Assignment 0311 (formerly 0227)

Our last assignment before we plunge into the third dimension involves some work on the opposite end of the spectrum, with pixel-level color manipulation and some exploration of graphics primitives.

Outcomes

This assignment will affect your proficiency measures for outcomes 1a, 2c, 3b, 3c, and 4a–4f. This assignment applies only to the color computation aspect of 2c, so that outcome will have a maximum proficiency of 1 until a future assignment expands that to include light computations as well.

Not for Submission

If you have the Angel textbook, you can get deeper treatment of recent material and some future course content with the following readings.

- Colors, graphics primitives: Sections 2.5 (pages 67–73) and 6.8 to 6.10 (pages 323–331)
- 3D graphics overview and pipeline: Sections 1.1–1.9 (pages 1–40)

For Submission

A Few Good Filters

Copy the nanoshop and nanoshop-neighborhood sample code and add two (2) new pixel filter functions each to the Nanoshop and NanoshopNeighborhood modules, for a total of four (4) such filters. Modify the accompanying demo pages to show them off. Feel free to change the base picture that gets filtered, especially with your own code from Assignment 0129. Be creative, have fun!

Commit and push your work to your repository under homework/nanoshop-filters.

Primitive Behavior

Copy the primitives sample code and make the following modifications to it:

- Modify the lineBresenham function so that it accepts a dash parameter. This parameter is expected to be an integer that draws a dashed line. A dash argument of 5, for example, would draw 5 pixels first, then skip a pixel, then another 5, then skip, etc. (like this: — — — —)
- Modify the plotCirclePoints function so that, instead of plotting the outline of a circle, it fills the circle with a linear gradient (left to right or top to bottom—your choice). You will need to modify the signatures of the circle drawing functions, of course.

Make sure to adjust the accompanying demo code so that they showcase your modifications in action. Commit and push your work to your repository under homework/primitives-plus.