Lecture-1
SSK

classmate
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Computer Networks

Course objectives

1. To impart knowledge on various types of networking, networking components, performance criteria, connectivity and network topologies.
2. To impart knowledge on the concept of layered architecture, OSI reference model, TCP/IP reference model, & the differences b/w these two
3. To impart knowledge on the basic principles of communication like switching, coding, modulation techniques, multiplexing & transmission media.
4. To impart knowledge of framing, flow control, error control using various protocols including the concept of LANs & multiple access.
5. To impart knowledge of addressing mechanisms prevailed in computer networks and internets.
6. To impart knowledge on congestion control using TCP & UDP.
7. To impart concept of client-server computing using DNS, FTP, SMTP, WWW and also network security.

Course outcomes

After successfully completing the course, the students will be able to:

1. Demonstrate the working of various protocols on various networking models.
2. Implement and analyse different computer networks.
3. Identify and solve various ARQ, addressing problems, routing problems, and programming & socket programming problems.
4. Demonstrate the operations of various protocols like TCP, IP, UDP, DNS, FTP, SMTP etc.
5. Clearly implement security mechanisms on networks.

Data communication

Transfer of information between a sender and a reciever through a transmission medium.

Wired medium - 1. Twisted wire cable
2. Fibre-optic cable (Optical fibre)
3. Co-axial cable

Wireless medium - 1. Air

* There should be a common feature between the communicating parties for succesful communication which governs the whole process. It is called communication protocol.

Entities required for a succesful communication:
1. Some information to share.
2. Sender
3. Reciever
4. Medium
5. Protocol

* If reciever discards the message from the sender due to some reason (irrelevant or late message), the purpose of communication fails.

* Timeliness of transfer is very critical.

* Of the five entities, the message/information to transfer is the most important.

Recommended books:
- Computer networks - A.S. Tannenbaum
- Communication network - Leon-Garcia, Widjaja
- Computer communications - William Stallings
- Complete reference on networking - Craig Zacker
- Data communication & Networking - B.A. Forouzan