COMP90007 Internet Technologies

Week 5 Workshop

Semester 2, 2018

Question 1

What is the minimum overhead in bytes to send an IP packet using PPP?

Question 2

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

Question 3

The wireless LANs that we studied used protocols such as MACA instead of using CSMA/CD. Under what conditions, if any, would it be possible to use CSMA/CD instead?

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 bit slots are needed to resolve the contention?

Question 5

Six stations, A through F, communicate using the MACA protocol. Is it possible that two transmissions take place simultaneously? Explain your answer.

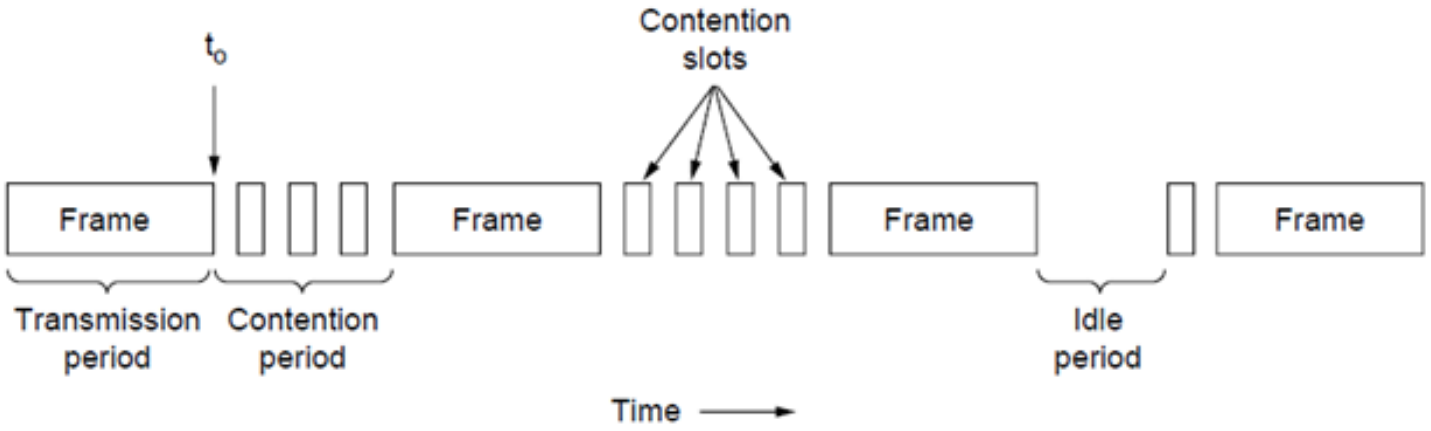
Question 6

Give two reasons why networks might use an error-correcting code instead of error detection and retransmission.

Question 7

Consider the CSMA/CD model shown below for collision free protocols.

Now consider the Binary Countdown protocol involving stations 0 to N-1 with each station represented by equal length binary digits. Stations with data ready to send broadcast their addresses during a contention period simultaneously. An arbitration rule is applied so that only one station wins the right to send the frame after the contention period.



a)Now consider the situation when N is 16. What is the length of the contention period in bits?

a)Briefly explain the arbitration rule used in the Binary Countdown protocol.

a)Suppose at time t_0, stations 3 (0010), 5 (0100), 11 (1010) and 12 (1011) became ready to transmit. Which station will win the right to transmit after the contention period?

a)If d is size of the frame and there are N stations, what is the channel efficiency of the method?

b)What is the main advantage of Binary Countdown protocol over Bit-Map protocol?