NEP NEW SYLLABUS

COMPUTER FUNDAMENTALS - II

for

First Year B.Com. (Semester - II)

2024 Pattern as per NEP Syllabus
w.e.f. Academic Year 2024

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Preface ...

We take an opportunity to present this book entitled as "Computer Fundamentals - II" to the students of First Year B. Com. (Semester-II). The object of this book is to present the subject matter in a most concise and simple manner. The book is written strictly according to the New Syllabus (NEP-2020 Pattern w.e.f June 2024) of Savitribai Phule Pune University.

The book has its own unique features. It brings out the subject in a very simple and lucid manner for easy and comprehensive understanding of the basic concepts, its intricacies, procedures and practices. This book will help the readers to have a broader view on Computer Fundamentals - II. The language used in this book is easy and will help students to improve their vocabulary of technical terms and understand the matter in a better and happier way.

We sincerely thank Shri. Dineshbhai Furia and Shri. Jignesh Furia, the publishers, for the confidence reposed in us and giving us this opportunity to reach out to the students of commerce studies.

We thank Mrs. Anita Panajkar, Miss Madhuri Gabhale for their important inputs time to time. Mr. Akbar Shaikh painstakingly attended to all the details to make this book appear good.

We also thank Ms. Chaitali Takale, Mr. Ravindra Walodare, Mr. Sachin Shinde, Nikunj Joshi, Nilesh Deshmukh, Ashok Bodke, Moshin Sayyed and Nitin Thorat.

We have given our best inputs for this book. Any suggestions towards the improvement of this book and sincere comments are most welcome on niralipune@pragationline.com.

PUNE **AUTHORS**

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1.2 Network Topology, Wireless Network Internet and Internet application Introduction, Internet evolution, Working of Internet, Use of Internet, Overview of World Wide Web (Web Server and Client).

1.3 IEEE 802.11 -Wi-Fi: Types of Wi-Fi, Uses of Wi-Fi.

1.4 Near by Share: Applications of Nearby Share.

2. Introduction to Internet and Cyber Security

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2.1 Concept of Internet, Internet Service Providers (ISP), Services Provided by the Internet: E-mail, Search Engine.

2.2 Information Security Overview – Background and Current Scenario Types of Attacks, Goals of Security.

2.3 Overview of Security Threats, Weak/Strong Passwords and Password Cracking, Insecure Network connections, Digital Signature.

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Chapter **1**...

Introduction to Computer Network and E-Commerce

Learning Objectives ...

- To understand of the Fundamental Concepts of Computer Networking
- To Identify the different types of Network Devices and their Functions within a Network
- To study the different types of Network Topologies and Protocols
- To elaborate the Internet Services and related terms of Internet
- To get knowledge of WI-FI Technology

1.1 INTRODUCTION

- A computer network is interconnection of various computer systems located at different places. In computer network two or more computers are linked together with a medium and data communication devices for the purpose of data communication and sharing resources.
- The computer that provides resources to other computers on a network is known as *server*. In the network the individual computers, which access shared network resources, are known as *nodes*.
- When one process in one device is able to send/receive data to/from at least one process residing in a remote device, then the two devices are said to be networked.
- The computers on a network may be linked through cables, telephone lines, radio waves, satellites, or infrared light beams.

Definitions:

Various definitions of Computer Network:

- Computer network is "a group of computers connected in same fashion in order to share resources."

- A computer network is a set of electronically connected computers which can share information and resources among themselves.
- A computer network is a group of computer systems and other computing hardware devices that are linked together through communication channels to facilitate communication and resource-sharing among a wide range of users.
- A computer network is a collection of computer systems which can communicate or interact with each other.
- Computer network is a group of computers and associated peripheral devices connected by a communications channel capable of sharing files and other resources among several users.

1.1.1 Network Services

- Network services are the services of management of networks by IT service providers for their clients. Some basic services computer network can offer are:
  1. **File services:** This includes file transfer, storage, data migration, file update, synchronization and achieving.
  2. **Printing services:** This service produces shared access to valuable printing derives.
  3. **Message services:** This service facilitates e-mail, voice mails and coordinate object-oriented applications.
  4. **Application services:** This service allows to centralize high profile applications to increase performance and scalability.
  5. **Database services:** This involves coordination of distributed data and replication.

1.1.2 Goals of Computer Network

- The following are the objectives or goals of the computer network:
  1. **Resource Sharing:** This is the main objective of the computer network. The goal is to provide all the program, data and hardware is available to everyone on the network without regard to the physical location of the resource and the users.
  2. **High Reliability:** This is achieved by replicating the files on two or more machines, so in case of unavailability (due to fail of hardware) the other copies can be used.
  3. **Save Money:** Computer organization has helped organization to save money. This is due to the fact that the small computer has much better price to the performance ratio comparison than the large computer like Mainframe computer. Mainframe computers are approximately ten times faster than the Microcomputers, but

they cost thousands of times more. As a result of this imbalance, organization has preferred to install interconnected Micro-computer connected to the Mainframe computer.

4. **Performance:** Computer networks have provided means to increase system performance as the work load increases, (load balancing).In the days of mainframe when the system was full it was to replace with the other large mainframe computer, usually at expensive rate that is not suitable for user.
5. **Powerful Medium:** Computer network help people who live or work apart to report together. So, when one user prepared some documentation, he can make the document online enabling other to read and convey their opinions. Thus, computer network is a powerful communication medium.
6. **Security:** Only authorized user can access resources in a computer network. Users are authenticated by their user's name and password. Hence, it is not possible to access the data without proper account. This increases security.

1.1.3 Workings of Network

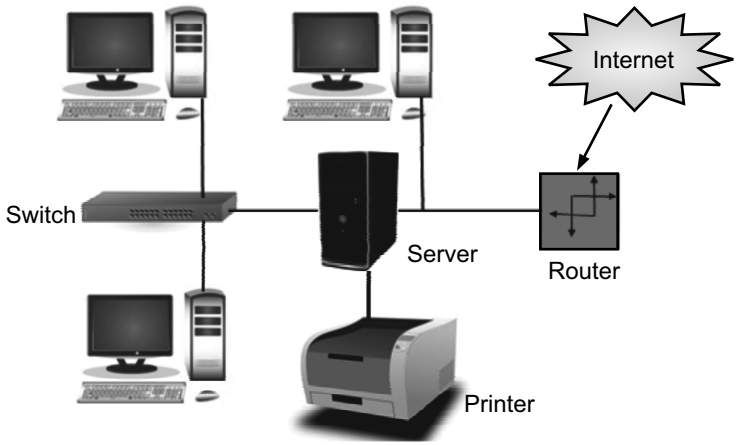


Fig. 1.1: Computer Network

- A computer network is exchange of data between two computer machines. This network is made up of five components.

1. **Sender:** This is the device which sends the data message. It can be a computer, workstation, telephone handset, video camera and so on. Data is in human readable form, gets converted into machine form i.e., 0s and 1s.

2. **Receiver:** The receiver is the device which receives the message. Again, it can be a computer, workstation, telephone handset, television and so on.
3. **Message:** The message is nothing but the data or information which is to be communicated. It may have texts, numbers, pictures, sound or video or combination of anything from these.
4. **Medium:** The transmission medium is the physical path by which a message travels from sender to receiver. It may be twisted pair wire, coaxial cable, fiber-optic cable, laser or radio waves and so on. The radio waves may be terrestrial or satellite microwave.
5. **Protocol:** A protocol is a set of rules required for data communication. It represents the agreement between the two communicating devices. Without protocol, we can connect two devices but they cannot communicate with each other.

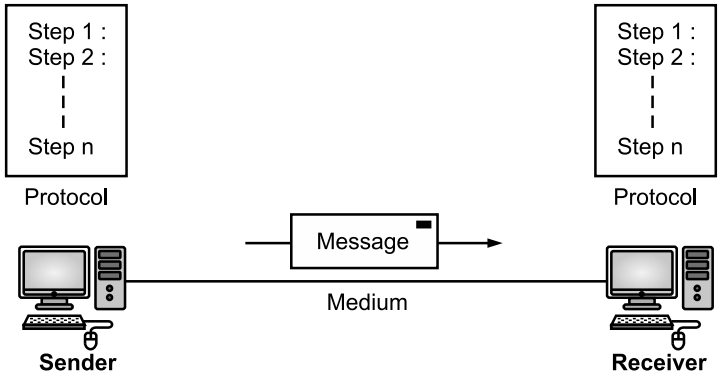


Fig. 1.2: Components of Computer Network

1.1.4 Advantages of Network

1. Networking provides the advantage of centralization of data from all the user systems to one system where it can be managed in an easy and better way.
2. Using networking peripherals such as printers can be shared amongst many different users.
3. Networking allows the users to communicate online in a faster and cost-effective manner.
4. Networking allows to share files, software and access to databases among different users.
5. Networking provides a flexible networking environment. Employees can work at home by using through networks ties through networks into the computer at office.

6. Computers on a network can be used to take back-up of critical data.
7. Networking supports increased storage capacity since there is one or more computers which can easily share files.

1.1.5 Disadvantages of Network

1. After installation, proper maintenance is also required by an expert to ensure smooth running of the network.
2. Security threats are always problems with large networks. There are hackers who are trying to steal valuable data of large companies for their own benefit.
3. The breakdown of the whole network due to an issue to the server, therefore once established it is vital to maintain it properly to prevent such disastrous breakdowns.
4. Security measures are needed to restrict access to the network.
5. Computer networks are expensive to set up.
6. Since most networks have Client/Server architecture, the client users lack any freedom. Centralized systems are dependent on the capabilities of the central device or system.
7. Networks need efficient handlers i.e., any user with just the basic skills cannot operate/administer a computer network.

1.1.6 Applications

- Some of the network applications of the different fields are:
  1. **Marketing and Sales:** Marketing professional uses computer network to collect exchange and analyze data relating to customer needs and product development cycles.
     Sales application includes teleshopping, which uses order entry computers or telephone connected to an order processing network, and online reservation services for railways, hotels, airlines, restaurants, theatre etc.
  2. **Financial Services:** It includes credit history searches, foreign exchange and investment services and Electronic Fund Transfer (EFT), which allow a user to transfer money without going to bank.
  3. **Manufacturing:** Computer networks are used in many aspects of manufacturing, including the manufacturing processes itself. Two aspects that uses network to provide essential services are Computer Assisted Design (CAD) and Computer Assisted Manufacturing (CAM), both of which allow multiple users to work on a project simultaneously.

4. **Electronic Messaging:** E-mails transfer the messages between two and more users in a network. With this application user can transfer the information in the form of text, picture and voice.
5. **Directory Services:** It allows list of files to be stored in central location to speed up the world-wide search operation, For example, search engines like Google, Britannia, and Yahoo etc.
6. **Information Services:** It includes Bulletin Boards and data bank. A 'WWW' site offers the technical specification for a new product in a information services.
7. **Electronic Data Exchange (EDI):** EDI allows business information (including documents such as purchase orders and services) to be transferred without using paper.
8. **Teleconferencing:** It allows conference to occur without the participant being in the same location. It includes:
   - **(i) Text Conferencing:** Participant communicates through their keywords and computer monitors.
   - **(ii) Voice Conferencing:** Participant at a number of locations communicates simultaneously through phone (talk).
   - **(iii) Video Conferencing:** Participant can see as well as talk to another.
9. **Cellular Telephone:** Wireless phone communication even while traveling through long distance.
10. **Cable TV:** This is widest usable thing today throughout the world. Cable TV systems provide video and data services through a system of high bandwidth coaxial cables and fibers.

1.1.7 Importance of Networking Computer Network (LAN, WAN, MAN)

- Following are types of Networks based on size. The size of a network can be expressed by the geographic area they occupy and the number of computers that are part of the network.

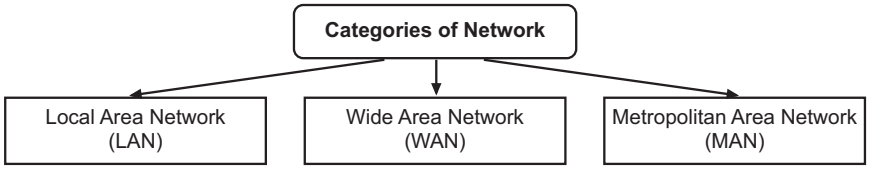


Fig. 1.3: Types of Networks