CS1566

October 24, 2019

- send array of 108 vertices to graphics pipeline
  - first and second sets of 36 are for top left and top right cubes
  - use 36 vertices, scale and move to position and then send to graphics pipeline
  - third set of 36 vertices is the original cube without any modification (1x1x1)

Lighting

- We need to model
  - light sources
  - light-material interactions
- Lighting model can be applied in various parts:
  - application,
  - vertex shader, or
  - fragment shader
- LIght-Material Interaction
  - Specular surfaces: Shiny - reflect light in a narrow angle
  - Diffuse surfaces: matte - reflect light equally in all directions
  - Translucent surfaces: transparent - let light pass through
- Light Sources
  - a location that emits light
  - Every point (x, y, z) on the surface of a light source has its own characteristic.
    - intensity of energy emitted at each wave length (lambda)
- Phong Reflection Method
  - A light source has ambient, diffuse, and specular terms
  - Each term contains three colors: red, green, and blue
  - For any point $\mathbf{p}$ on a surface we need a 3x3 illumination matrix for each light source i:
    - $[L_{ira}\ L_{iga}\ L_{iba}]$
    - $[L_{ird}\ L_{igd}\ L_{ibd}]$
    - $[L_{irs}\ L_{igs}\ L_{ibs}]$