



# TCS332 Fundamental of Information Security and Blockchain

**B. Tech CSE III Semester**

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- **Unit III: Basics Networking and Web Security**

# 1-1 DATA COMMUNICATIONS

- The term **telecommunication** means communication at a distance.
- The word **data** refers to information presented in whatever form is agreed upon by the parties creating and using the data.
- **Data communications** are the exchange of data between two devices via some form of transmission medium such as a wire cable.

## Topics discussed in this section:

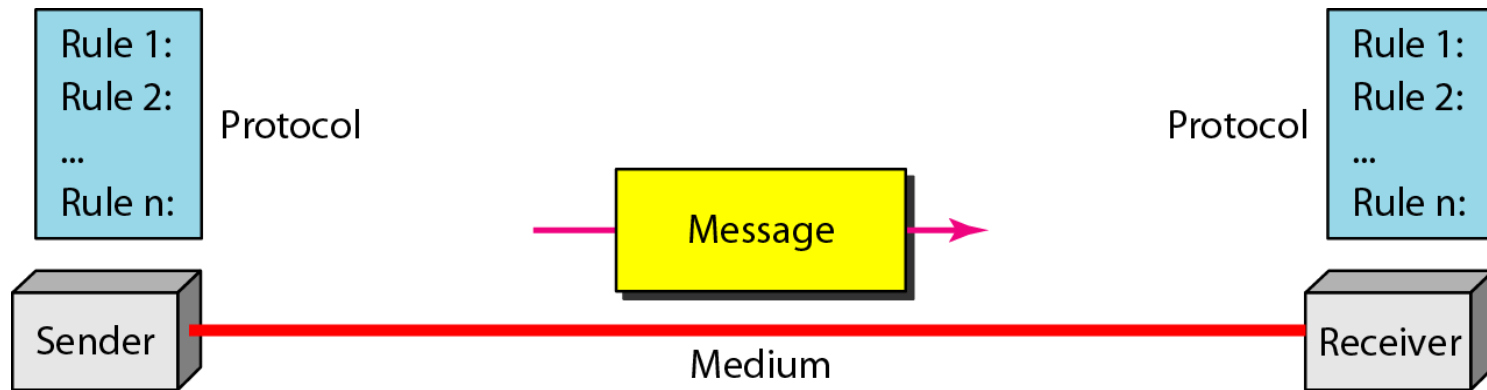
Components

Data Representation

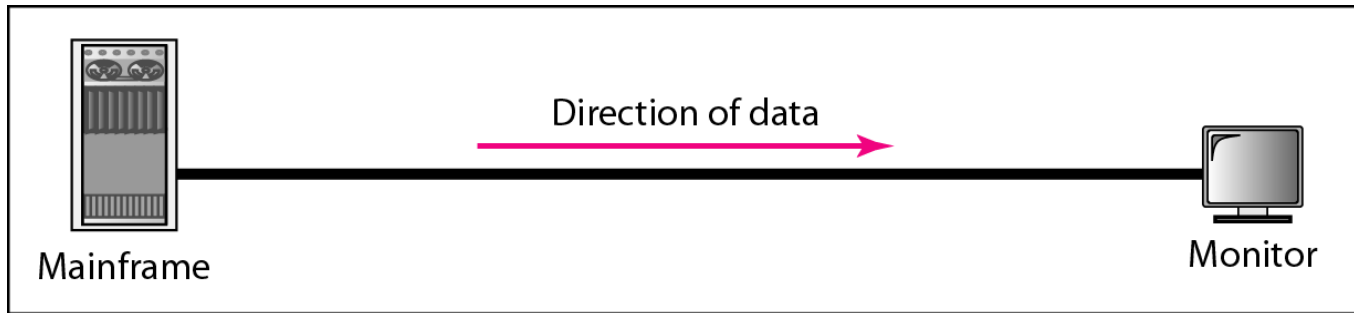
Data Flow

**Figure 1.1** *Five components of data communication*

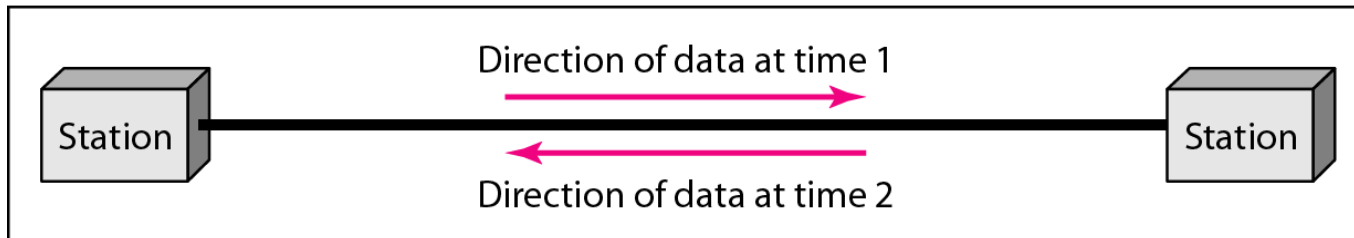
**Data**  
**Sender**  
**Receiver**  
**Transmission Medium**  
**Protocol**



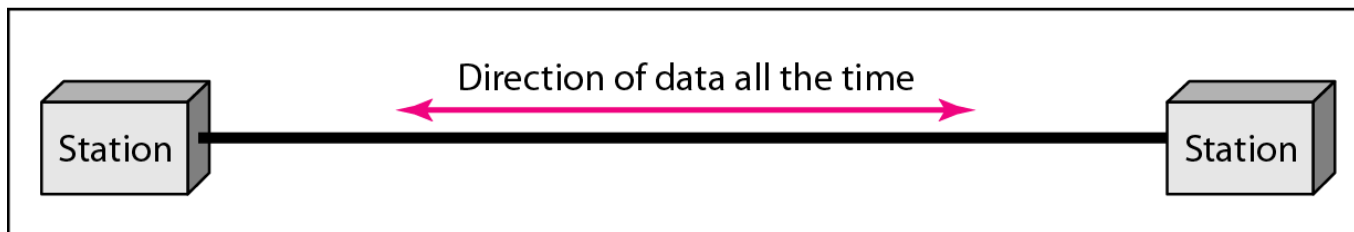
**Figure 1.2** *Data flow (simplex, half-duplex, and full-duplex)*



a. Simplex



b. Half-duplex

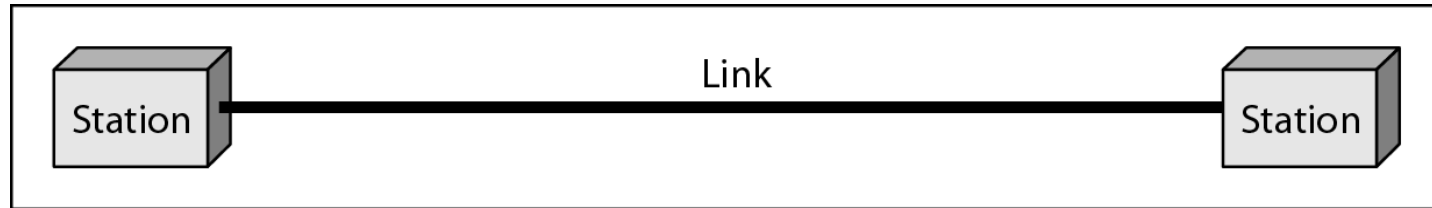


c. Full-duplex

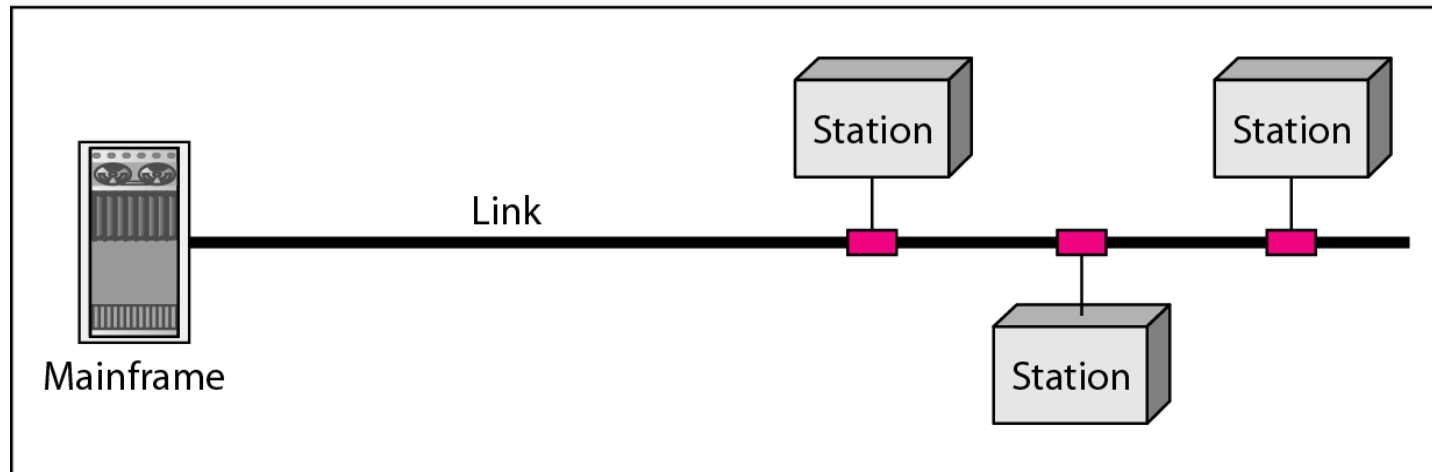
## 1-2 NETWORKS

*A **network** is a set of devices (often referred to as **nodes**) connected by communication **links**. A node can be a computer, printer, or any other device capable of sending and/or receiving data generated by other nodes on the network.*

**Figure 1.3** *Types of connections: point-to-point and multipoint*



a. Point-to-point

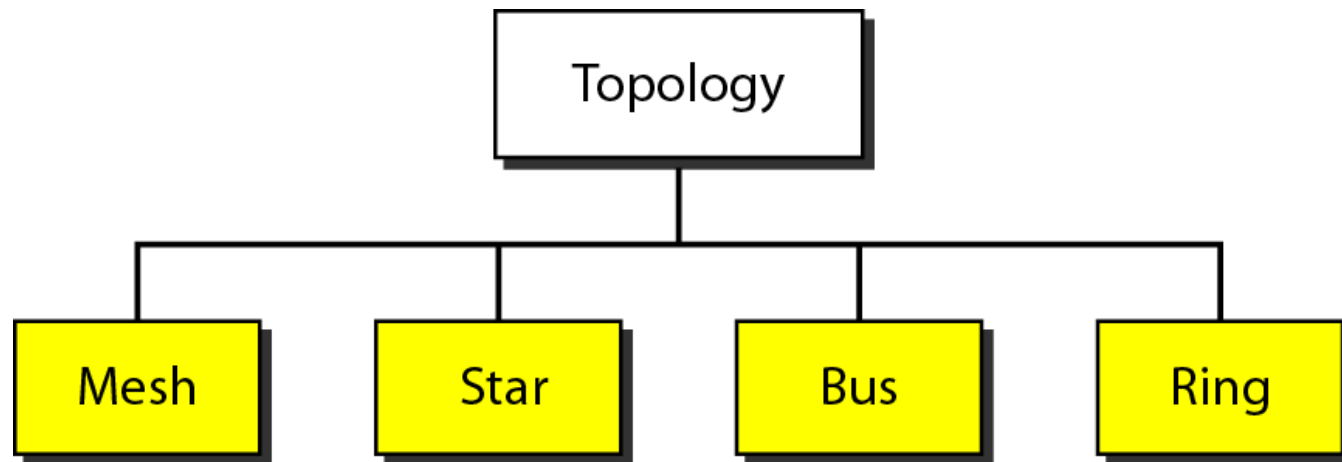


b. Multipoint

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**Figure 1.4** *Categories of topology*

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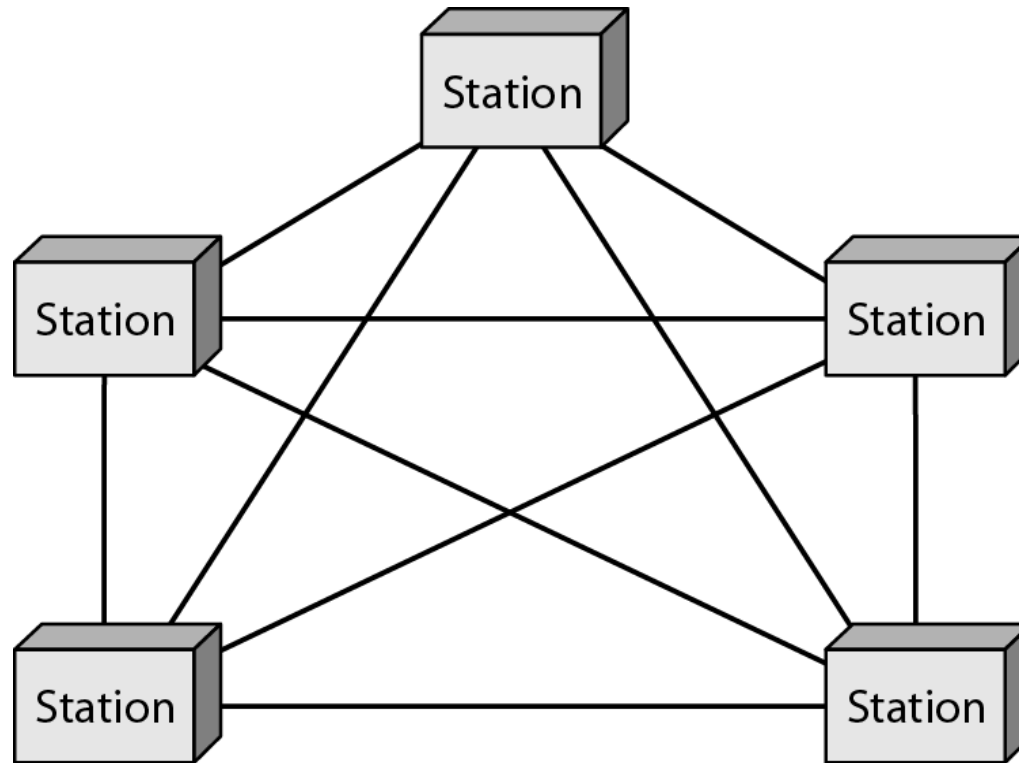




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**Figure 1.5** *A fully connected mesh topology (five devices)*

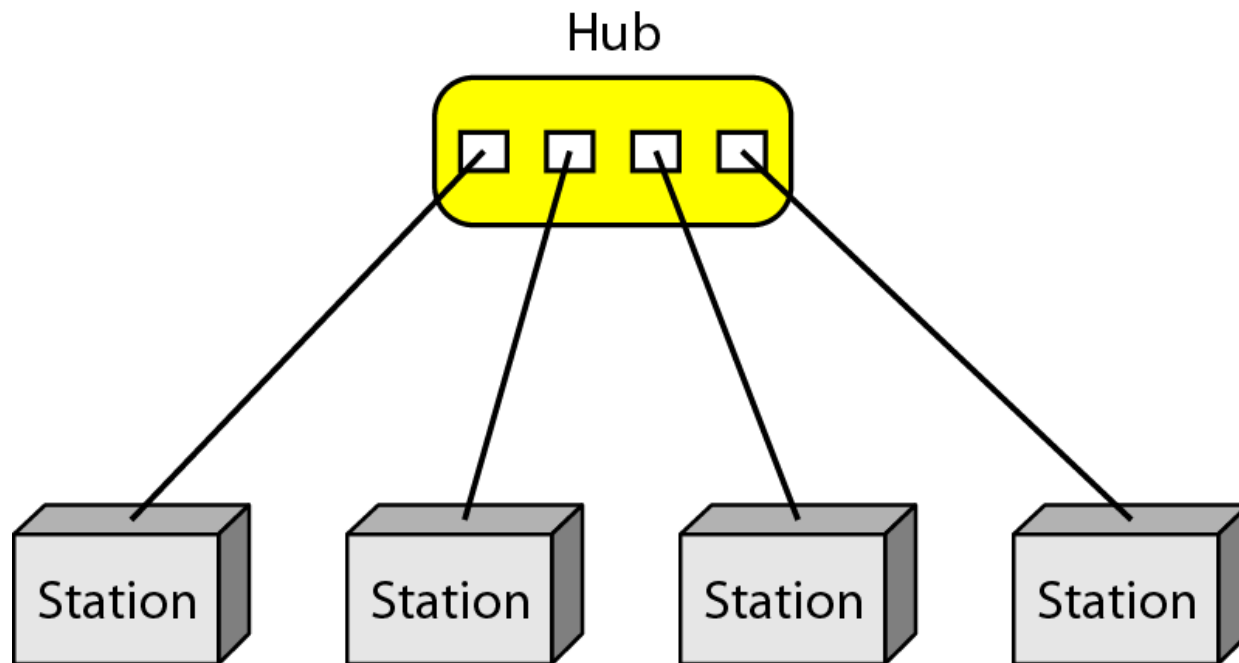
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**Figure 1.6** *A star topology connecting four stations*

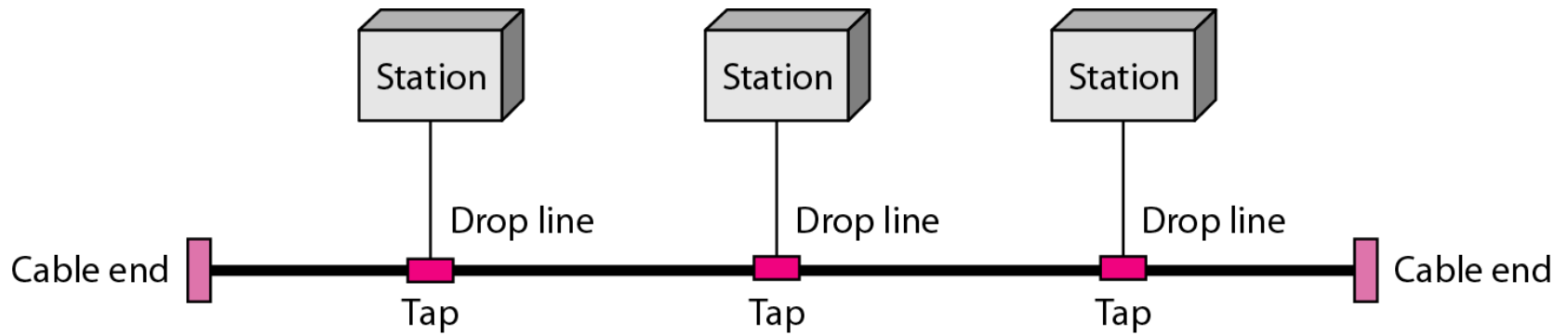
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**Figure 1.7** *A bus topology connecting three stations*

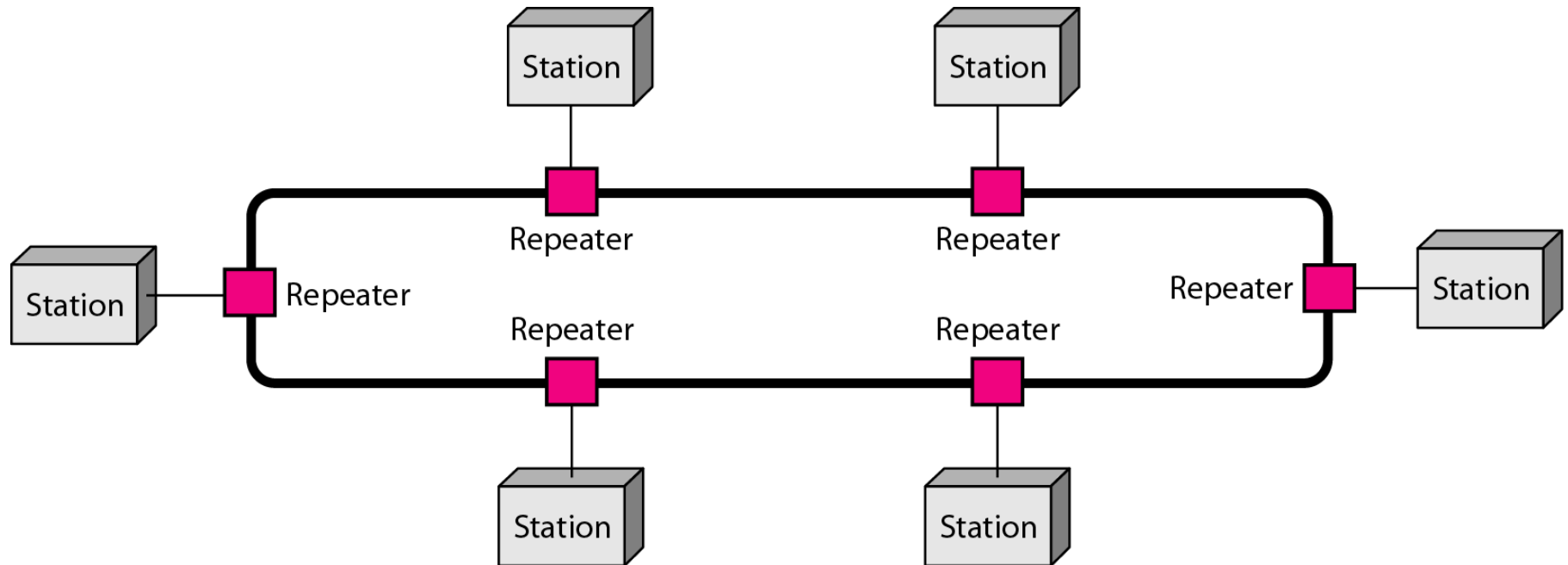
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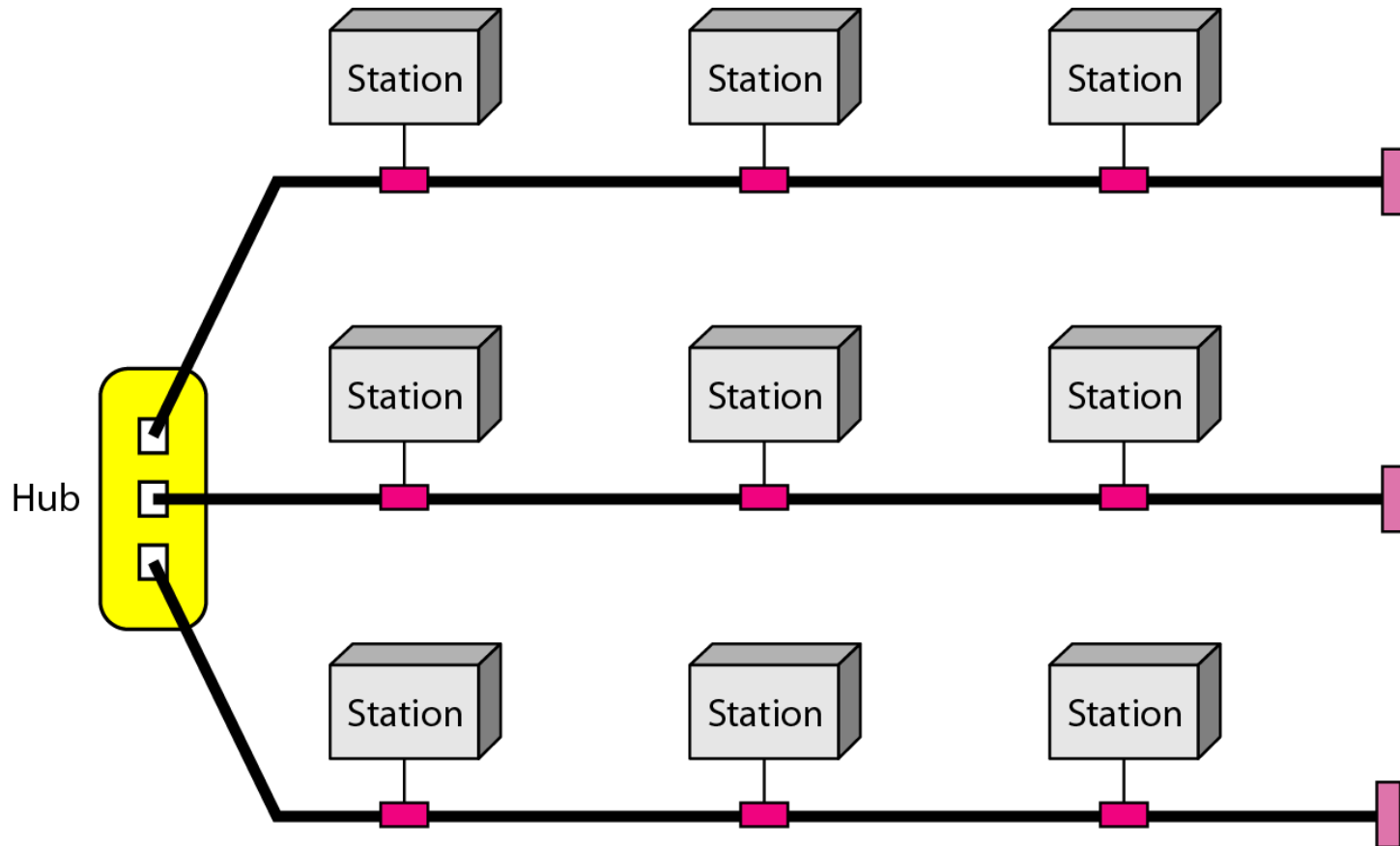
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**Figure 1.8** *A ring topology connecting six stations*

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**Figure 1.9** *A hybrid topology: a star backbone with three bus networks*



## 1-4 PROTOCOLS AND STANDARDS

*In this section, we define two widely used terms: **protocols** and **standards**. First, we define protocol, which is synonymous with rule. Then we discuss standards, which are agreed-upon rules.*

- **Network Protocols** are a set of rules governing exchange of information in an easy, reliable and secure way.
- **Standards:** A common set of rules.

## **ISO (International Organization for Standards):**

- The International Organization for Standardization widely known as ISO, is an international standard-setting body composed of representatives from various national standards organizations.
- Founded on February 23, 1947, the organization promulgates worldwide proprietary industrial and commercial standards.

## **W3C - World Wide Web Consortium**

- The World Wide Web Consortium (W3C) is the main international standards organization World Wide Web (abbreviated WWW or W3).

## 1-3 THE INTERNET

- *The **Internet** has revolutionized many aspects of our daily lives.*
- *It has affected the way we do business as well as the way we spend our leisure time.*
- *The Internet is a communication system that has brought a wealth of information to our fingertips and organized it for our use.*



## References

1. Protocol and standards. Information available at: <http://mucins.weebly.com/13-protocols-and-standards.html>
2. Data Communications and Networking Textbook by Behrouz A. Forouzan