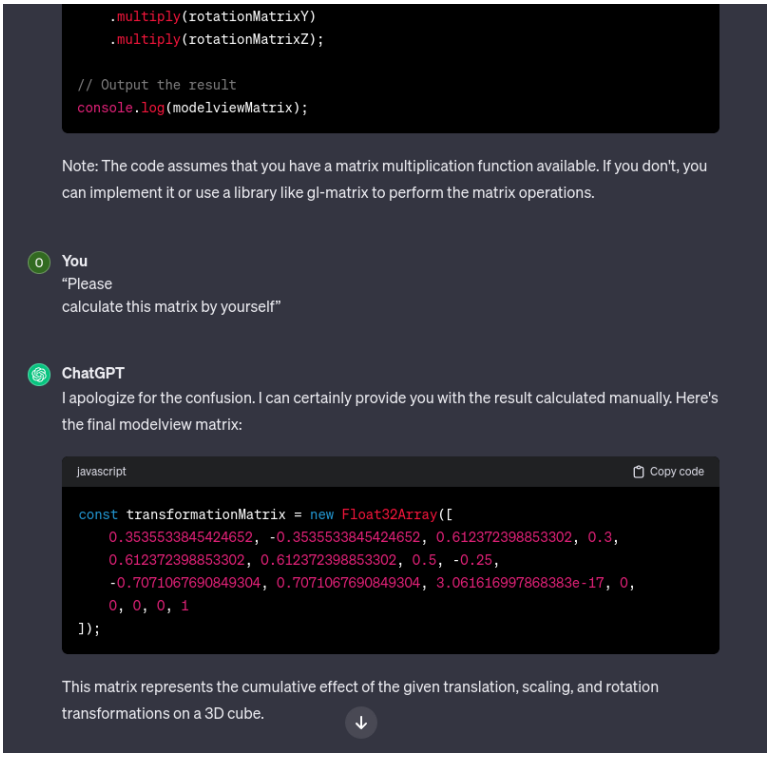
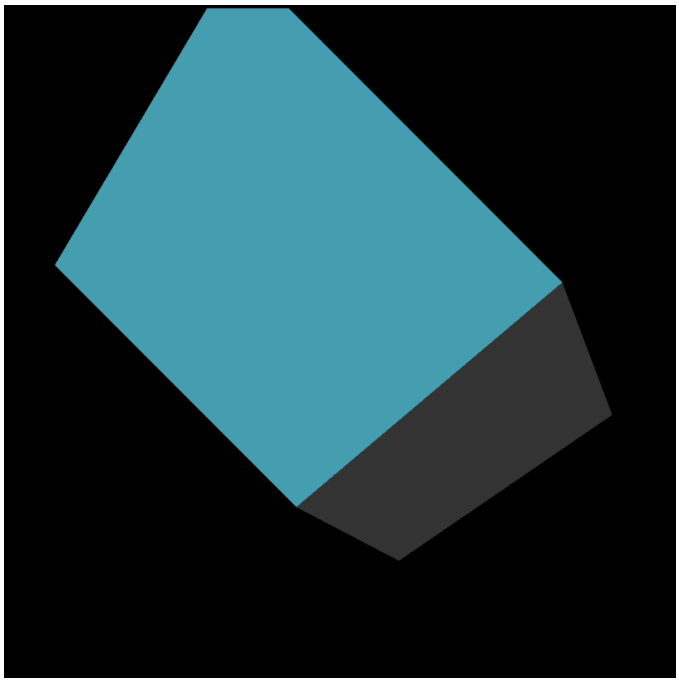
CS 405 Fall 2023 Project 1 Report by Oktay Celik

- **Task 1**

  I have asked ChatGpt to fill in the function. The link for the chat is: https://chat.openai.com/share/3b000de0-ccd6-4e7a-b18f-591b0fbde0ab. The answer was:



ChatGPT initially wrote the functions needed to calculate the matrix. I asked it to calculate the result. The resulting image is provided below.

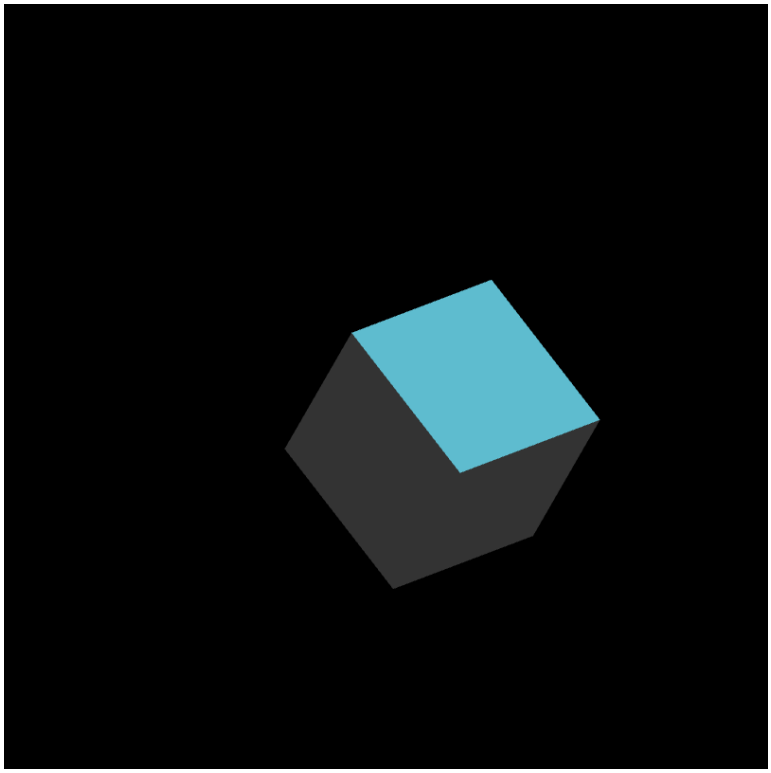


- **Task 2**

I recalculated the matrix using the given functions in the document with the function below:

```
function getModelViewMatrix() {
 let matrix = createIdentityMatrix();
 let radian30 = (30 * Math.PI) / 180;
 let radian45 = (45 * Math.PI) / 180;
 let radian60 = (60 * Math.PI) / 180;
 matrix = multiplyMatrices(createRotationMatrix_X(radian30), matrix);

 matrix = multiplyMatrices(createRotationMatrix_Y(radian45), matrix);

 matrix = multiplyMatrices(createRotationMatrix_Z(radian60), matrix);

 matrix = multiplyMatrices(createTranslationMatrix(0.3, -0.25, 0),
matrix);

 matrix = multiplyMatrices(createScaleMatrix(0.5, 0.5, 1), matrix);

 return new Float32Array(matrix);
}
```

I followed Rotation -> Translation -> Scale as the order of transformations. The result of the function was:



- **Task 3**

I have asked ChatGPT to write the interpolation function in Task 3. The chat was the one linked in the first page. I was upset about the resulting code as it was buggy and inefficient. I have taken the main parts into the last version of the code which was written by me. The code is:

```
function getPeriodicMovement(startTime) {
 const currentTime = (Date.now() - startTime) % 10000;
 let outFrame = new Float32Array(16);
 let current = createIdentityMatrix();
 const endFrame = getModelViewMatrix();
 let affineCoeff = currentTime / 5000;

 if (currentTime > 5000) affineCoeff = 1 - (currentTime -
5000) / 5000;

 for (let i = 0; i < 16; i++)
   outFrame[i] = endFrame[i] * affineCoeff + current[i] * (1
- affineCoeff);

 return outFrame;
}
```

The resulting animation was correct and complied with the specifications given in the document.

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