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Παράλληλα Συστήματα και Προγραμματισμός

1η αναθεωρημένη έκδοση

Abstract

This textbook targets undergraduate and graduate university students enrolled in Computer Science, Computer Engineering and related programs. The subject of the book is in the forefront of computer technology, dealing with contemporary parallel / multicore computers which are nowadays the only type of computing systems available, be it general or special purpose. The book tries to be self-contained. As such, it can also be useful to general readers, practitioners and professionals who have a working knowledge of computers and programming, but have not been exposed to the relatively new technology of parallelism. The book aims to cover two facets of parallel, high-performance computer systems: (1) Their organization and architecture. The reader will be in position to recognize how such a system operates, how its constituent elements are interconnected, what are the basic problems architects and designers face, and what are the alternative solutions. In this frame, the book covers shared-memory systems, multicores and compute clusters. (2) Their programming. The most popular parallel programming models are presented and utilized. The book covers widely used programming models, such as POSIX threads and OpenMP for shared-address space programming, which is suited for multicore systems, and MPI for message passing, which is a must on clusters.