<<组合网络理论>>

图书基本信息

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内容概要

《组合网络理论(英文版)》内容简介：This book provides the most basic combinatorial problems and well-established theory in design and analysis of the topological structure of interconnection networks in the graph-theoretic language.It covers the basic methods of network design， several well-known networks such as hypercubes， de Bruijn digraphs， Kautz digraphs， double loop， and the newest parameters to measure performance of networks such as forwarding indices of a routing， Menger number， Rabin number， fault-tolerant diameter， wide-diameter， generalized dominating number， and restricted connectivity.It will be of significant interest to researchers and practitioners working in design and analysis of networks， particularly to undergraduates and postgraduates specializing in computer science and applied mathematics.
Xu Junming is a Professor at School of Mathematical Sciences， the University of Science and Technology of China(USTC)， a fellow of Operations Research Society of China， and Commission on Combinatorics and Graph Theory in China.His research interest is combinatorics and graph theory， in particular， combinatorial problems of interconnection networks， has published more than 200 research papers.

书籍目录

章节摘录

Chapter 1Fundamentals of Networks and GraphsIn this chapter, we will briefly recall some basic concepts and notations on graph theory used in this book as well as the corresponding backgrounds in networks.Some basic results on graph theory will be stated, but some proofs will be omitted.For a comprehensive treatment of the graph-theoretic concepts and results discussed herein, the reader is referred to any standard text-book on graph theory, for example, Bondy and Murty [59], Chartrand and Lesniak [83], or Xu [503].1.1 Graphs and NetworksIn this section, we will introduce some concepts on graphs as well as how to model an interconnection network by a graph. Although they have been contained in any standard text-book on graph theory, these concepts defined by one author are different from ones by another. In order to avoid quibbling it is necessary to present a formidable number of definitions.A graph G is an ordered pair （V, E）, where both V and E are non-empty sets, V = V （G） is the vertex-set of G, elements in which are called vertices of G；E = E（G）? V × V is the edge-set of G, elements in which are called edges of G. The number of vertices of G, also called order of G, is denoted by υ （G）. The number of edges of G, also called size of G, is denoted by ε （G）.Two vertices corresponding an edge are called the end-vertices of the edge. The edge whose end-vertices are identical is a loop. The end-vertices of an edge are said to be incident with the edge, and vice versa. Two vertices are said to be adjacent if they are two end-vertices of some edge；two edges are said to be adjacent if they have an end-vertex in common.If E ? V ×V is considered as a set of ordered pairs, then the graph G = （V, E） is called a directed graph, or digraph for short. For an edge e of a digraph G, sometimes, called a directed edge or arc, if a = （x, y） ∈ E（G）, then vertices x and y are called the tail and the head of e, respectively；and e is called an out-going edge of x and an in-coming edge of y.If E ? V ×V is considered as a set of unordered pairs, then the graph G = （V, E） is called an undirected graph. Note that an undirected graph does not admit loops.Usually, it is convenient to denote an unordered pair of vertices by xy or yx instead of {x, y}. Edges of an undirected graph are sometimes called undirected edges.A graph G is empty if ε （G） = 0, denoted by Kc υ , and non-empty otherwise. An undirected graph can be thought of as a particular digraph, a symmetric digraph, in which there are two directed edges called symmetric edges, one in each direction, corresponding to each undirected edge. Thus, to study structural properties of graphs for digraphs is more general than for undirected graphs. A digraph is said to be non-symmetric if it contains no symmetric edges.