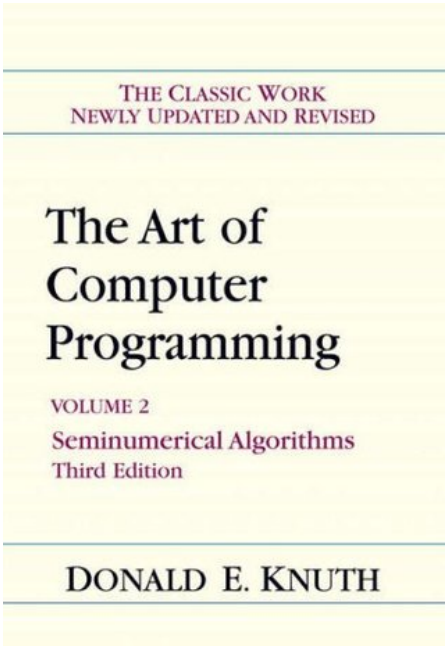

The Art of Computer Programming, Volume 2: Seminumerical Algorithms

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The bible of all fundamental algorithms and the work that taught many of today's software developers most of what they know about computer programming. -Byte, September 1995 *I can't begin to tell you how many pleasurable hours of study and recreation they have afforded me! I have pored over them in cars, restaurants, at work, at home... and even at a Little League game when my son wasn't in the line-up.* -Charles Long *If you think you're a really good programmer... read [Knuth's]* Art of Computer Programming... *You should definitely send me a resume if you can read the whole thing.* -Bill Gates *It's always a pleasure when a problem is hard enough that you have to get the Knuths off the shelf. I find that merely opening one has a very useful terrorizing effect on computers.* -Jonathan Laventhol The second volume offers a complete introduction to the field of seminumerical algorithms, with separate chapters on random numbers and arithmetic. The book summarizes the major paradigms and basic theory of such algorithms, thereby providing a comprehensive interface between computer programming and numerical analysis. Particularly noteworthy in this third edition is Knuth's new treatment of random number generators, and his discussion of calculations with formal power series.
Ebook (PDF version) produced by Mathematical Sciences Publishers (MSP), http: //msp.org

The Art of Computer Programming, Volume 2: Seminumerical Algorithms Details

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Genre	:	Computer Science, Programming, Science, Algorithms, Computers, Reference, Nonfiction, Technical, Mathematics, Technology

From Reader Review The Art of Computer Programming, Volume 2: Seminumerical Algorithms for online ebook

Parnell says

The depth of thought and exploration of fundamental algorithms and their adaptation (sometimes modification) to computing is impressive. Knuth clearly has a love for detail and making the detail germane.

Some sections are very thick and not all of the mathematics or exercises I could do, but don't let the book scare you away. I understand far more about how my computer works than I did before and I learned a lot about algorithmic methods for what feel like simple tasks that only feel simple because we were taught the easiest algorithms in fifth grade.

I think his more passionate and favorite parts of the book were: pseudo-random numbers, method of complements, and the manipulation of numbers represented in exotic radixes (like negabinary or imaginary).

Arun Rajappa says

Difficult, instructive, intelligent, amusing and brain-numbing - all rolled-in-to-one in this classic of CS. Buy it, read a page at a sitting and savor it - this is a book read over 5 years.

Topilno says

Creating Web Pages for Dummies

Linda Friedman says

didn't really read this volume. :)

Eugene Miya says

A short story: some years ago, a Silicon Valley institution existed named Computer Literacy Bookshop founded by a couple of friends and run by a 3rd. They sold the shop to a couple of guys who owned the cbooks domain, and they decided to have a book signing with Knuth for the newly reprinted TeX versions of TAOCP. I was lucky to be invited to a dinner before hand. The new owners reached out to shake Don's hand when one asked the question: "Are there any applications for Fibonacci numbers?" Which caused me to roll my eyes in the back of my head, and thinking "Oh, a few dozen", which was basically Don's answer.

This is why one reads Vol. 2.

Until DEK wrote vol. 2 this was a little researched area in math. TAOCP is more a reference to important algorithms which aren't purely numerical methods (excepting sorting and searching, saved for Vol. 3).

If any single criticism for TAOCP stands out, it's that Don has chosen to stick with MIX (and MMIX) rather than higher level languages like Pascal (in his time) or C/C++, or Java, or what ever easier to program future language comes along. Don has his reasons to illustrate lower level machine function. Bear with him. Vol. 2 is an incredible reference, and you will be able to understand more the Fibonacci answer.

Gregory Blake says

More so than even in the first volume of the series, this is a math-forward approach to Computer Science. I enjoyed the theory on psuedorandom number series, and the early parts of arithmetic, but got lost during the coverage of polynomial series and matrices. Knuth's treatment of his subject matter is (as expected) almost painfully thorough.

If you're a programmer with limited mathematical background, I strongly advise reviewing college algebra, pre-calculus, and calculus prior to reading this book.

Josh Berry says

This was a much denser volume than the first volume. To say that it went over my head in many parts would be an understatement. It is interesting to see the points for where highly computationally intensive applications will have to be concerned.

The first half is a good warning to consider before you try and do anything "random." It actually begins with simple tests that are very intuitive to determine how random a series is and builds up to some fairly comprehensive tests.

Interestingly, the intro to the second half is just plain fun for a brief history of arithmetic. To the point that you will feel like such a "simple" discipline will seem almost alien. Very impressive.

At any rate, I do plan on revisiting sections later. Not sure I will make a ton more progress, but you won't know till you try. And many of these topics are more reachable once you missed them the first twenty times. :)
