also new to this edition is discussion of the "Eight Great Ideas" of computer architecture.

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.

Instructors looking for4th Edition teaching materials should e-mail textbook@elsevier.com.
Optimization techniques featured throughout the textCovers parallelism in depth with examples and content highlighting parallel hardware and software topicsFeatures the Intel Core i7, ARM Cortex-A8 and NVIDIA Fermi GPU as real-world examples throughout the bookOnline companion website provides links to simulators and compilers along with tutorials for using them, as well as additional advanced content, appendices, a glossary, references, "Historical Perspectives," and recommended reading

Computer Organization and Design MIPS Edition: The Hardware/Software Interface Details

Date	:	Published October 10th 2013 by Morgan Kaufmann Publishers (first published 1993)
ISBN	:	9780124077263
Author	:	David A. Patterson , John L. Hennessy
Format	:	Paperback 800 pages
Genre	:	Science, Computer Science, Reference, Nonfiction, Technical, Textbooks

From Reader Review Computer Organization and Design MIPS Edition: The Hardware/Software Interface for online ebook

Stefan Kanev says

This is a good textbook, but I would recommend picking it up unless you have a lot of time (or you are studying it in a course). I started reading it because I realized my understanding for processors was ancient and wanted to update it a bit. It does go into the new and fancy stuff, but it definitely helps you get a good overview. After you've finished it, you'll have a good idea how to (conceptually) build a basic computer. Two major caveats: the writing is a bit boring and academical (to be expected out of a textbook) and it will take ages to read it. If you're interest is just casual, you might be better by picking Code by Petzold (although that is quite basic and matches my "ancient" knowledge about processors).

Xiaofei Guo says

I remember when I first learn computer architecture in China. The book we used is terribly complicated. I once thought computer architecture as a subject with random things to memorized.

Fortunately, I study this book years later in the US. It goes through the fundamental philosophy of computer architecture design and it gives lots of examples, pictures, and exercises to help you understand the concept.

The book not only talks about simple examples, it also break the real machine down to show how the principles in the book being applied in the real world. I find that very fascinating! I also teach this subject for undergraduate students. By going through the flow of the book, the student are able to understand the fundamental principles of computer architecture.

This book is a true learner-centric textbook!

????? says

Essential book for anyone interested in computer architecture

---

YouKneeK says

This textbook was required reading for my Computer Organization and Architecture university course. Sometimes it can be difficult to give a textbook a fair review because, in a typical course, students are rarely required to read the entire book and they may be given reading assignments that are not in sequential order. This means it’s not easy to judge the progression of the material as presented in the textbook from beginning to end.

Such was the case with this textbook. In my class, we skipped around and read different sections from different chapters rather than reading any single chapter all the way through. One thing I was impressed with,

given how much we skipped around, was how easy it was to pick up each section we were asked to read. Even if it was a section in the middle of a chapter we hadn’t read from before.

Unlike some textbooks I’ve read, there weren’t any cryptic terms or acronyms that I couldn’t easily find the definition to. Definitions for new terminology were noted in the margins, making it easy to refer back to them if needed. In general, explanations were clear and the examples were good. However, there were quite a few grammatical/spelling errors and there was some awkward phrasing that required rereading in order to understand what the authors were trying to convey. Sometimes they skipped intermediate topics, such as jumping from a single-cycle datapath to a pipelined datapath without covering the multi-cycle datapath which I understand was in previous editions of the book. My university course provided very good supplementary content and I found the concepts easy to understand when presented in that logical progression. I might have struggled more if I had been limited to the book's presentation, but it's hard to say for sure since I wasn't in that position.

I don’t normally comment much on the physical aspect of books I read, but this book was literally falling apart as I read it. School textbooks are the only type of book that I still purchase in a physical format, and this textbook was no exception. I saw a couple reviews on Amazon where reviewers mentioned that their pages fell out, but I needed the textbook and I wanted it in a physical format, so I bought it with the plan to be extra careful with the pages. Sure enough, as soon as I started reading, pages started randomly falling out. I would gingerly turn a page, and sometimes the page would turn *and* come out of the book. I don’t resell my textbooks, but anybody who does probably wouldn’t be able to resell this one. Maybe that was the goal…

The falling pages became quite a problem for me because I took several business trips while taking this course and I was afraid to travel with the book. I didn’t want to have pages falling out all over the place and getting lost where I would never find them again, and I figured the flimsy book would never survive my laptop bag or my suitcase, so I purchased the e-book version of the textbook to use while traveling. The e-book version had its own issues. There weren’t any page numbers, which could be a problem when I needed to reference specific pages for my class, and the tables and diagrams were very small. I was reading on a 10.5” tablet, with a screen nearly as big as the pages in the physical book, but the size in the e-book was drastically different from the size on the printed page and did not fully utilize the space. I constantly had to zoom in on them so I could read them, which meant I couldn’t see them in context with the text on the page. Perhaps all of this is normal with e-textbooks; I haven’t read enough of textbooks in this format to know. It definitely frustrated me, though. If I could give half stars, I would give this book 3.5 stars.

Lily says

Probably the best textbook I've ever read. Everything is actually explained and the examples aren't overbearing. The content itself can get a bit dry but still very useful. However, the amount of typos is ridiculous.

Victor says

Very good introduction and reminder for computer architecture, reviewing all topics such as instruction decoding, memory hierarchies, pipelines, I/O, computer clusters, vector computers, GPUS, energy

consumption. In my opinion some previous knowledge must be got before reading this book, since it omits many implementation details. Appendix are added so that you can extend your knowledge in more advanced topics.

For those understanding Spanish, I strongly recommend this other book: Conceptos básicos de arquitectura y sistemas operativos: Curso de Ordenadores. Gregorio Fernández. It probably better explains many details such as microarchitecture and micro programming omited in the Hennesy-Patterson book.

Ben Haley says

This book drew abstract mathematical concepts down to their underpinning hardware implementations. In doing so, it clarified the practical concerns that drive the development of new software systems. Patterson, who is brilliant in his straightforward execution does a great job of revealing that the land of information does have a bottom where it grinds up against a land of silicon and copper. For me it's a relief.

Dilshan Jayakody says

Even this book is recommended to use as a textbook I use it as quick reference. All the chapters are well organized and up to date. Most of the chapters are based on modern hardware platforms like ARM and x86.

Highly recommended as textbook for computer architecture and related courses.

up to now the only bad thing which I notice in this book is some of the content are in the supplied CD-ROM, which is bit annoying sometimes.

Brock Pereira says

I understand why this book is the “hallmark” of hardware design textbooks, but I couldn’t help but want to bang my head off the desk during this class.

Otherwise - great book, easy to read and understand

Ibrahim Al-bluwi says

This was the textbook of a university course that I took during my BSc. Although I am not a big fan of hardware and assembly languages I enjoyed studying from this book to a great extent.

The book is very well written and very well organized. I found the presented information clear and I liked the way the authors emphasize what is important, elaborate with examples, and keep extra details to the end

of each chapter.

Matt Hanson says

I've got two versions of this book, the newer one(5th edition) I bought at my university book store for my computer architecture course and the older one(one from the late nineties/early 2000s) I got for $3 at a used book store. Both books are good, but the newer edition has more relevant information about modern CPUs and newer topics like using multiple cores and such. If you can afford a newer version absolutely get it, but if you can find an older version for cheap you should get that instead of not having the book for a class.

Ayush Bhat says

This is almost a standard book for computer organization but takes a lot of time per page.
This is kind of a prerequisite to read the Computer Architecture: A Quantitative Approach from the same authors.

João says

I am currently teaching a BSc-level course using this book. It is very well structured for either "hardcore" hardware-related courses or more software-inclined (or at least not so low-level hardware) courses. I have mixed feelings towards the approach of anticipating some issues of multicore architectures (e.g. cache coherence) w.r.t. to the description of the corresponding architectures in Chapter 7.

David says

Used this as my textbook for ECE425 - Computer Architecture and thought it explained a lot more than what the professor tried to teach. I would recommend reading this a few times before listening to the professor go over whichever topic you're covering and I'm sure it'll help you.

I recommend also watching these videos throughout the course
http://nptel.iitm.ac.in/video.php?sub...

Passed Computer Architecture

Raja Bilal Rsb says

This was my course book in Software engineering 4th semester. Every thing in the book was so detailed that most of the time i did't needed my professors help to understand the concepts.