End ch 13 Exercise

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

Minimum

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

Maximum

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

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.

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 1024 x 1024 bytes = 12,582,912 bytes.

So, 12582912 / 1500 = 8389 (rounded up) Ethernet frames is needed