Computer Networks - Unit 1 & 2 Summary

UNIT 1: Introduction to Computer Networks

Lecture 1 - Basics

Definition, uses in business/home/mobile, components (sender, receiver, medium, protocol), topologies (physical/logical).

Lecture 2 - Topologies (Part 1)

Bus, Star, Ring - advantages/disadvantages.

Lecture 3 - Topologies (Part 2) & Hardware

Mesh, Hybrid - hardware: server, client, router, media.

Lecture 4 - Protocols & Standards

Software, protocol suite, de facto vs de jure standards.

Lecture 5-7 - OSI Model

7 layers: Application to Physical with their responsibilities.

Lecture 8-9 - TCP/IP Model

4 layers, major protocols, transmission media (guided & unguided).

Lecture 12 - Multiplexing

FDM, TDM, WDM.

Lecture 13 - Switching

Circuit, Packet, Message switching.

Lecture 14 - Mobile Systems

1G-5G evolution, base stations, MSCs.

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UNIT 2: The Data Link Layer

Lecture 1 - Design Issues

Framing, Addressing, Sync, Error Control, Flow Control, MAC.

Lecture 2-4 - Error Detection & Correction

Single/Multiple/Burst errors, Parity, Checksum, CRC, Hamming Code.

Lecture 5 - ARQ Protocols

Stop-and-Wait, Go-Back-N, Selective Repeat.

Lecture 6-8 - Protocols

HDLC, PPP, SLIP, LCP/NCP.

Lecture 9 - MAC & Ethernet

MAC sublayer, Ethernet (CSMA/CD), switch operation.