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Introduction to

## Reliable and Secure Distributed Programming

Second Edition

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C. **Cachin**, R. **Guerraoui**, L. **Rodrigues**
**Introduction to Reliable and Secure Distributed Programming**

► **Introduces fundamental reliable and secure distributed programming abstractions, and offers algorithms to implement these abstractions**
► **Incremental approach explores basic abstractions before moving to more sophisticated concepts**
► **The book functions as a complete practical reference to the basics of reliable distributed programming applications**
► **Includes a companion set of running examples implemented in Java**

In modern computing a program is usually distributed among several processes. The fundamental challenge when developing reliable and secure distributed programs is to support the cooperation of processes required to execute a common task, even when some of these processes fail. Failures may range from crashes to adversarial attacks by malicious processes.

Cachin, Guerraoui, and Rodrigues present an introductory description of fundamental distributed programming abstractions together with algorithms to implement them in distributed systems, where processes are subject to crashes and malicious attacks. The authors follow an incremental approach by first introducing basic abstractions in simple distributed environments, before moving to more sophisticated abstractions and more challenging environments. Each core chapter is devoted to one topic, covering reliable broadcast, shared memory, consensus, and extensions of consensus. For every topic, many exercises and their solutions enhance the understanding

This book represents the second edition of "Introduction to Reliable Distributed Programming". Its scope has been extended to include security against malicious actions by non-cooperating processes. This important domain has become widely known under the name "Byzantine fault-tolerance".