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This well established text covers both the theory and practice of scheduling. On the one hand it contains computational complexity analyses of numerous scheduling models, on the other it considers a range of commercial scheduling systems. The third edition includes new material on polynomial time approximation schemes, constraint programming and online scheduling, as well as batch and family setup processing. There is also an accompanying CD-ROM. There are 555 pages of text, more than 300 exercises, classified as either computational or theory and no fewer than 500 references spanning the period 1957 to 2007. The eight appendices cover mathematical programming formulations and applications, deterministic and stochastic dynamic programming, constraint programming, complexity theory, a complexity classification of deterministic scheduling problems, an overview of stochastic scheduling problems, selected scheduling systems and the academic Lekin system. The CD-ROM contains slides and lecture note handouts from five schools that have adopted this text, three academic scheduling systems, a complex case study, including a 31 page case analysis, nine mini-cases and two movies about scheduling in the aircraft industry. There is also an accompanying solutions manual and a website.

The book begins with motivating examples and the penultimate chapter discusses some commercial scheduling systems and examples of their implementations. In between there is a thorough analysis of scheduling theory and practice. The text is divided into three parts. Part I considers deterministic models from single machines through parallel machines to flow, job and open shops. This is the longest of part of the book covering many of the myriad of scheduling

scenarios. A typical chapter contains theorems and proofs of the optimality and computational complexity of various algorithms, together with discussion and comments and references sections as well as numerical and more challenging exercises requiring proofs.

Part II, the shortest of the three, deals with stochastic models, with a format similar to that of Part I. In this part a distinction is made between static and dynamic schedules. In the latter the evolution of stochastic processes can be taken into account in the scheduling process. After an introductory chapter on stochastic models there are chapters on single machines, parallel machines and finally a single one covering flow, job and open shops. Not surprisingly the proofs in this part are generally longer. Some results assume particular probability distributions. In various cases problems whose deterministic versions are NP-hard have polynomial time expected value solutions, for their stochastic counterparts.

Part III, entitled scheduling in practice, includes material on dispatching rules such as earliest release date first, and meta-heuristics such as genetic algorithms, simulated annealing and ant colony optimization. There are two chapters on the design and implementation of scheduling systems. The second last chapter provides overviews of six commercial and one academic scheduling system. Possible future developments are discussed in the brief final chapter. These include new scheduling formats such as online and multiple agent, schedule robustness to cope with unexpected changes and the design of suitable user interfaces.

As is evident from the above, the text covers a wide range of topics, sometimes adopting a theoretical and at other times a more practical approach. The presentation throughout is clear and elegant with plentiful diagrams to assist the student. The book should be very useful to graduate students, instructors and researchers in the field of scheduling and to the wider operations research community.