

Introducing....*Data Communications and Networking* by Forouzan

We are pleased to present this Edition of Forouzan's *Data Communications and Networking*. It has been developed specifically to meet the need of students of computer networks. In addition to a chapter on the *peer-to-peer paradigm*, a full chapter on *quality of service (QoS)*, generous coverage of *forward error correction*, coverage of WiMAX, and material on socket-interface programming in Java, we have added new end-of-chapter questions and problems to make the content more relevant and improve learning outcomes for the student.

Technologies related to data communications and networking are among the fastest growing in our culture today, and there is no better guide to this rapidly expanding field than Behrouz Forouzan, an author whose visual, student-friendly approach has become a hallmark in computer science instruction.



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FIFTH EDITION

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To my beloved grandson, William.

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PREFACE

Technologies related to data communication and networking may be the fastest growing in our culture today. The appearance of some new social networking applications every year is a testimony to this claim. People use the Internet more and more every day. They use the Internet for research, shopping, airline reservations, checking the latest news and weather, and so on.

In this Internet-oriented society, specialists need be trained to run and manage the Internet, part of the Internet, or an organization's network that is connected to the Internet. This book is designed to help students understand the basics of data communications and networking in general and the protocols used in the Internet in particular.

Features

Although the main goal of the book is to teach the principles of networking, it is designed to teach these principles using the following goals:

Protocol Layering

The book is designed to teach the principles of networking by using the protocol layering of the Internet and the TCP/IP protocol suite. Some of the networking principles may have been duplicated in some of these layers, but with their own special details. Teaching these principles using protocol layering is beneficial because these principles are repeated and better understood in relation to each layer. For example, although *addressing* is an issue that is applied to four layers of the TCP/IP suite, each layer uses a different addressing format for different purposes. In addition, *addressing* has a different domain in each layer. Another example is *framing and packetizing*, which is repeated in several layers, but each layer treats the principle differently.

Bottom-Up Approach

This book uses a bottom-up approach. Each layer in the TCP/IP protocol suite is built on the services provided by the layer below. We learn how bits are moving at the physical layer before learning how some programs exchange messages at the application layer.

Changes in the Fifth Edition

I have made several categories of changes in this edition.

Changes in the Organization

Although the book is still made of seven parts, the contents and order of chapters have been changed. Some chapters have been combined, some have been moved, some are

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- I-frame *see* inter-coded frame
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- ICANN *see* Internet Corporation for Assigned Names and Numbers
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