CSC 411 / URI | Assignment 1 (due Feb 15th) | Spring 2021

This problem set has 6 questions, for a total of 100 points. Answer the questions below and mark your answers in the spaces provided. Please provide details on how your answer was calculated.

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1. Assume a color display using 8 bits for each of the primary colors (red, green, blue) per pixel and a frame size of 1280 × 1024.

   (a) [5 points] What is the minimum size in bytes of the frame buffer to store a frame?

4 bytes = 32 bits, so 1 byte must be 8 bits

Each color pixel uses 3 bytes, 1 byte per color "RGB"

Frame: 1280 x 1024

Area = A = w · H = 1280 x 1024 = 1,310,720 Pixels

Size of frame = 3 x 1,310,720 = 3,932,160 bytes

   (b) [5 points] How long would it take, at a minimum, for the frame to be sent over a 100 Mbit/s network?

Looking back at the table from slides → 1 Mbit/s = 10^6 bit/s

So Answering the question 100 Mbit/s = 100×10^6 bit/s

= 10^8 bit/s

size of frame = 3,932,160 x 8 = 31,457,280 bit

After looking up equation for time => time = size / speed

= $\frac{31,457,280 \text{ bits}}{10^8 \text{ bit/s}}$

= 0.3145728 s