CISC 3620, Homework 6: Applying textures to a cube

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1 Introduction

For this assignment, we will modify the texture mapping used in the cube viewer in class. Instead of mapping the same Brooklyn College logo to each face, we will map a part of the Brooklyn College logo to each face. In order to do this, we will only need to modify the definition of the texture mapping and vertex coordinates in the JavaScript file.

See this video for what the final texture mapping should look like:
http://m.mr-pc.org/t/cisc3620/2019sp/hw6screencast.mp4

2 Fork my project

2.1. Go to https://jsfiddle.net/asterix77/o27u6ma3/

2.2. Make sure you are logged in to the account you created for homework 1

2.3. Click on the "Fork" button to create your own copy of the fiddle

2.4. Click on the "Run" button to run it. You should see a lighted 3D sphere shown in perspective.

3 Figure out the texture mapping

3.1. Figure out which face each call to `makeCubeFace()` corresponds to and label them with a comment.

3.2. Divide the logo in to 9 equally-sized pieces using a 3×3 grid.

3.3. Assign the center of the Brooklyn College logo to the "back" face, which is visible in the initial screen with an up-down angle of $60°$ and a left-right angle of $-150°$. It also corresponds to the set of points that all have a negative z value.

3.4. Given the above definition of the back face, assign the top, bottom, left, and right faces to the texture squares on the 3×3 grid that are above, below, to the left of, and to the right of the center, respectively.

3.5. Assign the front face to a texture outside of the texture map.

4 Modify makeCubeFace()

When making each cube face, we want to be able to assign a specific part of the texture map to that face.

4.1. Modify `makeCubeFace()` to take the texture coordinates to use for that face

4.2. Modify `makeCube()` to pass the right texture coordinates to `makeCubeFace()`.

5 Correctly orient the textures

Once the textures are on the faces of the cube, they might need to be rotated to achieve the correct orientation. To do this, you need to do one of two things:

5.1. Change the order of the vertices that are passed in to `makeCubeFace()` to change the orientation of the face.

5.2. Another option is to change the definition of the texture coordinates assigned to each vertex of each face to achieve the correct correspondence.

6 Record your model and moving viewer

Record a video of your viewer showing the same set of angles as my video above. Use a screen-cast program like Quicktime or CamStudio.

6.1. Start at up-down $60°$ and left-right $-150°$.

6.2. Go left until the left-right angle is $-325°$.

6.3. Go down until the up-down angle is $300°$ and the cube is back in its original orientation.

7 Submit it

7.1. Click on the "Save" button to save your fiddle.

7.2. Log in to Blackboard and open the dropbox for Homework 6.

7.3. Add the video of your fiddle to the submission

7.4. Paste the URL of your fiddle as part of the comment for your submission.