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CAP5726
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Final Project README

## Compilation Instructions

This process should be the same as in the other two assignments since the structure for this build is reused from assignment 2.

## 1.2.3 Simplification

As stated in my project proposal, I chose to work with the "Surface Simplification Using Quadric Error Metrics" paper. Below are my results regarding the 3 required parts of the assignment.

## Main Algorithm

Implementing the paper's algorithm - the main purpose of this project - is entirely complete. In particular, the process of finding the Q matrix for each vertex, combining them into pairs and finding the cost of contracting each pair, and then recursively contracting these pairs based on cost works has been completed. The results (shown below) are similar to those shown in figures 9 and 10 of the original paper, though with slightly less consistency as the number of faces approaches 0. I assume that my method of determining a contraction point in the case of an uninvertible matrix as described in section 4 was not perfect, and this became more obvious as the number of faces decreased. That said, the two versions are still comparable, so I am happy with the result.
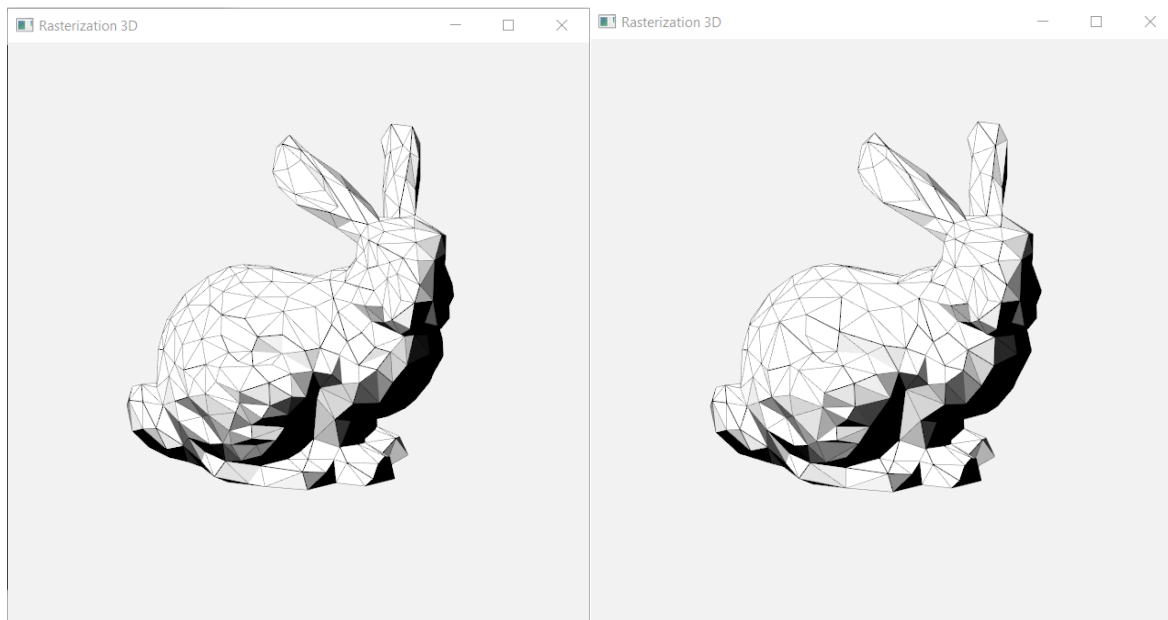


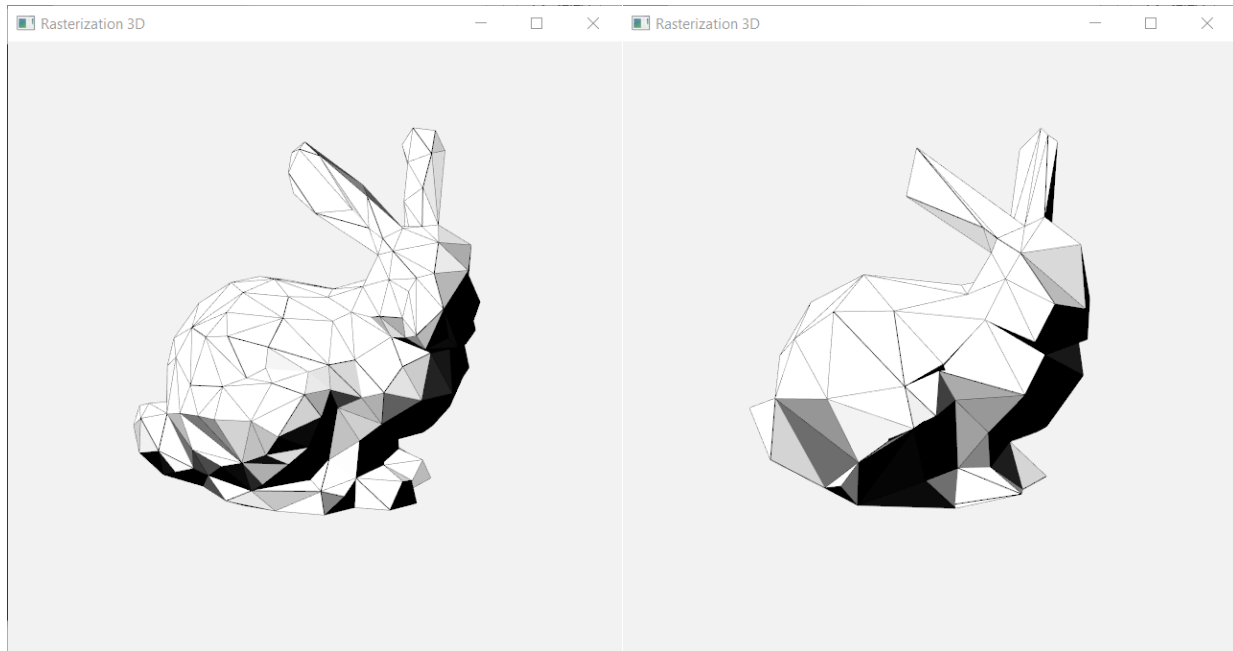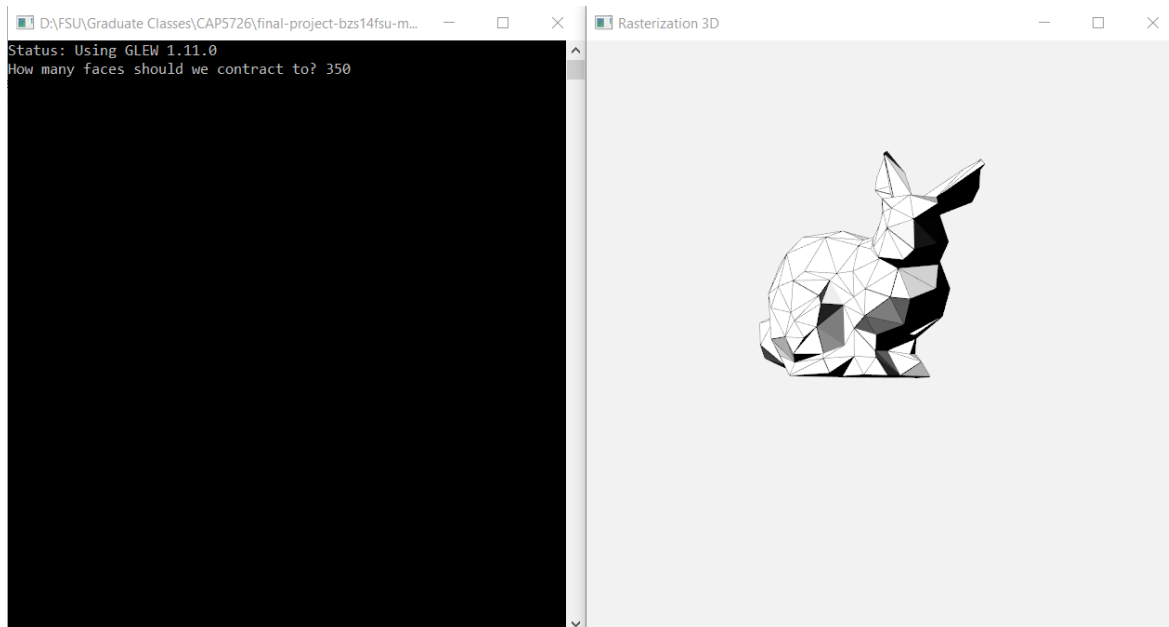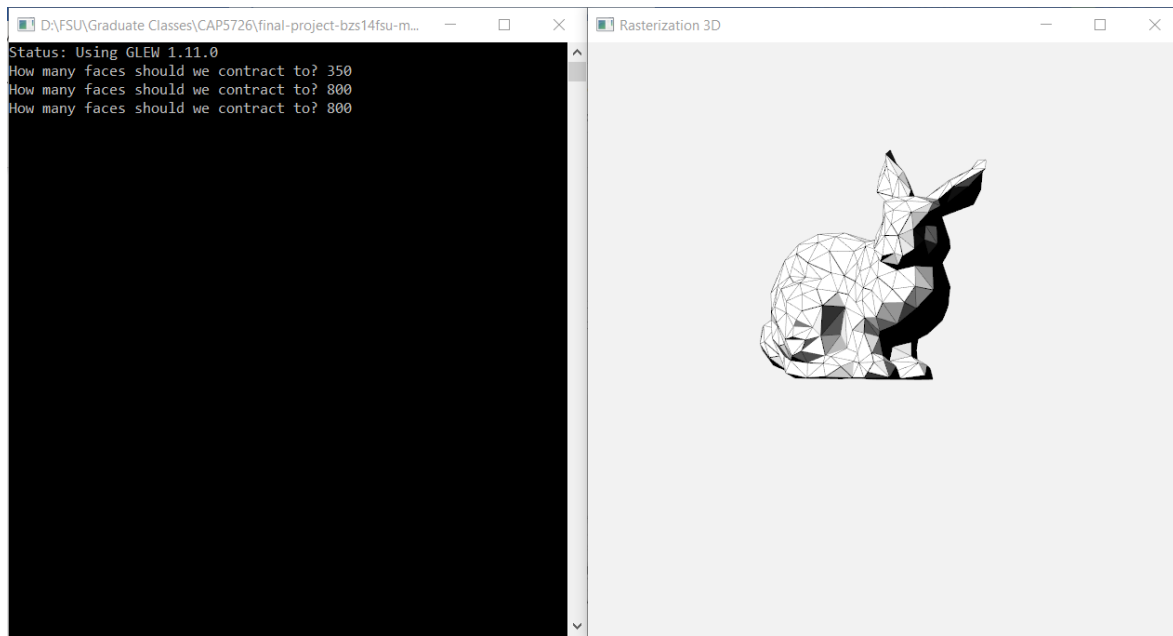*Figure 1 - (left) faces = 1000, (right) faces = 800*

*Figure 2 - (left) faces = 500, (right) faces = 200*

## In-program Updating

This functionality is supported. Pressing the 'y' key again after reducing the number of faces allows the user to choose another value, so long as it is less than the original number of faces.

## Exporting

This portion of the project does not work correctly. While the program can produce a .obj file that contains vertices and faces in the correct format, there seems to be a problem with how faces are written to the file.