Computer Graphics Final Project
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This final project consists of a web page with a 2D game in the html canvas. The game have as purpose to bring awareness of the danger that sea turtles bear every day at the ocean. All around the world, mainly, the society uses plastic for differents reasons. Then, some of this plastic ends in the ocean. This causes big problems to the marine life. Sea turtles eat jellyfish and these are transparent. As transparent as plastic bags. The turtles can get easily confused between jellyfish and plastic bags. So, they eat the plastic bags and this can cause their death. This is only an example of plastic bag on the ocean, but there are many more and not only with sea turtles. They cause environmental issues with all marine life. This is the motivation for me to do this game.

This game is made, as said earlier, as a HTML file with javascript code. The code consist of the *index.html* as web structure, 3 javascript files, a css file and a folder with the images or sprites used during the game. The game consist of 3 javascript files, each for main component. One, is the **game** component. In it it's described the *class Game,* with the methods: *constructor*, *load* for loading the sprites, *play*, *end.* Second, it the **turtle** component, which has its own class and methods for loading the turtle sprite, drawing the sprite on the canvas and detecting if there is a collision with an obstacle. Which brings the third component, the **obstacles** component. The obstacles are describe in a class with methods similar to the *class Turtle*, but without the collision method and with another method for removing the obstacle from the canvas when collide with the turtle. In the *index.html* file, we can find the *start* function, which load all the main components and sprites. Also, there is a function to *update* the coordinates of the turtle and obstacles components. And a *render* function which draws all the sprites on the canvas. Also, there is a couple of function to initiate the keyboard and listen for any events.

The purpose of the game is to eat all of the jellyfish without colliding with the plastic bags or six packs rings. At first, you press *Space* to play then to move the turtle use the arrow keys. The *Up* and *Down* arrows mean that the turtle will move forward or backward. *Left* and *Right* will rotate the turtle. When all jellyfish are eaten then it's game over and automatically will reload the page to start again. However, the originally the purpose of the game was not the described above. It was to eat all the jellyfish and if collide with plastic bag or six packs rings then lose a life (which at first has 3 life). If a jellyfish was eaten the increment the score board.

There were a couple of challenges that I found. And, sadly, some of them I could not solve them. These were a better and more accurate detection of collisions algorithm, when it’s game over: display a game over sprite and give the option to press *Space* to play again, when collide with a plastic bag or six pack ring lose a life and when the 3 lives were lost it’s game over, and display a heart display at the top left of the canvas

indicating how many lives were left. Some of the challenges that were resolved were to create multiples obstacles at differents coordinates and float, when eaten a jellyfish increase the score board and have a detection of collision algorithm.

Here are some screenshots of the game.