

Hacettepe University
Computer Engineering Department
BBM 414 Computer Graphics Lab.
Experiment 2

Subject: WebGL2 shape drawing and basic shading

Submission Deadline: Part 1 : 29.10.2021 23:59

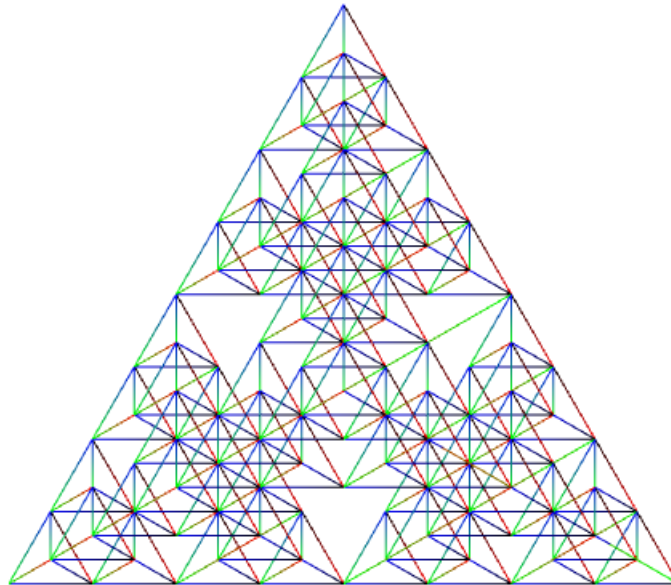
Part 2 : 08.11.2021 23:59

Advisors: Asst. Prof. Ufuk ÇELİKCAN, T. A. Zeynep BALA

Tasks

Part 1 (20%):

- Download the source code gasket4 example from Piazza:
- Update the color of the triangles and draw only the lines so that they look like the scene below:



Part 2 (80%):

- Try to complete as many of the following steps as you can.
- To switch between the steps use the following keyboard keys:
 - Use '1' key to switch to Step 1.
 - Use '2' key to switch to Step 2.
 - Use '3' key to switch to Step 3.

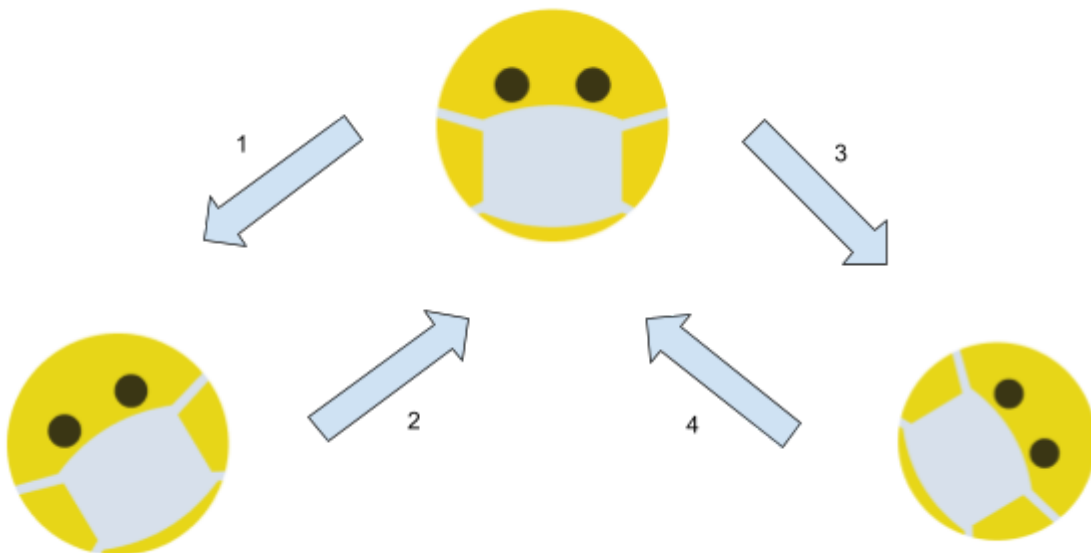
Step 1 (20%):

- Scaling the emoji from the previous experiment, create the scene given in the following picture:



Step 2 (30%):

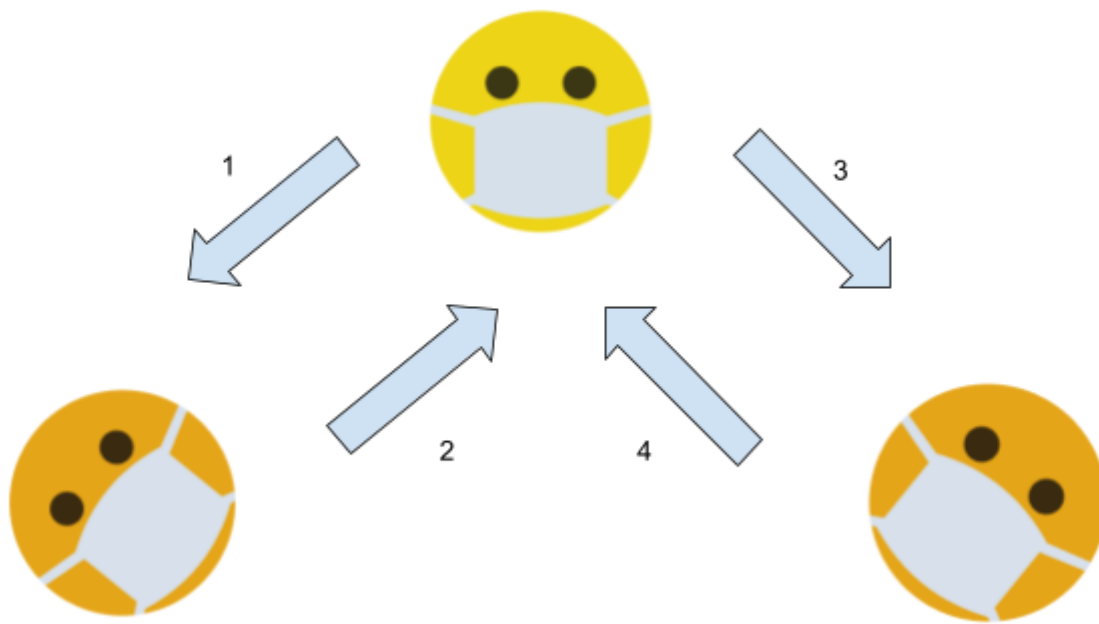
- Change the vertex shader code to create swinging animation given below:



- The emoji should not spin around its origin but should rotate $[-45, 45]^\circ$ to perform the swing animation.

Step 3 (30%):

- Change the fragment shader code to degrade the color of the emoji according to its rotation as given below:



- The emoji should have its darkest color when its rotation is -45° and 45° and it should have its lightest color when its rotation is 0° .
- The brightest and darkest colors of your shape should be as similar as possible to the ones given in the figure above.

Notes and Restrictions

- Implement your homework using WebGL2. All programming assignments must use the shader-based functionality of WebGL2: at least one vertex shader and one fragment shader.
- The assignment must be original work. Turning in someone else's work, in whole or in part, as your own will be considered as a violation of academic integrity. Please note that the former condition also holds for the material found on the web as everything on the web has been written by someone else. **Detection of such plagiarism in a submission will automatically void the submission and establish grounds to trigger an official disciplinary investigation.** General discussion of the assignment among peers is allowed, but do not share answers, algorithms or source codes. **Also using other resources (example source code, book, webpage etc.) as a code and javascript libraries (except jquery, Angel's book) are not allowed.**
- **Do not write the scripts into the html file. Reference your scripts in html file.**
- Style and appropriately commented code matter.

Submission

- You should submit entire Netbeans or Webstorm project directory including javascript files and html file in a zip file extracted from IDE.

- Submission file structure is as given below:
For part 1: <student_id>.zip
|----Experiment2_Part1 (your project directory)
For part 2: <student_id>.zip
|----Experiment2_Part2.zip
|----report.pdf
- You should upload your files via “Online Experiment Submission System” which is at <http://submit.cs.hacettepe.edu.tr>
- **Do not submit any file via e-mail.**
- **No submission will be accepted after deadlines.**