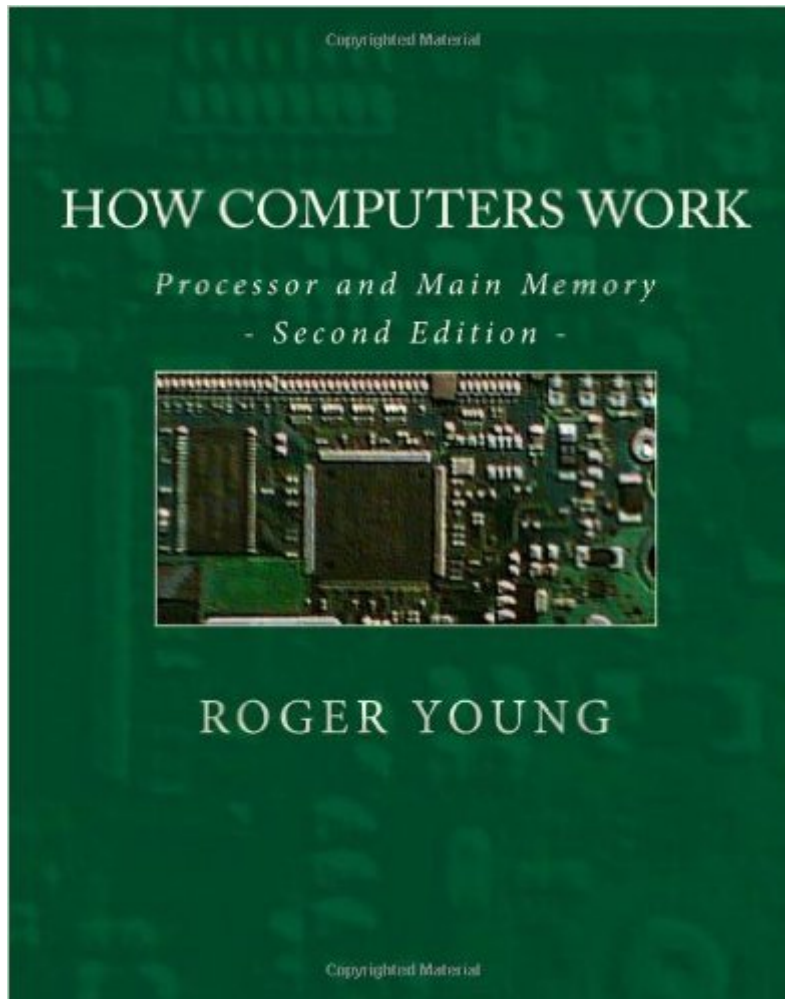


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# How Computers Work: Processor And Main Memory (Second Edition)



## Synopsis

Computers are the most complex machines that have ever been created. This book will tell you how they work, and no technical knowledge is required. It explains in great detail the operation of a simple but functional computer. Although transistors are mentioned, relays are used in the example circuitry for simplicity. Did you ever wonder what a bit, a pixel, a latch, a word (of memory), a data bus, an address bus, a memory, a register, a processor, a timing diagram, a clock (of a processor), an instruction, or machine code is? Unlike most explanations of how computers work which are a lot of analogies or require a background in electrical engineering, this book will tell you precisely what each of them is and how each of them works without requiring any previous knowledge of computers, programming, or electronics. This book starts out very simple and gets more complex as it goes along, but everything is explained. The processor and memory are mainly covered.

## Book Information

Paperback: 152 pages

Publisher: CreateSpace; 2 edition (April 17, 2009)

Language: English

ISBN-10: 1442113987

ISBN-13: 978-1442113985

Product Dimensions: 8 x 0.4 x 10 inches

Shipping Weight: 14.2 ounces (View shipping rates and policies)

Average Customer Review: 4.0 out of 5 stars Â Â See all reviews Â (45 customer reviews)

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## Customer Reviews

I'm a fifteen year old high school student and I have recently purchased this book. This was by far the best five dollars I have ever spent; the knowledge I have gained about computers is unimaginable. Who this book is for: -Person(s) of any age wanting to require knowledge about how computers really work -Anyone who has been interested in electronics -Hobbyists of electronics who create and mod projects on a daily basis Who this book is for not: -Person(s) not wanting to invest time into learning about what is dominating past, current, and future decades As a fifteen year old I haven't been through most high school science classes, nor math classes and this books was very

understandable to me. The book starts out as a simple Light circuit with a battery and light bulb and through pages gains complexity and different circuits. The book also explains simple programming and how a computer would use these circuits to store, erase, and read data. The two main parts of a computer this book is revolved around is the processor and the main memory; it fully explains both to its fullest potential and how each use each other to create programs. The final result leaves you with how memory works, and how a processor functions with that memory. It also leaves you with knowing how binary and simple programs work by using the processor and memory. All in all, its a marvelous read.

Most people think computers are all about 1's and 0's. This book shows exactly how all those ones and zero are just symbolic representations of on and off. I thoroughly enjoyed the logical flow of this book. It is not for the novice however. It will get quite involved in logic circuits and how they combine to make memory and processing work in a 16 bit computer. Every computer science student should own this book!

This book provides a good introduction to the way in which relays (which can be understood to work as transistors, though a section that fully expanded into transistors would have been nice) are integrated and signals passed for executing commands and reading memory. It presents the information in a very incremental fashion, but one still needs to expend effort (as one does in any learning situation) to trace the various paths to understand what relays are open/closed and why. The diagrams take work to trace, and as with any technical schematic, glancing at the diagram is insufficient. In any given diagram, some relays are open, some closed, and the issue is to work through why is a relay open/closed, and what signal needs to be applied to change it. I would have liked a book that went further and continued to build upon what was presented. For example, getting to the point of showing a full 8-bit system. In addition, in this current world, I would have liked to see assembly commands built around the x86 platform. Nonetheless, if you are like me in not having worked with computers at this level, despite years of programming them, this book is a good introduction into how the logic circuits are created.

The book is dry as sand, but very indepth and, as far as I can see, correct. It begins with a drawing of a wire connecting a battery to a lightbulb via a switch, and evolves that into a 4 bit computer with ROM, RAM, a clock and a 1-instruction (no opcodes) Van Neuman processor. Code: The Hidden Language of Computer Hardware and Software covers the same territory, only much better, for

almost 3 times the price (that's still cheap though). This book uses simple language and appears to be aimed at young people. Sufficiently nerdy teens might love it. As in Petzold's book (link above), there is no explanation of how transistors really work. It's certainly worth the price.

The 4 star rating is not because of the content. The content of this work is very informative and fulfilling to the person interested in IC setup and basic binary, hex, etc. It also features more basic things like Boolean logic, simple switch, transistor, mosfet type stuff. My biggest problem with this book is that it didn't go as far into the power issues memory can face. It is also apparently free from other sources. Otherwise, a fine explanation

The overall presentation of the layout (if you can call it that) and the illustrations leave A LOT to be desired, to put it mildly. Even though this book does go into more detail in some areas, I would have to recommend the book 'Code' by Charles Petzold instead for learning about this type of stuff.

this is a great book to get an understanding of a working model and is ment to be study over again, if you read national enquire, us, people, pass this book. however if you like discovery, time, popular mechanics, this would be a good purchase.

It's really hard to find a book that isn't for computer engineering majors on this topic. I think the author does a great job at explaining the basics. The author uses slightly older technology to explain the concepts, but he does this because it is simpler thus easier to teach the concepts, and he newer technology is not that different. After a while, the author did kinda loose me. But, I learned so much before hand it really didn't matter. So, I gave this book 4 stars. It worked for some of the knowledge I wanted to attain about how memory works and a few basic electrical engineer concepts. I only wish the author came out with another book that explains modern day circuits in an easy to understand manner...this would be more useful.

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