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Nota di contenuto	ADVANCED COMPUTER ARCHITECTURE AND PARALLEL PROCESSING; CONTENTS; PREFACE; 1. Introduction to Advanced Computer Architecture and Parallel Processing; 1.1 Four Decades of Computing; 1.2 Flynn's Taxonomy of Computer Architecture; 1.3 SIMD Architecture; 1.4 MIMD Architecture; 1.5 Interconnection Networks; 1.6 Chapter Summary; Problems; References; 2. Multiprocessors Interconnection Networks; 2.1 Interconnection Networks Taxonomy; 2.2 Bus-Based Dynamic Interconnection Networks; 2.3 Switch-Based Interconnection Networks; 2.4 Static Interconnection Networks; 2.5 Analysis and Performance Metrics 2.6 Chapter SummaryProblems; References; 3. Performance Analysis of Multiprocessor Architecture; 3.1 Computational Models; 3.2 An Argument for Parallel Architectures; 3.3 Interconnection Networks Performance Issues; 3.4 Scalability of Parallel Architectures; 3.5

Benchmark Performance; 3.6 Chapter Summary; Problems; References; 4. Shared Memory Architecture; 4.1 Classification of Shared Memory Systems; 4.2 Bus-Based Symmetric Multiprocessors; 4.3 Basic Cache Coherency Methods; 4.4 Snooping Protocols; 4.5 Directory Based Protocols; 4.6 Shared Memory Programming; 4.7 Chapter Summary; Problems
References5. Message Passing Architecture; 5.1 Introduction to Message Passing; 5.2 Routing in Message Passing Networks; 5.3 Switching Mechanisms in Message Passing; 5.4 Message Passing Programming Models; 5.5 Processor Support for Message Passing; 5.6 Example Message Passing Architectures; 5.7 Message Passing Versus Shared Memory Architectures; 5.8 Chapter Summary; Problems; References; 6. Abstract Models; 6.1 The PRAM Model and Its Variations; 6.2 Simulating Multiple Accesses on an EREW PRAM; 6.3 Analysis of Parallel Algorithms; 6.4 Computing Sum and All Sums; 6.5 Matrix Multiplication
6.6 Sorting6.7 Message Passing Model; 6.8 Leader Election Problem; 6.9 Leader Election in Synchronous Rings; 6.10 Chapter Summary; Problems; References; 7. Network Computing; 7.1 Computer Networks Basics; 7.2 Client/Server Systems; 7.3 Clusters; 7.4 Interconnection Networks; 7.5 Cluster Examples; 7.6 Grid Computing; 7.7 Chapter Summary; Problems; References; 8. Parallel Programming in the Parallel Virtual Machine; 8.1 PVM Environment and Application Structure; 8.2 Task Creation; 8.3 Task Groups; 8.4 Communication Among Tasks; 8.5 Task Synchronization; 8.6 Reduction Operations
8.7 Work Assignment8.8 Chapter Summary; Problems; References; 9. Message Passing Interface (MPI); 9.1 Communicators; 9.2 Virtual Topologies; 9.3 Task Communication; 9.4 Synchronization; 9.5 Collective Operations; 9.6 Task Creation; 9.7 One-Sided Communication; 9.8 Chapter Summary; Problems; References; 10 Scheduling and Task Allocation; 10.1 The Scheduling Problem; 10.2 Scheduling DAGs without Considering Communication; 10.3 Communication Models; 10.4 Scheduling DAGs with Communication; 10.5 The NP-Completeness of the Scheduling Problem; 10.6 Heuristic Algorithms; 10.7 Task Allocation
10.8 Scheduling in Heterogeneous Environments

Sommario/riassunto

Computer architecture deals with the physical configuration, logical structure, formats, protocols, and operational sequences for processing data, controlling the configuration, and controlling the operations over a computer. It also encompasses word lengths, instruction codes, and the interrelationships among the main parts of a computer or group of computers. This two-volume set offers a comprehensive coverage of the field of computer organization and architecture.