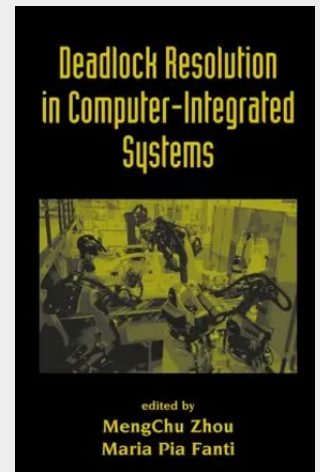


Deadlock Resolution in Computer-Integrated Systems

Complex computer-integrated systems offer enormous benefits across a wide array of applications, including automated production, transportation, concurrent software, and computer operating systems, computer networks, distributed database systems, and many other automated systems. Yet, as these systems become more complex, automated, distributed, and computing-intensive, the opportunity for deadlock issues rises exponentially. Deadlock modeling, detection, avoidance, and recovery are critical to improving system performance. Deadlock Resolution in Computer-Integrated Systems is the first text to summarize and comprehensively treat this issue in a systematic manner. Consisting of contributions from prominent researchers in the field, this book addresses deadlock-free models and scheduling, detection and recovery methods, the formulation of dynamic control policies, and comparison and industrial benchmark studies that evaluate various approaches. The editors lay the foundation for exploring deadlock issues with a typical example of an automated manufacturing process, illustrating three primary modeling methods (digraphs, Petri nets, and automata) and comparing their respective advantages and disadvantages. Providing all of the important models and resolution approaches, this book is the complete guide for electrical and control engineers and manufacturing, intelligent, and network systems designers to prevent and manage deadlock issues in their systems.



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