[PDF] Computer Architecture, Fifth Edition: A Quantitative Approach (The Morgan Kaufmann Series In Computer Architecture And Design)

David A. Patterson, John L. Hennessy - pdf download free book

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Description:

The computing world today is in the middle of a revolution: mobile clients and cloud computing have emerged as the dominant paradigms driving programming and hardware innovation today. The fifth edition of *Computer Architecture* focuses on this dramatic shift, exploring the ways in which software and technology in the cloud are accessed by cell phones, tablets, laptops, and other mobile computing devices. Each chapter includes two real-world examples, one mobile and one data center, to illustrate this revolutionary change.

- Updated to cover the mobile computing revolution.
- Emphasizes the two most important topics in architecture today: memory hierarchy and parallelism in all its forms.
- Develops common themes throughout each chapter: power, performance, cost, dependability, protection, programming models, and emerging trends ("What's Next").
- Includes three review appendices in the printed text. Additional reference appendices are available online.
- Includes updated case studies and completely new exercises.

New this Edition

- Each chapter includes two new, real-world examples, one mobile and one data center, to illustrate the revolutionary change to personal mobile devices and cloud computing.
- Expanded and improved coverage of multicore and GPU architectures.
- Completely new chapters on warehouse-scale (cloud) computers (Chapter 6) and vector processors and GPUs (Chapter 4).
- New "Putting it All Together" sections exploring real-world applications, including the pipeline organizations and memory hierarchies of the ARM Cortex A8 processor; the Intel core i7 processor; the NVIDIA GTX-280 and GTX-480 GPUs; and warehouse-scale computing at Google.
- Improvements and updates throughout, including updated performance analysis data featuring the new SPECPower benchmark.

Review

"What has made this book an enduring classic is that each edition is not an update, but an extensive revision that presents the most current information and unparalleled insight into this fascinating and fast changing field. For me, after over twenty years in this profession, it is also another opportunity to experience that student-grade admiration for two remarkable teachers." - *From the Foreword by* Luiz André Barroso, Google, Inc.

"This is an academic textbook that is also suitable for a far broader readership. Each chapter is organised in the same structure, with the main content supported by case studies and exercises. Having read this book I now have a far better understanding of why processors from all the different designers and manufacturers are so different. Memory hierarchies, multicore architectures and compiler optimisation are all covered in great detail. I was particularly interested in their discussion of graphical processing units and how they are suitable for far more than just graphical workloads. What is great about this book is that it moves with the times. There is a lot of content on processors for mobile computing, and power usage is a pervasive theme. At the other extreme there is an excellent chapter on warehouse scale computers, which offers tremendous insight into the cloud computing infrastructure provided by Google, Amazon and others. If your job has anything to do

with IT infrastructure then I recommend this book as a must-read. As an academic text book it has both depth and breadth. And if you're just interested in the topic you'll gain a huge amount of insight into the fundamentals of computer architecture."--The Chartered Institute for IT

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