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Intro to Web Programming 1045

Section 003

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Final Project

* Creating a basic game using HTML and JavaScript

1) Development description:

- The game that I have been designing for this final project of the term is called “Protect the Earth from the Invading of Other Planets”. My game of mine is pretty basic. I got this idea from a video on YouTube since it looks pretty cool and attractive. I decided to choose this game because it has some features that I have learned in class. Even though the game looks pretty basic, I have had to do a lot of things to completely finish the game. First of all, I created a canvas size 600x400. And then, I created some buttons needed for this game such as, “start Game”, “Level 1”, “Level 2”, etc. And, in order to make the buttons work, I had to make some functions to do the tasks that the buttons require. I made a function called “moveDots” to move the dots I drew, and I used the method called setInteval to animate the dots. After that, I made a function called “moveProjectile” to move the projectiles. And, to determine whether the projectiles and the dots collide or not, I made a function called “collision” to determine that. I made a function to create a player to play the game, which is a spaceship. I created two constructors of the player and the dots, so that my life would be easier.

- The objectives of the game are to destroy as many planets invading the Earth as possible

- The concepts I have used in the final projects: I think I have used all of the techniques that we have covered in class

* + Arrays: This is a vital concept. I used it to store the projectiles, the dots. When we store something in an array, it is easy to take them out to compare with other variables.
  + Conditional Statements: This is one of the first concepts I have learned in my coding journey. I used it to compare if the projectiles and the dots collide or not, and so on.
  + Objects: This is what I have learned recently. It is pretty handy. It creates the form including all properties needed in an object.
  + For Loop: I used it to check every single element in an array.
  + Canvas: In order to see what it looks like right now, it has to use Canvas
  + Animations: This is important. Without it, we cannot see the dots move, the player shoots the projectiles, etc.
  + Comments: This is a useful tool. We can note the purpose of the code.
  + Expressions:
  + Data types:
  + Operators: Calculate
  + Functions: Makes our code look better and organized.
  + Event handling

2) User Manual and Information about the game

Each time the player will have 5 lives to play. It has 4 different levels. The first level will be generating 5 balls. The second level will be generating 10 balls with different. Similarly, the third and the fourth level will be generating 15 and 20 balls. Each dot or ball has a different color and speed. The player will be a spaceship that needs to protect the Earth from the invading of other planets.

The player will need to use a mouse to play. There are no other ways to play

To start the game, you will be asked to choose a level that is suitable for you from 1 to 4.

If your input is not from 1 to 4 or not a letter, you will be asked to input again your value from 1 to 4.

Then, you choose your suitable level, click on the ‘Add Balls’ button to set up balls or dots.

After you successfully pass those steps above, you can left click on the “Start Game” button to play.

Then the dots will be starting to move from the top of screen to the bottom.

After you see that, that is the sign that you can begin playing.

In order to destroy them, you need to click on the screen with a proper direction.

If you miss, nothing happens. However, if other planets successfully touch the bottom of the screen (The bottom of the screen is the Earth). The player will be lost a life.

If you successfully kill other planets, the score will be added 100 for each planet killed.

And there will be a dot in the middle of the screen to let you know that you killed the planet. If you knock down another planet, the middle dot will be changed color.

If there are no dots in the screen, they will be generated again with your chosen level.

If you lose all your lives, the game will be over. And your will be asked if you want to play again.

If yes, you will be asked to choose a level that is suitable for you from 1 to 4 again. After you can start playing.

If no, there will be message ‘Thanks for playing!’

3) References:

- The resources that I have used

* + - <https://www.youtube.com/watch?v=eI9idPTT0c4&t=2068s>
    - <https://developer.mozilla.org/en-US/docs/Games/Techniques/2D_collision_detection>
    - <https://www.youtube.com/watch?v=BBvXJsDDYMc>
    - <https://www.w3schools.com/cssref/css_colors.asp>
    - <https://www.youtube.com/watch?v=tA_ZgruFF9k>