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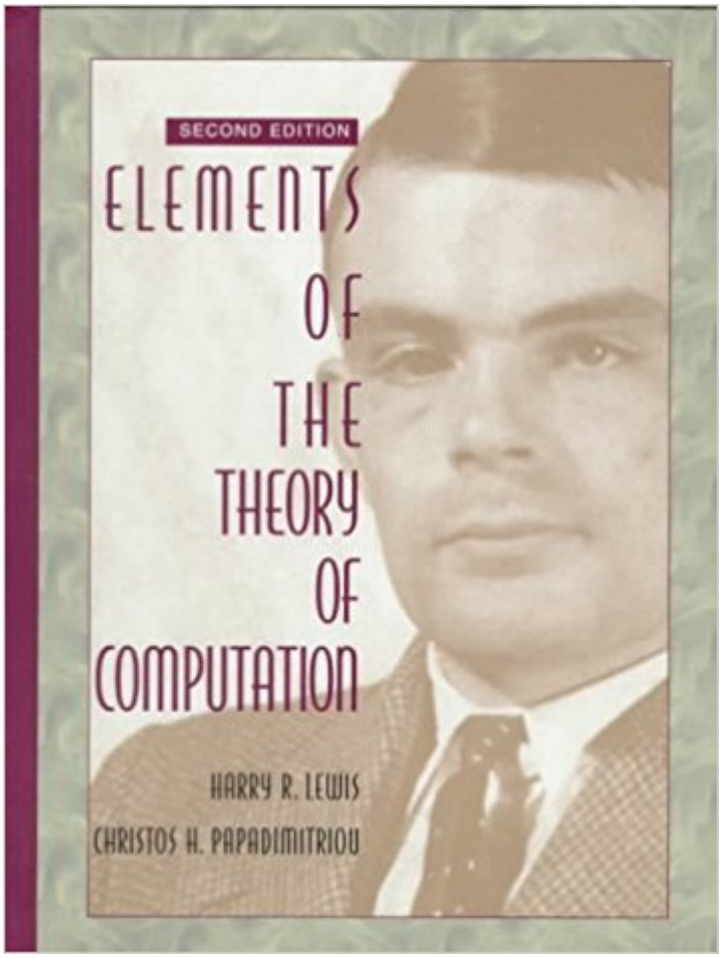
Elements Of The Theory Of Computation (2nd Edition)



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Synopsis

Lewis and Papadimitriou present this long awaited Second Edition of their best-selling theory of computation. The authors are well-known for their clear presentation that makes the material accessible to a a broad audience and requires no special previous mathematical experience. In this new edition, the authors incorporate a somewhat more informal, friendly writing style to present both classical and contemporary theories of computation. Algorithms, complexity analysis, and algorithmic ideas are introduced informally in Chapter 1, and are pursued throughout the book. Each section is followed by problems.

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Customer Reviews

A general, yet comprehensive, introduction to the classical and contemporary theory of computation. --This text refers to an out of print or unavailable edition of this title.

Lewis and Papadimitriou present this long awaited Second Edition of their best-selling theory of computation. The authors are well-known for their clear presentation that makes the material accessible to a a broad audience and requires no special previous mathematical experience. In this new edition, the authors incorporate a somewhat more informal, friendly writing style to present both classical and contemporary theories of computation. Algorithms, complexity analysis, and algorithmic ideas are introduced informally in Chapter 1, and are pursued throughout the book. Each section is followed by problems.

I enjoyed this book because I enjoy formal mathematics. This is not an applications book, but a formal study of the mathematics that underly algorithmic design and analysis. I'm no math wizard, and I found this book readable (but I had to take it very slowly). The course for which I bought the book only covered chapters 1 - 4 and glossed over the final 3 chapters, but I intend to read the rest over the summer between semesters because it's so well and thoroughly written. This book is *dense*. I had to re-read everything three times before I absorbed it all, but ultimately I've understood everything I've read. The hardest parts to understand were the formal "proofs by induction" on the lengths of strings and sets - and, as any math student knows, you can gloss over the proofs on the first reading. A lot of the formal definitions (finite automata, pushdown automata, Turing machines, context-free grammars, etc.) baffled me on the first reading, but after reviewing the examples and working through a few problems, I could go back, re-read the formal definition and understand it.My principal complaint with this book, and the only reason I gave this book a four-star review instead of five, is the same complaint I have with a lot of other textbooks - there are no answers for any of the problems (nor can I find a supplement or a study guide or any help anywhere). Given the nature of the problems themselves, it's impossible to verify your answers. This seems to be a trend in textbooks, and it's extremely frustrating. I plan to self-study the last half of the book in the next few months, but without a self-study guide, I'm pretty much out of luck if I can't solve a problem.

1)The book I got is having the headings in some other language along with English which isn't there in the original book.2)Also the size of the book is very small and the letter size in the book are very small which is not there in the original book.So I am not satisfied with this book.

I used this book for a Theory of Computation (TOC) course that I did in the 4th year of my college. I must mention that I am a Math major, and had done courses in Mathematical Logic and others BEFORE doing TOC.TOC is an extremely interesting subject. I had a great instructor for my course, and towards the later part of the course I used this book only for the end of the chapter problems which I found to be very useful in understanding the course contents.This book, unfortunately has a lot of typos. Typos in Mathematical proofs are extremely irritating, because students often end up wasting a lot of time on the proofs with the typos. Another thing that I didnt like about the book was that the authors don't give sufficient examples. The section on turing machines should ideally have examples of machines for various computable functions. The authors give examples for only a few.

The few examples given are well explained, but am sure the authors could have done with a some more examples.Similar problems are seen in the sections covering the pumping lemmas. The authors give only a couple of examples wherein they apply the pumping lemma for regular/context-free languages. Too little to help undergraduates master the techniques of using the very versatile and powerful pumping lemmas. They do give a good selection of exercises at the end of the chapter, but if you are using the book for self study, and dont have a good instructor to help you, you are going to have a hard time trying to solve those problems. The exercises require many original ideas, and I don't think the text/solved examples prepare one for that.

I discuss the first edition- I havent read the updated version. People have strong opinions about this classic book. Many students have it forced upon them for a class and they absolutely despise it. But a small number of people like me loved it, in fact its still one of my favorite textbooks. I first learned automata and computation theory here (which explains some of my fondness for the book), and it seemed kind of dull and strange until about halfway through- at which point I realized it's all very cool and I subsequently poured over the entire book several times. To get through it you need to enjoy mathematics and careful, rigorous definitions and proofs- rather than viewing these things as pointless obscurantism or pedantic arrogance. Engineering students tend to find the book dense, boring, and too difficult. Some people are intimidated by the sheer volume of special notation used. But if you're inclined towards mathematics or theoretical work you'll appreciate the extra rigor and precision (compared to most computation theory books). There are a few rough spots in it (I admit the development of the Herbrand expansion theorem in the last chapter is a mess, and the coverage of parsing theory isn't great), and some of the terminology and approaches are a little nonstandard, but overall a great book that will give you the foundation to begin studying computational complexity theory, recursive function theory, or mathematical logic. Note that the second edition has removed the chapters on logic, and I've heard its watered down. If you want something a little harder and more pure-math oriented, try Martin Davis's Computability and Unsolvability.

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