CS405 Project1 Report

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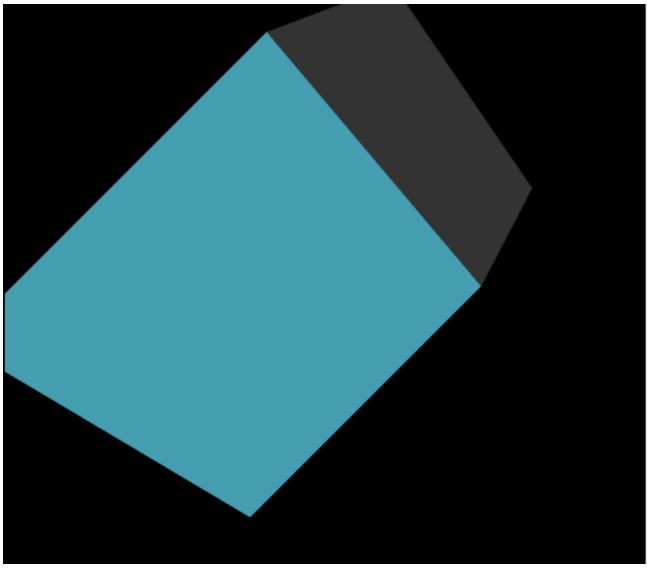
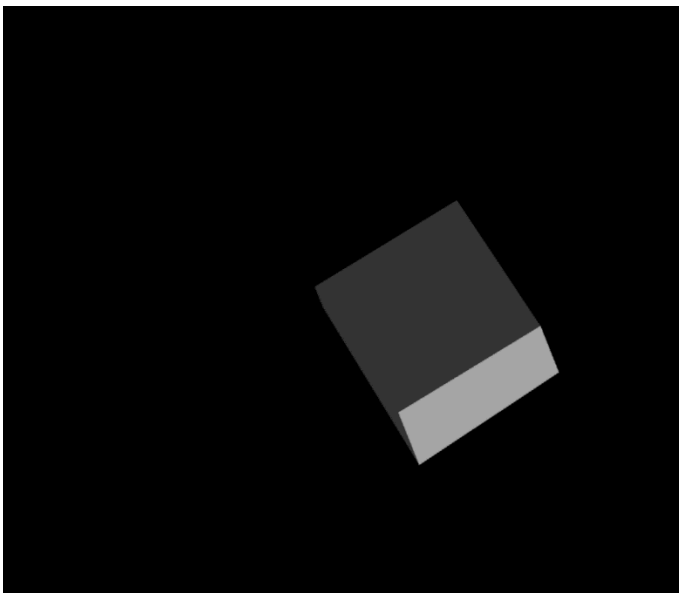
TASK I:

I've used the prompt provided in the text file and got a different result than what was shown in the document, thus I tried the prompt again asking the AI to redo the calculation 5 times to verify its correctness and received the resulting matrix as shown in the document. The 3D representation of the resulting matrix from task I is provided below.



TASK II:

For the calculation of the matrix by hand I've created an identity matrix first as a base matrix to apply the calculations on, I've calculated each matrix for translation, scaling and rotation one by one with the corresponding functions provided and multiplied each matrix with eachother starting with the identity matrix whilst following the correct order to avoid any miscalculations. The 3D representation of the resulting cube is provided below.



The resulting cube from TASK I and TASK II are drastically different, I believe my calculations to be correct and ChatGPT AI commonly makes mistakes whilst doing mathematical calculations and can defy most basic concepts in math like "1+1=2" by simply prompting "1+1=3" thus I believe the difference in the result is caused by a miscalculation on AI's end.

TASK III

For task III, I've tried several prompts to get a correct animation however I've failed the first 4 times due to my prompt being unclear or missing some details that AI tries to fill in resulting in errors. Below is the 5th prompt that worked:

Assume I have a cube and I want to animate it. Here is some guidelines for the animation I want: The animation will continue forever The initial position of the cube is the identity matrix The target position of the cube is below: [-0.2501617224174879, 0.08006185449687564, 0.42545175552368164, 0.30000001192092896, 0.3768473722859008, -0.20158566858613777, 0.2595173553118002, -0.25, 0.42616968520354803, 0.9010067884673543, 0.08103167740500794, 1, 0, 0, 0, 1] In the first 5 seconds the cube will transform from its initial position to the target position. In the last 5 seconds the cube should return to its original position from the target position. Assume you need to fit the code into this function function getPeriodicMovement(startTime) { } which gets supplied with startTime by an html file in this format: const startTime = Date.now(); and the function is expected to return modelViewMatrix.

The resulting animation algorithm created by the AI still had some faults, the AI made regular use of mat4 library to create matrixes and do matrix operations, I replaced the mat4 functions with functions already provided in the file. The AI made use of linear interpolation to generate matrixes corresponding to the time to create a smooth animation.