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Altri autori (Persone)	SachaKrzysztof M
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Nota di contenuto	Contents; Preface; List of Figures; List of Tables; Authors; Chapter 1 Real-Time Computing and Industrial Process Automation; 1.1

Introduction; 1.2 Industrial Control Systems; 1.3 Example: A Chemical Process; 1.4 Historical Perspective; Chapter 2 Conceptual Foundations; 2.1 Real-Time System Characteristics; 2.2 Continuous and Discrete Time; 2.3 Engineering Approach to Hard Real-Time System Design; Chapter 3 Digital Control of Continuous Processes; 3.1 Introduction; 3.2 Linear System Theory; 3.3 Control System Analysis and Design; 3.4 Digitising Analogue Signals; 3.5 New Developments

Chapter 4 Hardware Architectures 4.1 Classical Process Automation; 4.2 Centralised Direct Digital Control; 4.3 Redundant Configurations; 4.4 Multi-Level Control Systems; 4.5 Networked Distributed Systems; 5.3 Analogue Outputs; 5.4 Analogue Inputs; 5.5 Serial Interface; Chapter 6 Communication Networks; 6.1 Network Architecture; 6.2 LAN Technology; 6.3 LAN Medium Access Control; 6.4 LAN Logical Link Control; 6.5 MAP /TOP Protocol; Chapter 7 Real-Time Operating Systems Principles; 7.1 Operating System Requirements; 7.2 Synchronous and Asynchronous Task Execution

7.3 Multi-Tasking 7.4 Task Synchronisation and Communication; 7.5 Time and Event Handling; 7.6 Distributed Operating Systems; Chapter 8 Comparison of Some Real-Time Operating Systems; 8.1 System iRMX88; 8.2 System iRMX; 8.3 System QNX; 8.4 System PORTOS; 8.5 Comparison of Real-Time Operating Systems; Chapter 9 High Level Real-Time Programming; 9.1 Real-Time Features in High Level Languages; 9.2 A Closer Look at Ada and PEARL; 9.3 Requirements for New High Level Language Features; 9.4 High-Integrity PEARL; 9.5 Advanced Features of High-Integrity PEARL

Chapter 10 Schedulability Analysis 10.1 Schedulability Analyser; 10.2 Front-End of the Schedulability Analyser; 10.2.1 A Segment Tree Example; 10.2.2 Front-End Statistics; 10.3 Back-End of the Schedulability Analyser; 10.4 Program Transformation; 10.5 Empirical Evaluation; Chapter 11 System and Software Life Cycle; 11.1 System Development; 11.2 Software Life Cycle; 11.3 Software Development Economy; 11.4 Classical Software Development Methods; 11.5 Prototyping; 11.6 Object-Oriented Development; 11.7 Transformational Implementation; 11.8 Evaluation of the Development Paradigms

Chapter 12 Software Quality Assurance 12.1 Software Quality Assurance Planning; 12.2 Reviews and Audits; 12.3 Structured Walkthrough and Inspections; 12.4 Software Testing; Chapter 13 Computer Aided Software Engineering Tools; 13.1 Software Development Environments; 13.2 The EPOS System; 13.3 Example: A Chemical Process; Chapter 14 Formal Specification and Verification Methods; 14.1 Introduction; 14.2 Sequential and Parallel Description; 14.3 Petri Nets; 14.4 Properties of Petri Nets; 14.5 Temporal Logic; 14.6 Correctness Verification Using Temporal Logic

Chapter 15 Programmable Logic Controllers

Sommario/riassunto

This book represents the first comprehensive text in English on real-time and embedded computing systems. It is addressed to engineering students of universities and polytechnics as well as to practitioners and provides the knowledge required for the implementation of industrial computerized process control and manufacturing automation systems. The book avoids mathematical treatment and supports the relevance of the concepts introduced by practical examples and case studies. Special emphasis is placed on a sound conceptual basis and on methodologies and tools for the development of high quality