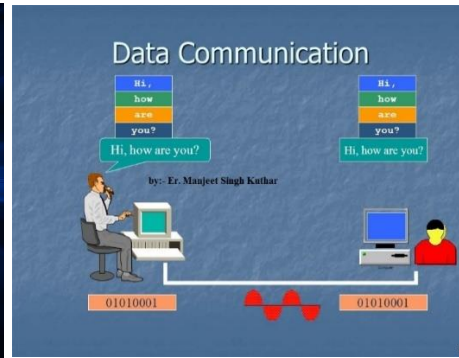


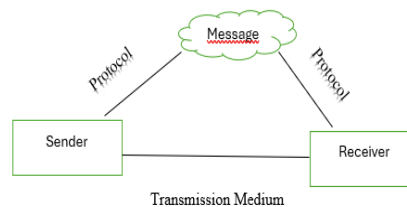


Data Communication and Computer Networks.



Introduction:

Data communication is the process of transmitting information between two or more devices through a communication medium such as cables, optical fiber or wireless signals. It forms the substructure of computer networks, enabling the sharing of data, resources, and services across local and global distances. Data communication is required in modern life because it supports activities such as email, online learning, e-commerce, and real-time collaboration, making communication faster, more efficient, and more accessible.



The **sender** is the device that originates the message; the **receiver** is the device that accepts it. The **transmission medium**, such as a cable, optical fiber, or wireless signal, carries the data between the sender and receiver. The exchange of information is managed by **protocols**, which are rules that ensure accurate and reliable communication. Computer networks are commonly classified according to their geographical coverage. A **Local Area Network (LAN)** connects devices within a limited area such as a home, school, or office. A **Metropolitan Area Network (MAN)** spans a city or a large campus, linking multiple LANs. A **Wide Area Network (WAN)** spreads over two geographical regions. The most familiar example of a WAN is the internet. The **benefits** of networking are resource sharing, centralized data management, efficient communication, improved collaboration, and cost savings, and the **applications** of networking are online education, e-Commerce, Banking, Health-Care, and business collaboration. **Example:** When a student sends an email to a teacher,

Conclusion: Computer networks have become indispensable in both education and society. They enable the high-speed exchange of information, support online learning and collaboration, and provide access to a vast range of digital resources and services. Across the globe, computer networks foster knowledge sharing, economic growth, and technological innovation, making them a cornerstone of the modern world by connecting people and devices.

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