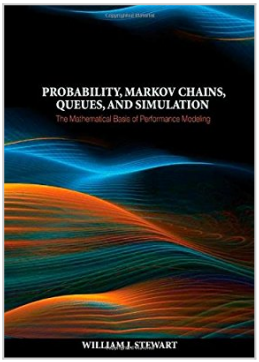

Probability, Markov Chains, Queues, and Simulation: The Mathematical Basis of Performance Modeling

By William J. Stewart

Probability, Markov Chains, Queues, and Simulation: The Mathematical Basis of Performance Modeling By William J. Stewart

Probability, Markov Chains, Queues, and Simulation provides a modern and authoritative treatment of the mathematical processes that underlie performance modeling. The detailed explanations of mathematical derivations and numerous illustrative examples make this textbook readily accessible to graduate and advanced undergraduate students taking courses in which stochastic processes play a fundamental role. The textbook is relevant to a wide variety of fields, including computer science, engineering, operations research, statistics, and mathematics.

The textbook looks at the fundamentals of probability theory, from the basic concepts of set-based probability, through probability distributions, to bounds, limit theorems, and the laws of large numbers. Discrete and continuous-time Markov chains are analyzed from a theoretical and computational point of view. Topics include the Chapman-Kolmogorov equations; irreducibility; the potential, fundamental, and reachability matrices; random walk problems; reversibility; renewal processes; and the numerical computation of stationary and transient distributions. The M/M/1 queue and its extensions to more general birth-death processes are analyzed in detail, as are queues with phase-type arrival and service processes. The M/G/1 and G/M/1 queues are solved using embedded Markov chains; the busy period, residual service time, and priority scheduling are treated. Open and closed queueing networks are analyzed. The final part of the book addresses the mathematical basis of simulation.

Each chapter of the textbook concludes with an extensive set of exercises. An instructor's solution manual, in which all exercises are completely worked out, is also available (to professors only).

- Numerous examples illuminate the mathematical theories
- Carefully detailed explanations of mathematical derivations guarantee a valuable pedagogical approach
- Each chapter concludes with an extensive set of exercises

Probability, Markov Chains, Queues, and Simulation: The Mathematical Basis of Performance Modeling

By William J. Stewart

Probability, Markov Chains, Queues, and Simulation: The Mathematical Basis of Performance Modeling By William J. Stewart

Probability, Markov Chains, Queues, and Simulation provides a modern and authoritative treatment of the mathematical processes that underlie performance modeling. The detailed explanations of mathematical derivations and numerous illustrative examples make this textbook readily accessible to graduate and advanced undergraduate students taking courses in which stochastic processes play a fundamental role. The textbook is relevant to a wide variety of fields, including computer science, engineering, operations research, statistics, and mathematics.

The textbook looks at the fundamentals of probability theory, from the basic concepts of set-based probability, through probability distributions, to bounds, limit theorems, and the laws of large numbers. Discrete and continuous-time Markov chains are analyzed from a theoretical and computational point of view. Topics include the Chapman-Kolmogorov equations; irreducibility; the potential, fundamental, and reachability matrices; random walk problems; reversibility; renewal processes; and the numerical computation of stationary and transient distributions. The M/M/1 queue and its extensions to more general birth-death processes are analyzed in detail, as are queues with phase-type arrival and service processes. The M/G/1 and G/M/1 queues are solved using embedded Markov chains; the busy period, residual service time, and priority scheduling are treated. Open and closed queueing networks are analyzed. The final part of the book addresses the mathematical basis of simulation.

Each chapter of the textbook concludes with an extensive set of exercises. An instructor's solution manual, in which all exercises are completely worked out, is also available (to professors only).

- Numerous examples illuminate the mathematical theories
- Carefully detailed explanations of mathematical derivations guarantee a valuable pedagogical approach
- Each chapter concludes with an extensive set of exercises

Probability, Markov Chains, Queues, and Simulation: The Mathematical Basis of Performance Modeling By William J. Stewart Bibliography

- Sales Rank: #301356 in Books
- Brand: Brand: Princeton University Press
- Published on: 2009-07-26
- Original language: English
- Number of items: 1
- Dimensions: 10.00" h x 1.60" w x 7.10" l, 3.30 pounds
- Binding: Hardcover
- 776 pages

Editorial Review

Review
"The book represents a valuable text for courses in statistics and stochastic processes, so it is strongly recommended to libraries."**--Hassan S. Bakouch,** ***Journal of Applied Statistics***

From the Back Cover

"This is an excellent book on the topics of probability, Markov chains, and queuing theory. Extremely well-written, the contents range from elementary topics to quite advanced material and include plenty of well-chosen examples."**--Adarsh Sethi, University of Delaware**

"Clear and pleasant to read, this book distinguishes itself from comparable textbooks by its inclusion of the computational aspects of the material."**--Richard R. Muntz, University of California, Los Angeles**

About the Author
William J. Stewart is professor of computer science at North Carolina State University. He is the author of "An Introduction to the Numerical Solution of Markov Chains" (Princeton).

Users Review

From reader reviews:

William Grimm:

Book is to be different for each grade. Book for children until adult are different content. We all know that that book is very important for us. The book Probability, Markov Chains, Queues, and Simulation: The Mathematical Basis of Performance Modeling was making you to know about other understanding and of course you can take more information. It is extremely advantages for you. The guide Probability, Markov Chains, Queues, and Simulation: The Mathematical Basis of Performance Modeling is not only giving you much more new information but also to become your friend when you feel bored. You can spend your own personal spend time to read your publication. Try to make relationship with the book Probability, Markov Chains, Queues, and Simulation: The Mathematical Basis of Performance Modeling. You never sense lose out for everything in case you read some books.

Ralph Ainsworth:

Often the book Probability, Markov Chains, Queues, and Simulation: The Mathematical Basis of Performance Modeling will bring you to the new experience of reading a new book. The author style to clarify the idea is very unique. If you try to find new book to learn, this book very suitable to you. The book Probability, Markov Chains, Queues, and Simulation: The Mathematical Basis of Performance Modeling is much recommended to you you just read. You can also get the e-book through the official web site, so you can quickly to read the book.

Linda Soto:

Do you have something that you prefer such as book? The publication lovers usually prefer to decide on book like comic, limited story and the biggest an example may be novel. Now, why not hoping Probability, Markov Chains, Queues, and Simulation: The Mathematical Basis of Performance Modeling that give your entertainment preference will be satisfied through reading this book. Reading practice all over the world can be said as the opportunity for people to know world much better then how they react when it comes to the world. It can't be claimed constantly that reading routine only for the geeky particular person but for all of you who wants to become success person. So , for all you who want to start looking at as your good habit, you are able to pick Probability, Markov Chains, Queues, and Simulation: The Mathematical Basis of Performance Modeling become your own personal starter.

Kenneth Jordan:

Reading a publication make you to get more knowledge from it. You can take knowledge and information from your book. Book is written or printed or highlighted from each source in which filled update of news. Within this modern era like today, many ways to get information are available for you actually. From media social including newspaper, magazines, science guide, encyclopedia, reference book, story and comic. You can add your understanding by that book. Do you want to spend your spare time to open your book? Or just trying to find the Probability, Markov Chains, Queues, and Simulation: The Mathematical Basis of Performance Modeling when you required it?

Read Probability, Markov Chains, Queues, and Simulation: The Mathematical Basis of Performance Modeling By William J. Stewart for online ebook

Probability, Markov Chains, Queues, and Simulation: The Mathematical Basis of Performance Modeling By William J. Stewart Free PDF d0wnl0ad, audio books, books to read, good books to read, cheap books, good books, online books, books online, book reviews epub, read books online, books to read online, online library, greatbooks to read, PDF best books to read, top books to read Probability, Markov Chains, Queues, and Simulation: The Mathematical Basis of Performance Modeling By William J. Stewart books to read online.

Online Probability, Markov Chains, Queues, and Simulation: The Mathematical Basis of Performance Modeling By William J. Stewart ebook PDF download

Probability, Markov Chains, Queues, and Simulation: The Mathematical Basis of Performance Modeling By William J. Stewart Doc

Probability, Markov Chains, Queues, and Simulation: The Mathematical Basis of Performance Modeling By William J. Stewart Mobipocket

Probability, Markov Chains, Queues, and Simulation: The Mathematical Basis of Performance Modeling By William J. Stewart EPub

VWJPET64RCO: Probability, Markov Chains, Queues, and Simulation: The Mathematical Basis of Performance Modeling By William J. Stewart