

Computer Organization and Design ARM Edition: The Hardware Software Interface (The Morgan Kaufmann Series in Computer Architecture and Design)

By David A. Patterson, John L. Hennessy

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
The new ARM Edition of *Computer Organization and Design* features a subset of the ARMv8-A architecture, which is used to present the fundamentals of hardware technologies, assembly language, computer arithmetic, pipelining, memory hierarchies, and I/O.

With the post-PC era now upon us, *Computer Organization and Design* moves forward to explore this generational change with examples, exercises, and material highlighting the emergence of mobile computing and the Cloud. Updated content featuring tablet computers, Cloud infrastructure, and the ARM (mobile computing devices) and x86 (cloud computing) architectures is included.

An online companion Web site provides links to a free version of the DS-5 Community Edition (a free professional quality tool chain developed by ARM), as well as additional advanced content for further study, appendices, glossary, references, and recommended reading.

- Covers parallelism in depth with examples and content highlighting parallel hardware and software topics
- Features the Intel Core i7, ARM Cortex-A53, and NVIDIA Fermi GPU as real-world examples throughout the book
- Adds a new concrete example, "Going Faster," to demonstrate how understanding hardware can inspire software optimizations that improve performance by 200X
- Discusses and highlights the "Eight Great Ideas" of computer architecture: Performance via Parallelism; Performance via Pipelining; Performance via Prediction; Design for Moore's Law; Hierarchy of Memories; Abstraction to Simplify Design; Make the Common Case Fast; and Dependability via Redundancy.
- Includes a full set of updated exercises

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Editorial Review

About the Author

David A. Patterson is the Pardee Chair of Computer Science, Emeritus at the University of California Berkeley. His teaching has been honored by the Distinguished Teaching Award from the University of California, the Karlstrom Award from ACM, and the Mulligan Education Medal and Undergraduate Teaching Award from IEEE. Patterson received the IEEE Technical Achievement Award and the ACM Eckert-Mauchly Award for contributions to RISC, and he shared the IEEE Johnson Information Storage Award for contributions to RAID. He also shared the IEEE John von Neumann Medal and the C & C Prize with John Hennessy. Like his co-author, Patterson is a Fellow of the American Academy of Arts and Sciences, the Computer History Museum, ACM, and IEEE, and he was elected to the National Academy of Engineering, the National Academy of Sciences, and the Silicon Valley Engineering Hall of Fame. He served on the Information Technology Advisory Committee to the U.S. President, as chair of the CS division in the Berkeley EECS department, as chair of the Computing Research Association, and as President of ACM. This record led to Distinguished Service Awards from ACM, CRA, and SIGARCH.

John L. Hennessy is a Professor of Electrical Engineering and Computer Science at Stanford University, where he has been a member of the faculty since 1977 and was, from 2000 to 2016, its tenth President. Prof. Hennessy is a Fellow of the IEEE and ACM; a member of the National Academy of Engineering, the National Academy of Science, and the American Philosophical Society; and a Fellow of the American Academy of Arts and Sciences. Among his many awards are the 2001 Eckert-Mauchly Award for his contributions to RISC technology, the 2001 Seymour Cray Computer Engineering Award, and the 2000 John von Neumann Award, which he shared with David Patterson. He has also received seven honorary doctorates.

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