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Final Project

The main idea of the project is to give a completely interactive experience to the user, creating a game that is divided in two different level: one more complex than the other. The difficulty is characterized by the movement of the hero that is more slowed down than the movement in the first level. The user, for each level, will recover 5 elements to go to next level and to complete the game. For the realization of this project JavaScript, HTML, CSS and the Three.js library were used.

1) **Hierarchical model:** The main characters of the game are two heroes: Iron Man and Superman. Each of them is hierarchical model, characterized by body, arms, head, hair, legs, eyes, mouth and objects of ornament. the model is composed by a set of cubes arranged in such a way as to look like a body of Lego. Each hero can move and fly (in this case with the arms). To permit the hero to move and fly, it was created a function that for each pressure on the keyboard the model will have a movement that correspond at the key that was pressed. The function are muovi() and muoviIron(), each of them are on the file function.js
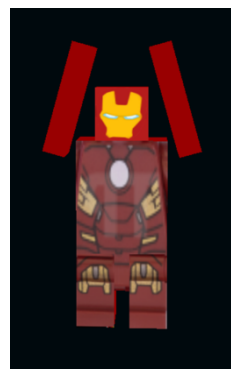

Figure 1, Superman

Figure 2, Iron Man

2) **Light and Texture:** The game is ambientes in the space, in fact we a have models of planets and starships and as can be see each model are fully enlightened. This was possible through the insertion of lights that were positioned in such a way as to give greater reflection and clarity to the various objects in the space. The functions used are THREE.AmbientLight(), THREE.DirectionalLight() and THREE.PointLight(). To render a complete immersion and realistic view to user it was add the texture to model Iron Man and the elements that the user will recover. On Iron Man was insert a texture to simulate armor and mask. On the elements were insert textures to create the gems and the "S" of Superman. The function used is THREE.TextureLoader ().
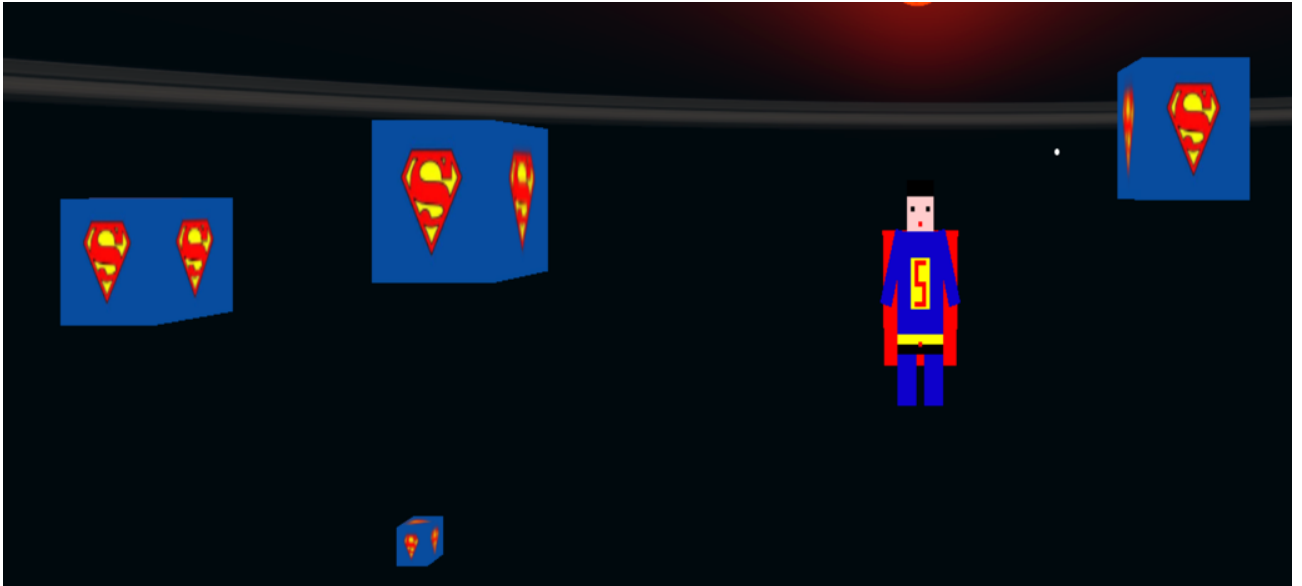

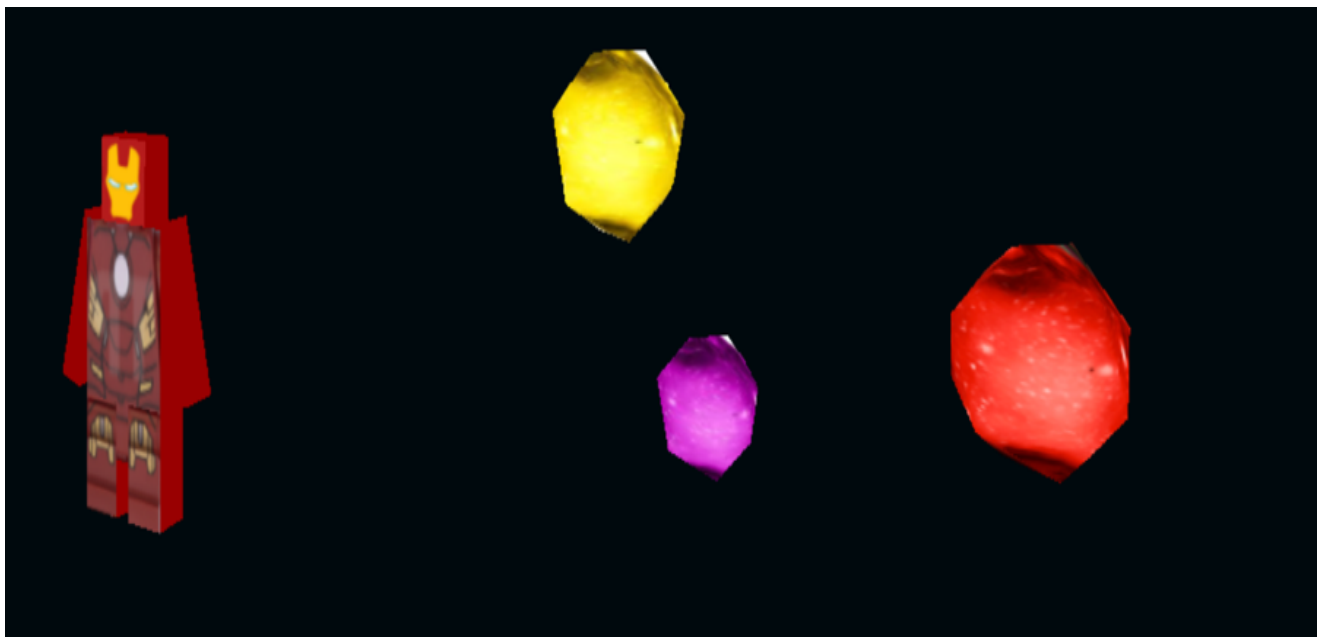*Figure 3 ,Planets and starships*

Figure 4, "S" elements

Figure 5, Gems

3) **User Interaction:** The first interaction that has the user is in the first page of the project, where he can choose if read the rules and structure of the game or start to play, moreover, he can decide whether to listen to background music or not. In the level of game, the user will be Superman and must recover all the "S" to complete the level. To recover the elements, it was created a collision between the hero and "S" in such way when the hero will recover all the elements (5 collisions) will appear an alert which will inform the user that has completed the level. When the user will click the alert, start the second level where the hero now is Iron Man and where the movements to move will be more difficult because the user will must understand exactly what key press to recover the gem. Also, in this case the contact between Iron Man and the gems is a collision, so when the user will recover all the gems, will appear another alert that inform that the game is complete. To help the user and to give a more interaction in the space there is a text that suggest what do to complete the level.
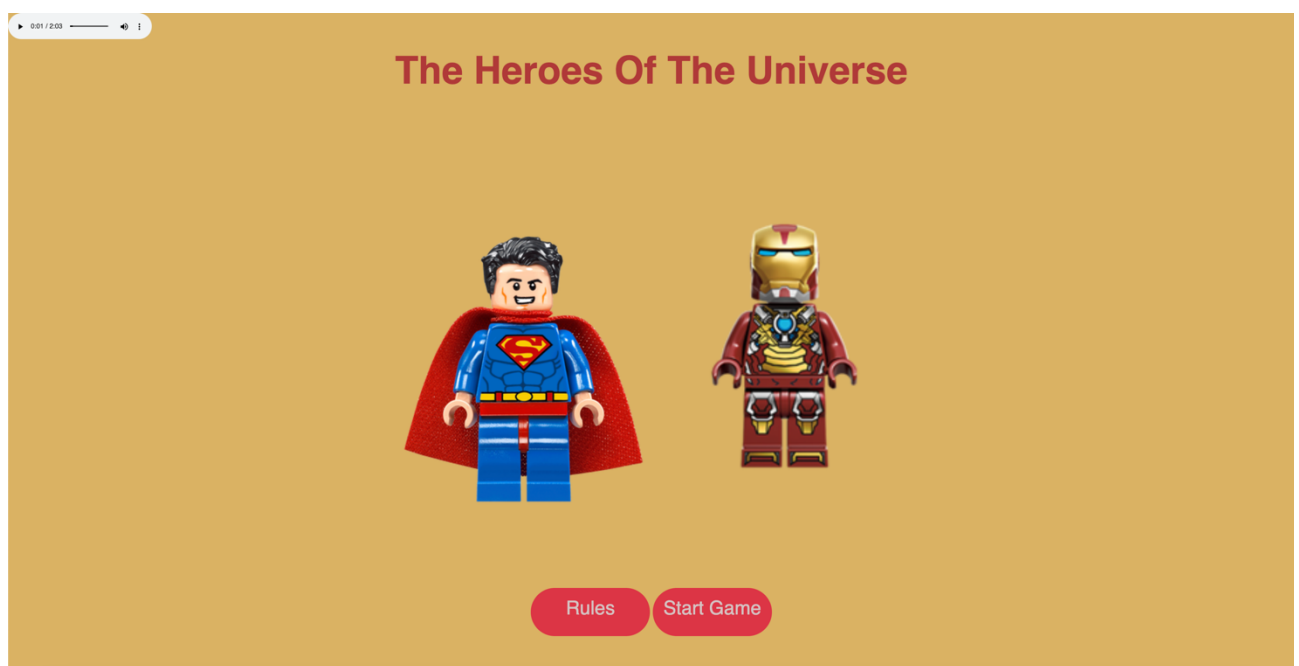

Figure 6, main index

The game consists of two levels:

1- The character you are going to check will be Superman and you will have to recover
all his 5 "S" to reach the second level.

2- The last level is the most difficult one, because you will have a more limited control of Iron Man. To finish the game you will have to recover all 5 gems of infinity.

Commands:

- "a" -> To fligh up.
- "s" -> To fligh down.

- To move the heroes:

Home   Start Game

Figure 7, page of rules

127.0.0.1:5500 dice

Congratulations, you have conquered the second level!
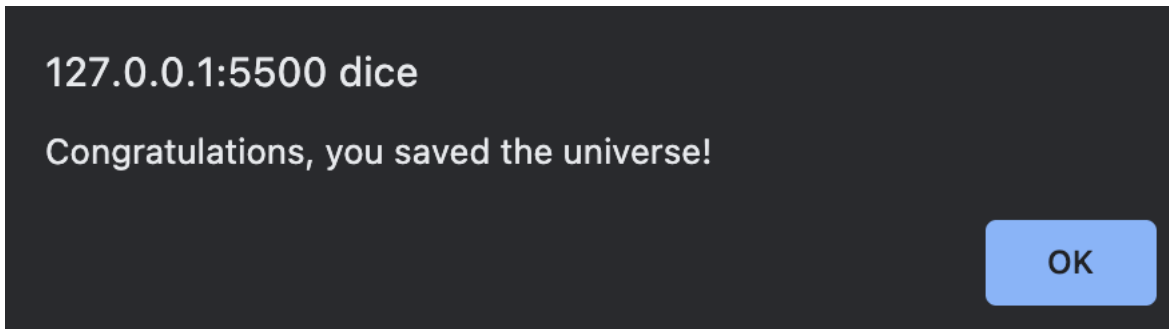
OK

Figure 8, alert of the first level

Figure 9, alert of the second level

4) **Animations**: Animations play a very important part in this game because permit to change hero, move the hero, permit at the hero to fly, the collision between the models and to change hero when the level finish. In the first level we see only Superman and thanks to the movements given to him by the user he can recover the "S" through collisions, and when this happens, the element will be removed from the space and when all the elements will be recovered, Superman will be removed and Iron Man will be add to the space. So, here starts the second level and Iron Man will must recover the gems and when we have a collision between them, the gem will be removed. At the end, when the game will complete, Iron Man will be removed and Superman will appear, so the user can play again.