Tecnologias e Sistemas de Informação para a Web

COMPUTAÇÃO GRÁFICA – 2020/2021 – Project 01

Goals

The first project of Computer Graphics aims to develop the students algorithmic reasoning skills and demonstrate its capabilities of using the HTML5 canvas, SVG and CSS3 web 2D animations, by developing the arcade game PANG[1].

In Pang, one to two players try to destroy a giant ball, using a harpoon, equipped with a handle, which is fired vertically. When reaching the harpoon, or the harpoon cable, the ball is divided into two balls, each half the original size. The process is repeated until the balls are too small, at which point they disappear. When there are no more balls, the level ends, and the player wins. If a ball hits the player, a life is lost. The player loses when he has no more lives.

Considerations:

- the implementation must have at least two (2) levels;
- the graphics must be created by the students, either through images or through drawings through Canvas drawing primitives;
- the game may have a maximum of two (2) players;
- there can be only one (1) harpoon per player.

Students must:

- main game animation must be developed using JavaScript and HTML5 element Canvas;
- implement an introductory animation, like the good old style of computer games, using SVG elements and animating them using CSS animations and transitions;
- the introductory animation must have at least 10 seconds;
- at least one SVG element has to be created by the students (simple primitives don't count);
- the remaining primitives and other resources must be under Creative Commons licenses, and properly referenced.

Implementation

Students should implement the project **in groups of a maximum of 3 elements**. The groups should identify themselves in the Wiki available in Moodle until the **7th of May**.
The use of frameworks or other graphic libraries must be previously agreed with the professor.
The use of external resources should be used as a source of inspiration or help in solving small algorithmic issues. All assets/code not developed by the students must be properly referenced. The work will be **disqualified** if plagiarism is detected. Plagiarism may trigger a **disciplinary process**.

[1] https://en.wikipedia.org/wiki/Buster_Bros.

Requirements

For this project students should concentrate on three components: **visualization**, **interaction** and **animation**. Originality, aesthetics, and technical quality of the code are, of course, important factors to consider in the evaluation.

Applications may be based on class exercises, but the work already done will NOT be considered for evaluation (new features need to be developed and additional techniques needed).

Project deliveries consist of a ZIP file with all the required files to visualize the application, submitted via Moodle.

Evaluation

The final evaluation of the project is based on:

- 1st delivery (20%);
- In-class follow-up (10%);
- Final delivery (70%).

Deadlines

1st delivery: 3rd November
Final delivery: 25th November

! Work submitted after the deadlines will not be accepted !

Defense: 26th and 27th November

- Mandatory presence of all group members
- Absent elements will not be evaluated

GOOD LUCK!