CS 324 **Programming Assignment #3**
Bruce Bolden **40 Points**
March 28, 2022 **Due:** April 8, 2022

Objectives Become familiar with basic 3-D modeling and displays.

Requirements

- Develop a basic 3D modeling system as described in lecture (handouts). Your modeling system is to consist of the following methods:
  - `defineWindow`, `defineViewport`, `windowToViewport`
  - `move3D`, `draw3D`
  - `defineCameraTransform`
  - `defineElementaryTransform`, `buildElementaryTransform`
  - `multiplyTransforms`
  - `applyTransform`
- Add a method (function) that will display your name and class information on your output.
- Use your modeling system to:
  - Plot the function:

$$z = \frac{\left(\frac{\sin r}{r}\right)}{9\cos\left(\frac{x}{y+0.02}\right)} \qquad r = x^2+y^2, \quad x = -2\pi \,..\, 2\pi, \quad y = -2\pi \,..\, 2\pi$$

  - Display a Rubik's cube with and without gaps between the blocks. Use a color scheme that allows someone to visualize the cube.
  - Display a *grid* of $10 \times 10 \times 10$ Rubik's cubes
  - Create a model to display a recognizer from Tron. One good recognizer is shown on: `https://www.thingiverse.com/thing:4588039`
  - Write your name in 3D block letters

Deliverables

- Summary
- Output—proof that your program worked.
- Programming log and any additional design work you need.
- Program—fully documented.

If you have any questions regarding this assignment, do not hesitate to contact me. Start working on this assignment as soon as possible.