

CIS 441/541: Project #1C

Due January 23rd, 2019 (which means 6am January 24th, 2019)

Worth 6% of your grade

Instructions

- 1) Download `get_triangles.cxx`. It has a routine to read triangles from a file. Incorporate its `GetTriangles` routine in the place of `GetTriangles` from project 1B.
- 2) Download the geometry file "`proj1c_geometry.vtk`".
- 3) Implement the scanline algorithm for arbitrary triangles and fill up the image buffer with their colors.
- 4) Note that the output image is 1786x1344. You should change the image size and initialize the buffer to be black (0,0,0). This was done for you in `project1b.cxx`, so just make sure that code didn't go anywhere.
- 5) The correct image (`GoDucks.png`) is posted to the website.

Note that:

- a file is available online that is helpful for debugging. For each pixel, it says which triangle deposited a color onto that pixel. When differencer tells you a pixel is wrong, you can use this file to narrow down debugging to the exact triangle.

When you are done, submit your code to Canvas.

If your code does not produce exactly the same image, you should expect to get less than half credit. You can confirm that it produces the same image with the difference program and the reference image on the website (`GoDucks.png`).

Notes (some repeated from 1B's notes):

- 1) The source data set has 376 triangles that are already "going up" or "going down." One triangle in the source data set has a flat side (i.e., "going right").
- 2) Some pixels may be outside the screen. Plan for that.
- 3) Don't forget to use double precision and the `floor_441` and `ceil_441` functions.
- 4) Be careful about which quantities you want to be integers and which you want to be double precision.

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