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15-112
Section: J

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TERM PROJECT
DELIVERABLE #1

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1. PROJECT PROPOSAL

For my term project, I plan of making a user customized Rubik cube generator and solver. This would allow the user to look at one side of the cube and then turn it into a 3D Rubik's rube. Then the user could scramble it and try solving it, and on giving up, the computer would backtrack the steps it took to scramble it and allow the user to solve it. The stages/steps of my project are as below:

Step 1: Seeing one side of the Cube

The user can choose the type of cube it wants by looking at one side of the cube (I might add more shapes if I deem it possible)

Step 2: Convert to a 3D Rubik Cube

The user can press the button to turn that into a 3D Rubik cube. This will essentially 3D the side of the cube, making every side a different color.

Step 3: Shuffle/Scramble the Cube

The user can shuffle the cube; either himself or the computer can do it for him. The program would keep a track of the steps taken to shuffle it so that they can be returned later.

Step 4: Solve the Rubik Cube

The user can try solving the cube himself, or make the program tell him the steps (by backtracking the way it was shuffled) to solve it, or return a solved cube.

Modules/Technologies:

I plan on using VPython for my project since it is a 3D graphics module and my Rubik's rube is going to be 3D. VPython allows the user to navigate the 3D imagine, by rotating, zooming in and out, etc., hence it seems fit to use it for my project.

2. COMPETITIVE ANALYSIS

There are many computer program that are designed either to allow the user to play with a rubik cube online or provide a solution to the cube.

The website http://ruwix.com has things extremely similar to my idea as it allows users to pick a cube with given dimensions and play around with it and tell the user the solution.

This was part of my original idea and I do intend to incorporate a model that allows users to play around with the cube and present a solution when the user gives up.

A feature that this website does not include is the 3D view of the cube which other websites like http://hi-games.net/ and applications like cubie allow you to do which shall also be incorporated in my project. I don't like the feature of ruwix.com that displays the cube as a laid out 2D image with different sides and hence I shall be doing away with that feature and simply showing a 3D version of the cube.

Along with that, most of these websites deal mostly with square cubes and I wish to extend the idea to rectangular cubes. Also, http://ruwix.com has other different shapes like triangles that I will try to work with if time deems possible.

One feature that I will add that is not included in any of the websites is allowing the user to pick a side (visualize it) and then clicking a button to turn it into a 3D cube as in my opinion, it adds to the user's experience and makes it more enjoyable.

3. STORY BOARD
See attached images.

4. CODE ARTIFACTS
See attached "TermProject1.py" file.

5. TIMESHEET
See attached "timesheet.txt" file