MIDTERM REVIEW

Chapters 1-2, 3.1

Pay attention to concept and principles

1 is going to be like quizzes, true or false

other 5 are application problems i.e. homework

calculate bandwidth

network applications 🡪 networks and how they work

\*\*\* scalability\*\*\*\*

cost efficient resource sharing 🡪 scalable, more nodes join, how to scale

what multiplexing is?: dividing signals from different nodes to one signal

the way we share multiple network resources among multiple nodes

how we allocate resources on a link to multiple nodes

statistical multiplexing: on “per-packet” basis

buffer overflows is called congestion

tcp = transport layer

ftp, http = different protocols 🡪 applications use these (application layer)

ip is most important because everything must funnel through it

internet architecture NOT ISO ARCH

physical and data link are in LAN

network layer in ISO Architecture

bandwidth vs throughput

throughput takes into consideration all communication

uses total data transmitted / time

bandwidth is how quickly we can put data on the link

\*\*\*KB = 2^10 bytes

\*\*\*Mbps = 10^6 bits per second

if RTT is 1 sec 🡪 propagation is half a second

general: distance / c

delay x bandwidth product: why is it important?

If we send consecutive 1’s🡪 over time voltage rises or falls and the average causes a confusion so that the system can’t tell the difference between 1’s and 0’s (i.e. thinks a 1 is a 0 because of a slight voltage change)

Baseline wander: when the signal, due to consecutive 1’s and 0’s, it becomes indistinguishable

This causes a problem: unable to recover the clock

The receiver becomes confused

Clapping example

Frequent transitions from high to low and vice versa are NEEDED to recover the clock

Manchester encoding: even though the signal transitions. It doesn’t necessarily mean data is sent

\*\*\*Inefficient\*\*\*

4B/5B Encoding: 80% efficient

ex: tell me what baseline wandering is

how did nrzi improve upon

even parity: number of 1’s in each row and column is even

odd: if it is odd in an even parity🡪 then there is an error : we can then trace rows and columns to find error bit

what does the sliding window represent?: the maximum number of frames that the sender can set up

how do we determine the value of the window? Delay \* bandwidth = volume of data we can fit in a link

LAR: last acknowledgement received

LFS: last frame sent

SWS: send window size = bound on # of outstanding / unAcked frames

Maintain invariant: LFS – LAR <= SWS

WILL BE QUESTION ON SLIDING WINDOW LIKE ON HW

VCI SWITCH QUESTION