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analysis; 1.3.6.6. Marking graph; 1.3.6.7. Generator of Markovian processes; 1.3.6.8. Fundamental equation; 1.3.6.9. Steady-state probabilities; 1.3.6.10. Performance indices (steady state); 1.4. Discrete-event simulation; 1.4.1. The role of simulation in logistics systems analysis; 1.4.2. Components and dynamic evolution of systems; 1.4.3. Representing chance and the Monte Carlo method; 1.4.3.1. Uniform distribution  $U [0, 1]$ ; 1.4.3.2. The Monte Carlo method; 1.4.4. Simulating probability distributions  
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1.4.4.2. Simulating discrete random variables; 1.4.4.3. Simulating continuous random variables; 1.4.5. Discrete-event systems; 1.4.5.1. Key aspects of simulation; 1.5. Decomposition method; 1.5.1. Presentation; 1.5.2. Details of the method; Chapter 2. Optimization; 2.1. Introduction; 2.2. Polynomial problems and NP-hard problems; 2.2.1. The complexity of an algorithm; 2.2.2. Example of calculating the complexity of an algorithm; 2.2.3. Some definitions; 2.2.3.1. Polynomial-time algorithms; 2.2.3.2. Pseudo-polynomial-time algorithms  
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2.4.2.2. Management of pheromones: example of the traveling salesman problem

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## Sommario/riassunto

This book aims to help engineers, Masters students and young researchers to understand and gain a general knowledge of logistic systems optimization problems and techniques, such as system design, layout, stock management, quality management, lot-sizing or scheduling. It summarizes the evaluation and optimization methods used to solve the most frequent problems. In particular, the authors also emphasize some recent and interesting scientific developments, as well as presenting some industrial applications and some solved instances from real-life cases. Performance evaluation tools (Pet

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