COMP90007 Internet Technologies
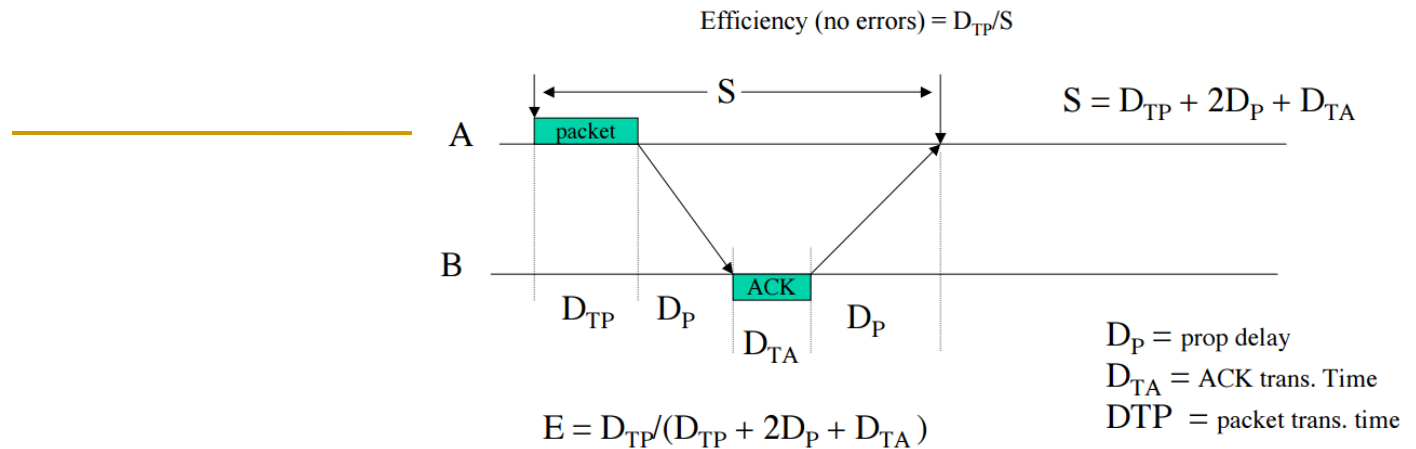# Week 6 Workshop

Semester 2, 2019

Question 1

A channel has a bit rate of 4 kbps and a propagation delay of 20 ms. For what range of frame sizes does stop-and-wait give an efficiency of at least 50 percent?
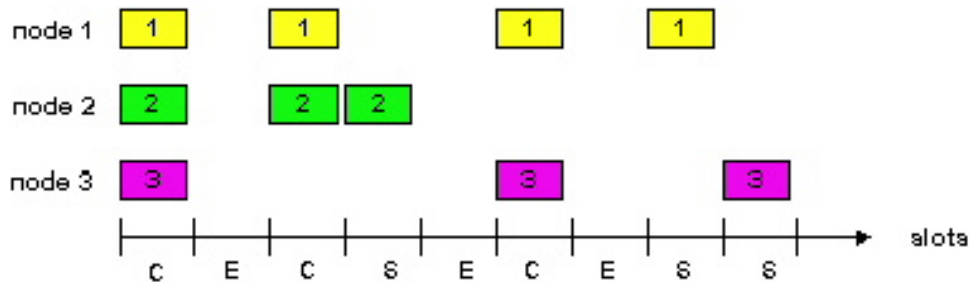
Efficiency (no errors) = D_{TP}/S

$$S = D_{TP} + 2D_P + D_{TA}$$

A packet

B ACK

D_{TP} D_P D_{TA} D_P

$$E = D_{TP}/(D_{TP} + 2D_P + D_{TA})$$

D_P = prop delay
D_{TA} = ACK trans. Time
DTP = packet trans. time

Question 2

Using the polynomial code method, compute the CRC for the frame: 1101011111 having a generator polynomial G(x) as $x^4 + x + 1$.
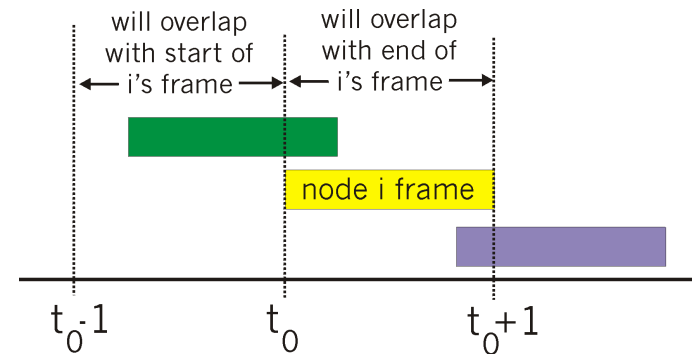
Question 3

Consider the delay of pure ALOHA versus slotted ALOHA at low load. Which one is less? Explain your answer.

Slotted ALOHA

Unslotted ALOHA

Question 4

Eight stations, numbered 1 through 8, are contending for the use of a shared channel by using the adaptive tree walk protocol. If all the stations whose addresses are prime numbers suddenly became ready at once, how many slots are needed to resolve the contention?

Question 5

Convert the IP address 11000001, 01010010, 11010010, 00001111 to dotted decimal notation.

Question 6

Convert the IP address 240.68.10.10 to binary format

Use the following key:

10000000	2^7	128
01000000	2^6	64
00100000	2^5	32
00010000	2^4	16
00001000	2^3	8
00000100	2^2	4
00000010	2^1	2
00000001	2^0	1