CS 205 Midterm Exam: D. Hepting
February 27, 2020, 10:00–11:15, CL 417

This is a closed book exam. You must maintain the confidentiality of your examination; do not provide any opportunity for others to copy any of your work. Electronic devices are NOT permitted during the exam. Please turn off and put away all cell phones and other electronic devices during the exam period.

ANSWER ALL QUESTIONS. All answers must be written on this exam in the space provided. You have 50 minutes to complete the exam. Please plan your answers, favour quality over quantity, do not exceed the space provided, and do your best to write legibly. QUESTIONS ARE ON BOTH SIDES OF THE PAPER.

This exam contributes 10 percent towards your final grade. Good luck.

Name (printed): _____

Student Number: ___ ___ ___ --- ___ ___ ___ ---___ ___ ___

Signature: _____

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Choose the best answer by circling the letter of the best response:

Q1. RGB is: A) divisive   B) multiplicative   C) subtractive   D) additive

Q2. CMYK is: A) divisive   B) additive   C) subtractive   D) multiplicative

Q3. K in Q2 is: A) kangaroo   B) blue   C) black   D) khaki

Q4. Explain the values needed to achieve black, grey, and white colours in RGB and HSB

Q5. Imagine that you have a fixed number of bits (24^3) to store an image. Use different allocations of those bits to explain *sampling* and *quantization*.

Q6.   What is a pixel?: _____

Q7.   What causes aliasing?: _____

Q8.   Imagine that you use 2 fair coin flips to choose each character to send in a message. How many different characters appear in your message? How much surprise is in your message? Can your message be losslessly compressed? Explain.

Q9.   Why is UTF-8 a popular format for text encoding?

_____

Q10. Use the following table to write Unicode codepoints 00E9 and 2A6D6 in UTF-8:

Bits	Last code point	Byte 1	Byte 2	Byte 3	Byte 4
7	U+007F	0xxxxxxx			
11	U+07FF	110xxxxx	10xxxxxx		
16	U+FFFF	1110xxxx	10xxxxxx	10xxxxxx	
21	U+1FFFFF	11110xxx	10xxxxxx	10xxxxxx	10xxxxxx

Q11. Write in B for bitmap or V for vector in the blank in front of each statement, whichever fits better:

_____ Saves space   _____ Scales poorly   _____ Fast

_____ Not so fast   _____ Uses lots of space   _____ Scales well

Q12. Do you like p5.js? _____