CS-733 Midterm Exam
October 23, 2023, 10:00 – 11:15, AH348
D. Hepting

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 75 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.

Name (printed): _____

Student Number and Signature:_____

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Q1. (2 marks) What is the geometry of a pixel?

Q2. (6 marks) Starting from black, describe or sketch how to get to the colour white, using the 3 primitive colours? How would it differ if you started from white and went to black?

Q3. (4 marks) Relate the following concepts: continuous, discrete, sampling, and quantization.

Q4. (2 marks) How do a you represent a point in homogeneous coordinates? Why are homogeneous coordinates important in computer graphics?

Q5. (2 marks) What is a window? How does it relate to a viewport?

Q6. (2 marks) How does one interact with a WebGL program?

Q7. (2 marks) What statement must be included in a WebGL program?

Q8. (4 marks) In general terms, describe the content and function of the files (.html, .js) used in a sample program from the texr.

Q9. (4 marks) Describe the relationship between vertices, triangles, triangle strips, and triangle fans in WebGL.

Q10. (4 marks) What the different ways we have used in class to connect our programs to shaders? What different uses do they represent?

Q11. (2 marks) What is a benefit and a disadvantage to using three.js?

Q12. (2 marks) Why is the flatten function required in code from the textbook?

Q13. (4 marks) How is it possible to express any scene to be rendered in terms of clipping coordinates [the cube from (-1,-1,-1) to (1,1,1)]?

Q14. (4 marks) What is the purpose of a depth buffer? Briefly explain how it is used.