End of Chapter 13 Exercises

Q1) In the Ethernet frame described in the text (figure 13.5 page # 410), what are the minimum and the maximum number of bytes?

Ans) Using figure 13.5, mentioned in textbook

Preamble and start frame delimiter = 8

Destination and Source MAC addresses = 12

Number of data bytes = 2

Payload minimum = 46

CRC = 4

The minimum is 8 + 12 + 2 + 46 + 4= 72 bytes

Preamble and start frame delimiter = 8

Destination and Source MAC addresses = 12

Number of data bytes = 2

Payload maximum = 1500

CRC = 4

The maximum is 8 + 12 + 2 + 1500 + 4= 1526 bytes

Q2) Suppose a higher layer application wants to send a file 12MB in size across an Ethernet LAN. How many Ethernet frames are needed? Assume the largest Ethernet payload is 1500 bytes.

Ans) The goal is to send 12MB which must be broken down into Ethernet frames holding 1500 bytes of content each. The file is 12 x 1,048,576 bytes = 12,582,912 bytes. So, 12582912 / 1500 = 8389 (rounded up) Ethernet frames are needed.