Interactive Graphics

Homework 2

Online Tuesday May 10th, 2022
Deadline: Sunday **June 5th, 2022 (11.59pm, Rome time zone)**

Tasks to do

The homework must be completed alone. Each student should do its own homework and NO CODE SHARING IS ALLOWED. Submissions will be checked for plagiarism and suspicious ones will be rejected and reported. You cannot use code taken from the web, the only code you are allowed to use in your submission is the initial code provided with the assignment and the code of the book. You can, however, access all the documentation you want (including the WebGL and GLSL official documents on https://www.khronos.org/).

To complete the assignment you need to use GitHub Classroom. Start by creating your own repository in the GitHub Classroom of the course by clicking on this link https://classroom.github.com/a/vbgUh8se. The assignment material includes this PDF file and two directories, Homework2 (containing the files homework2.html and homework2.js) and Common (containing the files MVnew.js and initShaders.js). You need only to modify the two files (homework2.html and homework2.js), add textures (if needed) and add a short documentation in PDF format (more details at the end of this file). Please **do not change the names of the files**, you only need to modify their content.

You need to remove the control sliders and modify the files, so to obtain the following effects:

1. Create a hierarchical model of a (very simplified) kangaroo https://en.wikipedia.org/wiki/Kangaroo, composed of the following parts;
    a. body
    b. 2 upper legs, each one composed of 2 independent components (upper and lower part)
    c. 2 lower legs, each one composed of 2 independent components (upper and lower part)
    d. head
    e. tail (composed of at least 3 components)

    All components are cubes, use the cube function present in the file. The kangaroo has a light brown color.
2. Add a surface on which you position the kangaroo that corresponds to a grass field. Attach to it a texture (color, bump or both) to give the appearance of a grass field.
3. Load or generate at least two more textures. A color texture to be attached to the front face of the head and a bump texture to be applied to the sides of the body.
4. Modify the surface so that there is a small hill, a low one.
5. Add a button that starts an animation of the kangaroo so that, starting from an initial position near the hill, such as the one in this image https://en.wikipedia.org/wiki/File:Kangaroo_Australia_01_11_2008_-_retouch.JPG, it hops (as inspiration, use this video https://www.youtube.com/watch?v=IdNtM_vb24E) all around the hill and comes back to the initial position and stops.
6. Allow the user to move the camera before and during the animation.

Describe your solution in a short document (2-3) describing your solution, the document should include a brief description of the techniques used, the advantages and disadvantages of the proposed solution, the features of your solution.

How to submit the homework

All files MUST be uploaded to the **GitHub Classroom** of this assignment, including the **documentation**.

Don't post solutions on Google Classroom. Use Google Classroom only for questions and clarifications. Do not ask for clarifications or comments by email, use only Google Classroom