METADATA

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Abstract

The book consists of three parts which answer the fundamental questions of this specific scientific field: a) What is the theory behind a simulation? b) How do we implement a simulator? c) How do we use the simulations and the results they give us? The first part of the book (Chapters 1 and 2) "builds" the necessary theoretical background for designing and implementing simulation studies. The second part of the book (chapters 3-8) studies the core of this scientific field which is no other than the implementation of simulators itself. We study 24 short programs written in C++ and 13 simulator implementations in the C++ language and the JaamSim software of JaamSim Software Inc. (https://jaamsim.com/). The simulators concern, among others, production, inventory, service and queuing systems. All applications are freely available to readers who may cite this book as a bibliographical source (see licensing page at the beginning of the book). The third part of the book (Chapters 9 and 10) addresses the topics that come after a simulator implementation. In chapter 9 we study how to set up/run simulation experiments and how to analyze the numerical results. In chapter 10 we discuss key issues related to optimization in simulation applications.

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