

Computer Networks B03 Final Review

- IV. Data Link Layer
 - D. Tanenbaum's DL protocols
 - 1. Utopia
 - 2. Stop-and-Wait {introduce ACKs}
 - 3. PAR {noisy channel}
 - a. "old version" {timer}
 - b. "new version" {ACKs, timers, premature timeouts}

-----**Mid Term Ended Here**-----

- 4. Sliding Window Protocols
 - a. piggybacking ACKs
 - b. 1-bit sliding window (protocol 4)
 - c. Go Back N (protocol 5)
 - d. Selective Repeat (protocol 6)
 - e. window size versus max sequence number
 - f. NAKs, ACKtimer
- V. Medium Access Sublayer (MAC)
 - A. "The Channel Allocation Problem"
 - 1. assumptions
 - B. LAN Performance Notation
 - 1. relative propagation time - a
 - 2. S, I, and G {throughput, input load, offered load}
 - C. ALOHA
 - D. Slotted ALOHA
 - E. CSMA
 - 1. non-persistent
 - 2. 1-persistent
 - 3. p-persistent
 - F. CSMA/CD and Ethernet
 - 1. binary exponential backoff
 - 2. Ethernet evolution (10Base5, 10Base2, 1Base5, 10BaseT)
 - G. Token Ring
 - 1. 802.5 token ring
 - a. priorities
 - H. Switched Ethernet
 - I. Bridges
 - 1. backward learning
 - 2. collision domains
- VI. High Speed LANs
 - A. FDDI
 - 1. differences from 802.5 token ring
 - 2. 4B/5B encoding
 - 3. dual ring

- B. Fast Ethernet
 - 1. 100 Base T4
 - a. four twisted pairs
 - b. 8B/6T encoding
 - c. 33-1/3 Mbps per pair
 - 2. 100 Base TX
 - 3. 100 Base FX
 - C. Gigabit Ethernet
 - 1. Fiber Channel technology
 - 2. 8B/10B encoding
 - 3. 1000 Base SX
 - 4. 1000 Base LX
 - 5. 1000 Base CX
 - 6. 1000 Base T
 - 7. carrier extension
 - 8. frame bursting
 - 9. buffered distributor
- VII. SONET
- A. optical fiber standard
 - 1. common master clock
 - 2. byte interleaved TDM
 - B. SONET architecture
 - 1. ADM - add/drop multiplexor
 - 2. REG - regenerator for optical signals
 - 3. section/line/path
 - C. SONET frame
 - 1. SPE Synchronous Payload Envelope
 - 2. Overhead
 - D. Multiplexing hierarchy
 - 1. up to STS-3 and beyond
 - 2. down to virtual tributaries
- VIII. ATM {Asynchronous Transfer Mode}
- A. Basics
 - 1. 53 byte cell-switching technology
 - 2. virtual circuits
 - B. Conceptual Model Assumptions
 - C. Header Details
 - 1. UNI versus NNI
 - 2. VPI/VCI
 - D. Architecture
 - 1. variety of traffic types
 - a. original four types
 - b. revised traffic types
 - 2. AALs
 - a. AAL1

- b. AAL3/4
 - c. AAL5
 - 3. CS and SAR
- E. Cell Switching Issues
 - 1. cells not reordered
 - 2. non-blocking switches
 - 3. PVCs versus SVCs
- IX. Network Layer
 - A. Routing
 - 1. Non-Adaptive
 - a. flooding
 - b. static
 - i. Dijkstra's Shortest Path routing algorithm
 - 2. Adaptive
 - a. centralized RCC
 - b. distributed
 - i. intradomain routing
 - ii. interdomain routing
 - 3. Distance Vector Routing
 - a. RIP
 - 4. Link State Routing
 - a. OSPF
 - 4. Border Gateway Protocols (BGP)
- X. Transport Layer
 - A. TCP Sliding Windows
 - 1. advertised window
 - B. TCP Congestion Control
 - 1. router congestion notification
 - 2. congestion window (cwnd)
 - 3. AIMD
 - 4. slow start

-----**Course Ended Here**-----