DATA COMMUNICATION AND NETWORKING

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PREFACE

Data communication refers to data exchange between a source and a receiver through transmission media form such as a wire cable. If communicating devices are in the same building or a similarly restricted geographical area, data communication is said to be local. A network is a series of linked computers, servers, mainframes, network devices, peripherals, or other devices to allow data sharing. The Internet, which links millions of people around the world, is an excellent example of a network. One of the ramifications of this development is a significant increase in the number of careers where knowledge of these technologies is key to success— and a proportionate increase in the number and types of students taking courses to learn about them. Today, students from a range of academic and professional backgrounds who want to understand the concepts and processes underlying telecommunications and networking.

Several features of this text are designed to make data communication and networking particularly easy for students to understand. We used the five-layer Internet model as the framework for the text not only because a thorough understanding of the model is essential to understand most current networking theory, but also because it is based on an interdependency structure: each layer builds on the layer below it and supports the layer above it. Likewise, each concept presented in our text builds on the concepts explored in the preceding chapters. The Internet model has been selected because it is a fully implemented protocol. This text is designed for telecommunications or data communication students with little or no background. We are using a bottom-up

approach for this purpose. With this method, before learning about networking (upper layers), students learn first about data communication (lower layers).

To be effective, students without technical expertise need to have access to a textbook on data communication and networking while still offering content that is sufficiently detailed to challenge more seasoned readers. With this new mix of students in mind, this text is written.

✍ *Author(s)*

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Thirumigu. M.G.BHARATHKUMAR
Founder & Chairman, Mahendra Educational Trust

Foreword

"Good communication is not just data transfer. You need to show people something that addresses their anxieties, that accepts their anger, that is credible in a very gut-level sense, and that evokes faith in the vision".

John P. Kotter, Dan Cohen (2013).

The fastest-growing technologies in our culture today may be data communication and networking. One of the ramifications of this development is a significant increase in the number of careers where learning these innovations is necessary for success and a proportionate increase in the number and types of students taking courses to learn about them.

We used the five-layer Internet model as the framework for the text, not only because a thorough understanding of the model is essential to understand most current networking theory, but also because it is based on an inter-dependency structure. Each layer builds on the layer below it, supporting the layer above it. Likewise, every definition presented in our text builds on the concepts explored in the preceding chapters. The Internet model has been selected because it is a fully implemented protocol. This

text is designed for telecommunications or data communication students with little or no background. We are using a bottom-up approach for this reason. With this approach, before learning about networking (upper layers), students learn first about data communication (lower layers).

I am pleased to note that the Mahendra College of Engineering's HoD of Computer Science and Engineering, Dr. H.Lilly Beaulah and her faculty members, Ms. L.Vinithasree and V.Deepa, have nicely written this book on "Data Communication and Networking" for the student community's benefit. They have accomplished this goal, and I believe their research will inspire and enlighten all those who are interested in computers, computer science, and the growing role of computer and information technology in the modern world.

M.G.BHARATHKUMAR
Founder & Chairman,
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