UNIVERSITY OF PAVIA

MASTER DEGREE IN COMPUTER ENGINEERING DATA SCIENCE

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PROJECT NAME

ASTEROID GAME

Author

Bill Mono

Contents

1 Introduction

Asteroid game is a game set in space. We are in 2100, terrestrial technologies have evolved, resources in the planets are scarce, therefore we must move towards space in search of new riches. We start with our spaceship in search of these riches hidden in space. During our journey we will have to be careful to avoid all the asteroids, which will arise in our path. Are you ready to start this new adventure? .

Figure 1: Title of the game.

2 Structure

On each page of the site, there will be a section that will contain the title of the game site, and in the footer, there will be in addition to information on the rights reserved, an info project link that will refer you to this file containing all the game instructions.

2.1 Home page

In addition to the game information, on the home page you will be asked to log in if you have not already done so, otherwise there will be two buttons, one that will send you to the game and the other that will disconnect the user. .
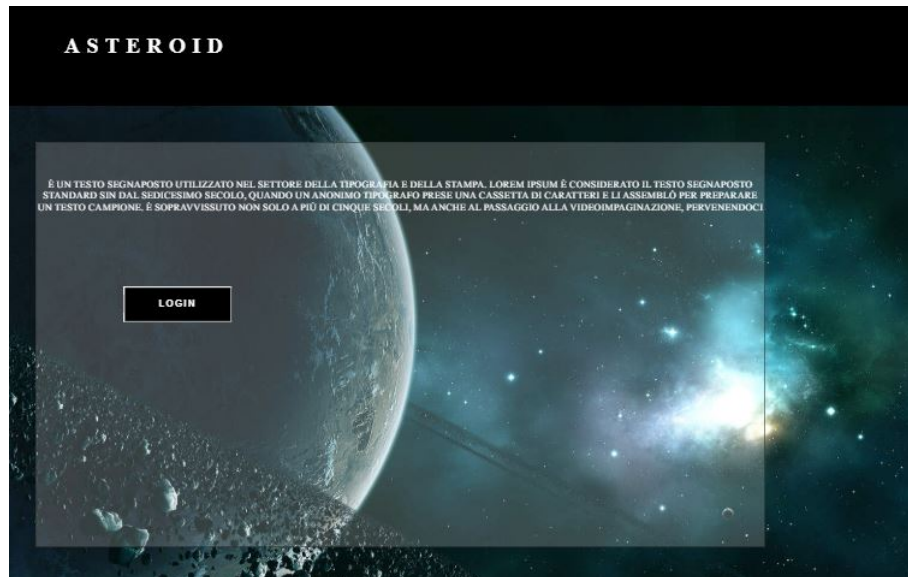

Figure 2: Home page if you are not yet logged in.

2.2   Login

On the Login page you will be asked to insert your login credentials. If you have not yet registered on the site, you can go to the signin page by clicking on the bar containing the word "signin". Once you have inserted your data, click on the "enter" button. If you do not insert the username or password, or if the password and username do not correspond to any user included in the database, an error message will appear.
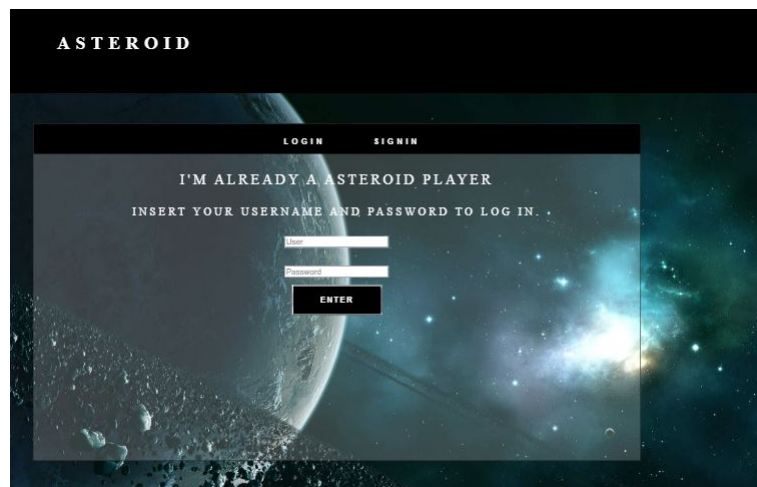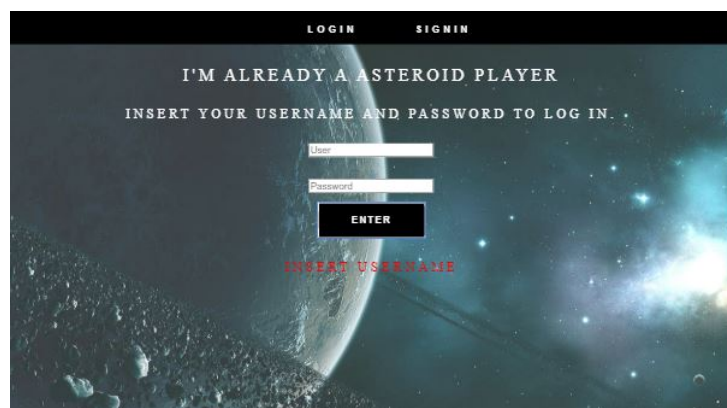

Figure 3: Login page.

Figure 4: Error if you don't insert your username.

2.3 Signin

On the Signin page you will be asked to fill in all the fields to complete the registration, once you have filled in all the fields click the "signin" button, you will be redirected to the login page, where you will have to insert the password and username chosen at the time of registration. If you do not fill in all the fields or the password and the password confirmation do not match, an error message will appear.
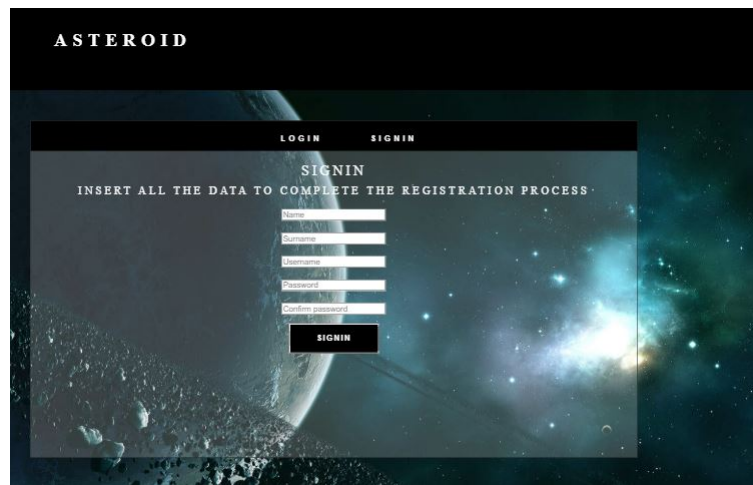

Figure 5: Signin page.

3 Game

On the game page there is the username, a score field, and three buttons one to go to the ranking page, one to restart the game, and one to stop the music. In addition to this, there is the game screen created with the tag canvas of HTML5 and Javascript.

3.1 Instruction

We control a spaceship, We can move within the limits of the game screen, using the left and rigth keys of the keyboard.

3.2 Elements of the game

The elements of the game are:

1. *Spaceship* that you can control both with the keyboard keys and with your voice.

2. *Asteroids* are the elements of the game that must be avoided, a collision with these elements causes the end of the game.

3. *Gold coins* are one of the riches that can be found in space, they increase your score by 1.

4. *Red coins* are one of the riches that can be found in space, they are rarer than gold coins, they increase your score by 5.

5. *Diamond* the rarest resource that can be found in space, increase your score by 50.

6. *Hourglass* , it is not easy to control time in space, hourglasses are time gates that can speed up or slow down the speed of the game.
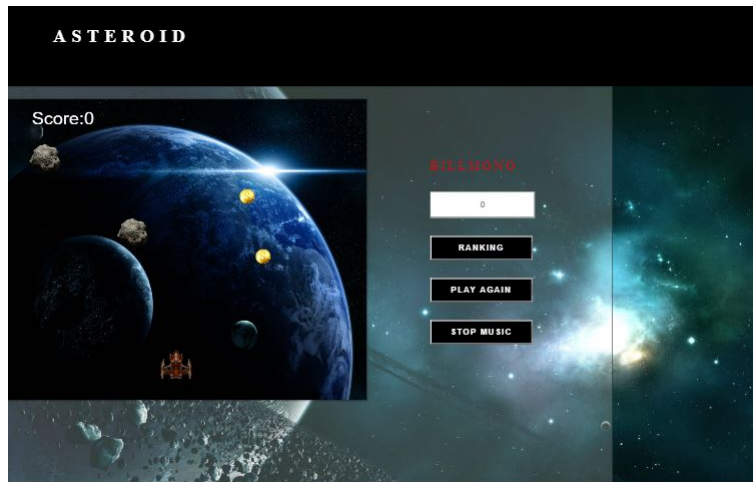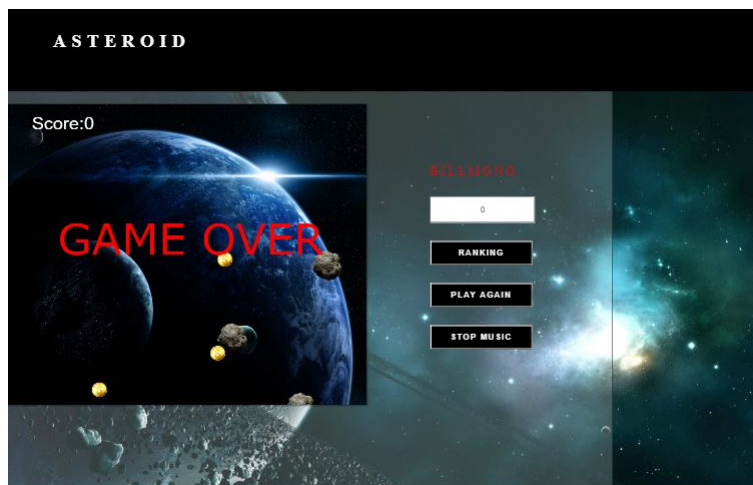
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Figure 6: Game page.

Figure 7: Gameover.

4   Accessability

I have tried to implement this game so that it is also accessible to people with movement disabilities, so I have implemented speech recognition.

4.1   Speech recognition

With voice recognition, the user can navigate through the pages of the game site without using a mouse or keyboard. Speech recognition works only with Google Chrome. On the homepage if you are not yet logged in, just say the word "LOGIN" to go to the login page, while if you are already logged in ,you can say the word "GAME" to go to the game screen, or you can say "HOME" to log out.
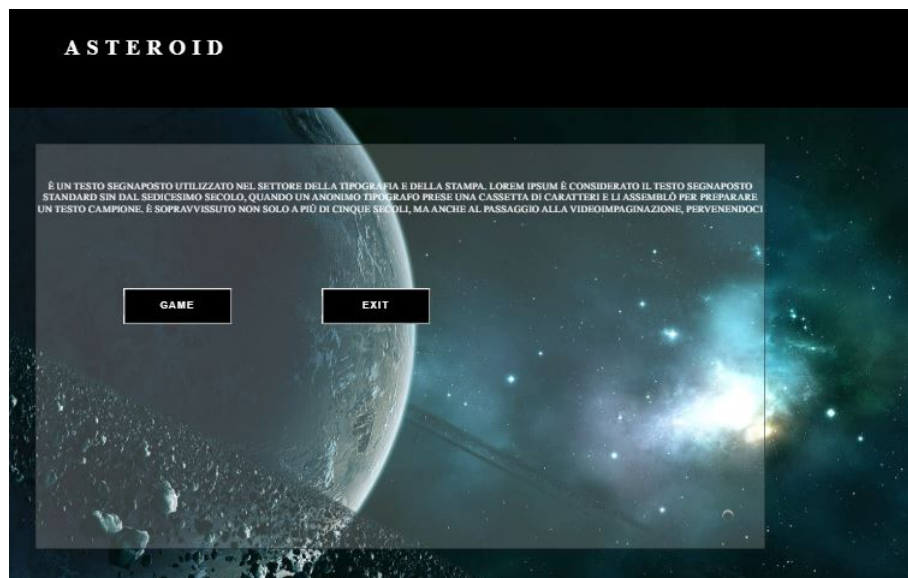
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Figure 8: Home page if you are yet logged in

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4.2 Game with speech recognition

Before playing, you will be asked if you want to use voice recognition in the game, if you answer "yes" you will not be able to use the keyboard but only voice recognition, the game speed will obviously be lower compared to a game played on the keyboard due to the fact that it is more complicated to move the spaceship only with the voice. If instead you answer "no",you will use the keyboard and not the voice recognition. The answer can be given either via the keyboard by clicking on the yes or no buttons, or with the voice saying YES or NO depending on whether you want to use voice recognition or not. When the game starts to move the spaceship just say LEFT to move it to the left, and say RIGTH to move it to the right, if instead you want to move it more positions, just repeat LEFT and RIGTH several times.
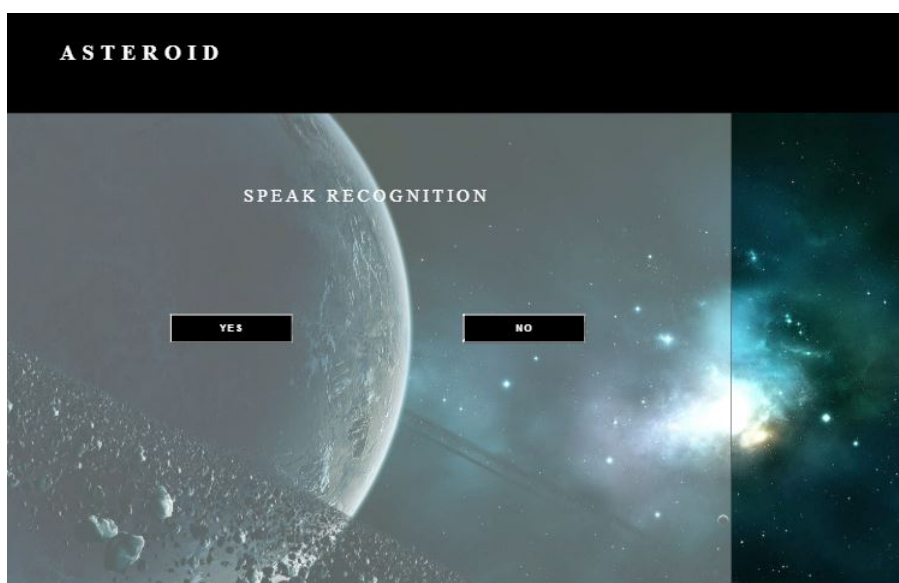
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Figure 9: Allow Speech recognition.

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5   Ranking

In the ranking page there are two rankings, the first is the general one and shows the top 4 positions with the best score, taking them from the users registered on the site. The second ranking shows the 3 best personal scores. Here too voice recognition is active, so to play another game just say "GAME" or click on the play button again, while to return to the home page just click the go to home button or just simply say "HOME".
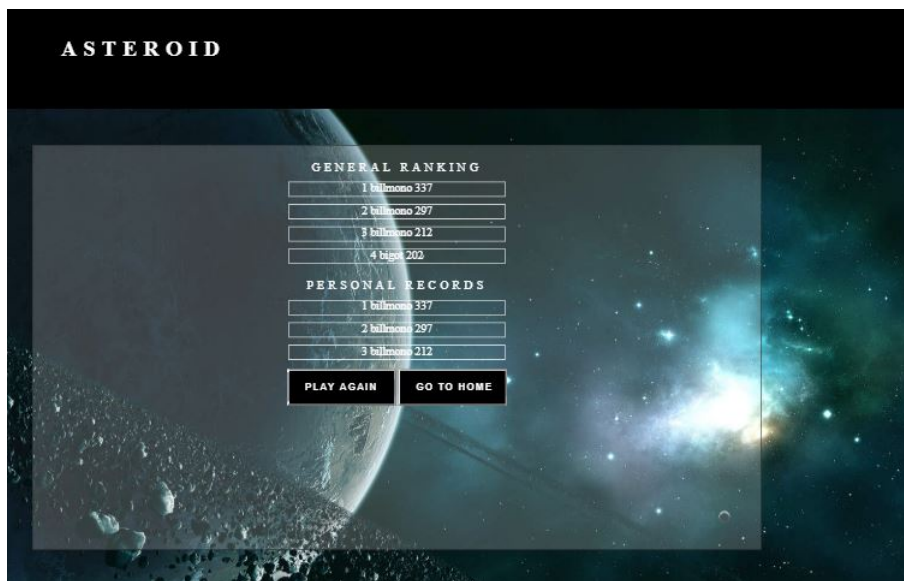

Figure 10: Ranking.