CGT 520

Midterm review

Fall 2019

Schedule

- October 22: Midterm exam in class
  - Exam 3:30-4:30
  - Break / Open Lab 4:30-5:00
  - **Discuss Final Project 5:00-5:30**

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Midterm Format

- 20 – 30 questions
  - Multiple choice
  - Short answer
  - Fill in the blank
  - Matching
  - A bit tougher than quiz questions

- Closed book, closed notes
- 60 minutes

Midterm Format

- Closed book, closed notes

  - I may ask what a particular piece of code does

  - Or what a given function does

  - I won't ask you to write syntactically-correct C++/OpenGL code

  - I may ask you to write syntactically correct glsl shader code

Topics

- From assigned readings, class notes and lab assignments

- GLUT

  - vs OpenGL (what is each responsible for)

  - Window and buffer creation

  - Callbacks

    - What events can GLUT handle?

Topics

- OpenGL

  - Setting state (e.g. glClearColor)

    - OpenGL is a state machine

  - Performing an action (e.g. glClear, glUniform)

- glm

  - Matrix, point, vector, scalar

  - Matrix and vector operations

  - Homogeneous coordinates

  - Know the math and the glm functions

    - Dot product and matrix vector multiplication

    - No calculator allowed or required

Topics

- Coordinate systems, frames

- Scalars, vectors, matrices, and their operations

- Homogeneous coordinates

- Transformations

  - Rotation, translation, scale
  - Be able to write and identify the matrices

- Model, view and projection matrices

  - What do each of them do / represent?
  - What are the frames being transformed from / to?
  - Perspective division
  - glViewport and glutReshape

Topics

- Shaders

  - Basics of glsl

    - vec2, vec3, vec4 types

    - Accessing components (v.x, v.r …), swizzling

    - Variable storage classes

    - Uniform, varying, attribute variables

  - The 4 stage pipeline

    - Names of stages

    - What they do

    - Correct order

    - Uniform, varying, attribute variables

  - Creation process

    - Compilation, linking, using

Topics

- Lighting
  - Local lighting models
    - What variables are involved?
  - Phong lighting equation
    - Be able to write and recognize the equation and its parts
      - Attenuation model
      - Ambient term
      - Diffuse term
      - Specular term