

CPSC 314 Homework 6

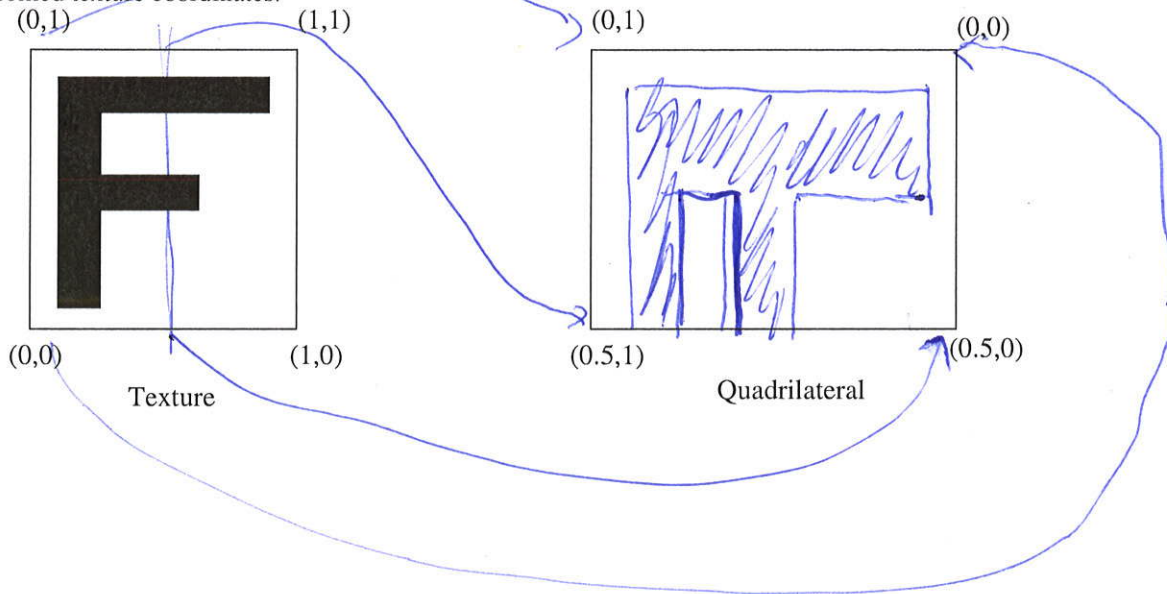


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This problem sheet deals with the depth buffer and blending. Solutions will be discussed in the labs in the week of March 9-13.

1 Texture Mapping

a) In the following figure, sketch the texture (left) as it would be applied to the rectangle (right) with the specified texture coordinates.



b) Starting with a rectangle with texture coordinates 0,0 (lower left), 1,0 (lower right), 1,1 (upper right), and 0,1 (upper left), specify the sequence of OpenGL commands that creates the texture coordinates shown on the right side of the figure above.

```
glMatrixMode (GL_TEXTURE);  
glScalef (0.5, -1.0);  
glRotatef (90.0, 0.0, 0.0, 1.0);  
glTranslatef (-1.0, -1.0, 0.0);  
// draw square here
```

2 Texture Mapping Terminology

Define of the following terms:

Bump Mapping

Texture mapping, where the texture modifies the surface normal of each pixel.

Displacement Mapping

Texture mapping, where each pixel is actually moved in 3D, as well as the normal being modified.

Environment Mapping

Texture representing the surrounding environment. Used to render reflections

MIP Mapping

Textures stored at multiple resolutions in order to solve the texture minification problem.