CS405 Project 1: 3D Animations using ChatGPT

In this project, you will use ChatGPT to calculate the ModelView matrix for a cube object and apply this transformation to your cube. After that, you will ask ChatGPT to write a method to animate your object. To do this, you have three tasks to do your project. For each task, uncomment the lines corresponding to each line inside the **index.html** file.

```
/**
*@WARNING
DO NOT CHANGE ANYTHING ABOVE THIS LINE
*/


/** @task1 */
//modelViewMatrix = getChatGPTModelViewMatrix();


/** @task2 */
// modelViewMatrix = getModelViewMatrix();


/** @task3 */
// modelViewMatrix = getPeriodicMovement(startTime);


/**
 * @WARNING
 * DO NOT CHANGE ANYTHING BELOW THIS LINE
 */
```

Warning: For all ChatGPT tasks, you should use ChatGPT 3.5

Task1:

In your project folder, you should see the **transformation-prompt.txt** file. Please paste the text inside that file to ChatGPT. After ChatGPT answers your question, you should see your answer in this format:
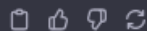
ChatGPT

Certainly! Here's the final modelview matrix in Float32Array format after applying the given transformations:

```javascript
const transformationMatrix = new Float32Array([
    0.3535533845424652, 0.3535533845424652, 0.612372398853302, 0.3,
    -0.612372398853302, 0.612372398853302, 0.5, -0.25,
    -0.7071067690849304, -0.7071067690849304, 0, 0,
    0, 0, 0, 1
]);
```

You can use this `transformationMatrix` in your JavaScript code as needed for further transformations or rendering.

If ChatGPT gives you a response in another format, you can use prompts like "**Please calculate this matrix by yourself**" to get the response in this format.

Once you get the response, please paste the Float32Array object inside the getChatGPTModelViewMatrix() method inside the **utils.js**

```javascript
/**
 *
 * @TASK1 Calculate the model view matrix by using the chatGPT
 */

function getChatGPTModelViewMatrix() {
    const transformationMatrix = new Float32Array([
        // you should paste the response of the chatGPT here:

    ]);
    return getTransposeMatrix(transformationMatrix);
}
```

Please take a screenshot of the generated cube and include it in your report. Also, generate a shareable link to your chat(see related section below) and include that link in your report.

Task2:

Now, by using the functions provided to you, you should generate the same transformation matrix by modifying the **getModelViewMatrix()** method inside the **utils.js** file.

```
/**
 *
 * @TASK2 Calculate the model view matrix by using the given
 * transformation methods and required transformation parameters
 * stated in transformation-prompt.txt
 */
function getModelViewMatrix() {
    // calculate the model view matrix by using the transformation
    // methods and return the modelView matrix in this method
}
```

Please take a screenshot of the generated cube and include it in your report. Also, check that the modelViewMatrix you calculated is the same as the modelViewMatrix calculated by ChatGPT. If they are different, please explain why they can be different.

Warning: For task 2, you should calculate the modelViewMatrix correctly to get full points from this task.

Task3:

After calculating the proper transformation matrix in task 2, you should ask ChatGPT to animate the cube object by using this transformation. The animation should continue infinitely, with an interval of 10 seconds. In the first 5 seconds, the object should transition to the calculated transformation in task 2. In the last 5 seconds, the object should return to its initial position. To implement this functionality, modify the **getPeriodicMovement()** method inside the **utils.js** file.

```
/**
 *
 * @TASK3 Ask CHAT-GPT to animate the transformation calculated in
 * task2 infinitely with a period of 10 seconds.
 * First 5 seconds, the cube should transform from its initial
 * position to the target position.
 * The next 5 seconds, the cube should return to its initial position.
 */
function getPeriodicMovement(startTime) {
    // this metdo should return the model view matrix at the given time
    // to get a smooth animation
}
```

In this task, you are free to use any prompt you like as long as you only modify the contents of the **getPeriodicMovement()** method. For this task, generate a link to your chat and include it in your report. Also, briefly explain the output of the ChatGPT in your report.

Report

Additionally, we expect you to write a report that clearly explains your methodology. **Any submission without the report will not be graded!**

Submission Guidelines

You should upload your work **to both GitHub and SuCourse.**
GitHub: Uploading the codes only is sufficient. Once you upload your code to GitHub, write the repository link to a txt file named github-link.txt and include that file with your submission to SuCourse.
SuCourse: You should zip your work (report, the code(s), and github-link.txt file) and upload it to SuCourse.

Important: Plagiarism will not be tolerated!

Sharing chat via link:
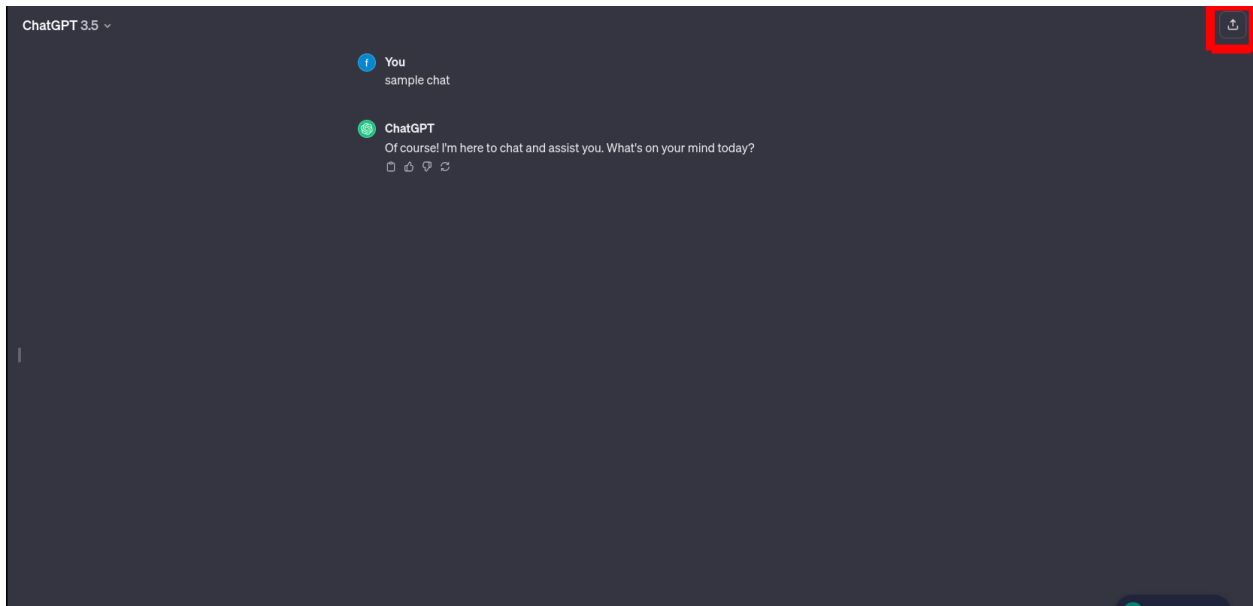
Please click the export button on the top right.