This is the official technical description of the PowerPC architecture and its hardware conventions, developed jointly by IBM, Motorola, and Apple. The book is an essential reference for hardware and system-software designers and applications programmers developing a range of products using implementations of the PowerPC family of microprocessors—from palmtops to teraFLOPS. The PowerPC architecture provides a stable base for software, allowing applications that run on one PowerPC processor to run consistently on any other PowerPC processor. In addition, well-designed operating systems can be moved from one processor implementation to another by making only a few minor changes. To achieve this, the specification of the architecture has been structured into three Books, corresponding to a distinct level of the architecture: Book I, User Instruction Set Architecture, describes the registers, instructions, storage model, and execution model that are available to all application programs. Book II, Virtual Environment Architecture, describes features of the architecture that permit application programs to create or modify code, to share data among programs in a multiprocessing system, and to optimize the performance of storage accesses. Book III, Operating Environment Architecture, describes features of the architecture that permit operating systems to allocate and manage storage, to handle errors encountered by application programs, to support I/O devices, and to provide the other services expected of secure, modern multiprocessor operating systems. An important feature of these specifications is that they only constrain implementations on matters that affect software compatibility. Even more significant, they specify the architecture in a manner that is independent of implementation. The PowerPC Architecture is a must for anyone who needs to understand the levels of compatibility between different processors in the PowerPC family—the 601 microprocessor, the 603 (low-end, battery-powered requirements), 604 (optimized price/performance for scaleable symmetric multiprocessors),...
and the 620 (for high-end technical and commercial requirements about performance).

My Personal Review:
I would usually not have a written a review for this book, but was taken aback by its very poor rating. It turned out that this was because of one very poor review which I feel did not do justice to the book, and so I felt compelled to add my opinion.

While many (free) manufacturer supplied data books for various PowerPC implementations have become available since this book was published this is the only PowerPC book that still remains on my shelf. I no longer work on this architecture, but I've found it impossible to give my copy of book away (yes, all the data books are long gone). I find this an excellent introduction to the PowerPC family of processors, and if there are facts about the architecture I need to look up I have always found it here. So, if you don't need a shelf full of data books, and are ready to pay for one hardcover that is almost always good enough, go out and get this one. It's not going to tell you about proprietary implementation details about a specific chip, but if you need to look up something about the PowerPC this should be a great reference.

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