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CS 396

Project 4: Cannon Game

**Project Description:**

Project was described to essentially have one cannon on a screen (ideally in the bottom middle) with 10 shots and at the top of the screen there is a horizontally moving target. There needed to be some way to be able to fire and change the angle of the cannon and a way to recognize when the target was actually hit. The project also required some method of keeping score and a way for the player to know when the game is officially over.

**Project Analysis and Design:**

In my version I went with what I would call a pretty standard build, using space bar to shoot and the left and right arrow keys to rotate the cannon. There is also a fairly large textbox to display the objective of the game and give live updates of important knowledge such as score and how many shots are left. I also took the liberty to make the target highlight in a light green color whenever it is hit so the user won’t have to check the score every time to know if they got a direct hit or not. I also decided to implement a theme to the game once I completed the functionality. I went in the direction of fighting global warming where the cannon is actually Patrick Star from SpongeBob and his mouth is full of snowballs and he shoots ice that gets aimed at the moving target which I redesigned to be a freezer. By loading up the ice into the freezer the you essentially save the world from global warming. To fully emphasize the theme the background is initialized to be in the middle of the desert and whenever the player reaches enough score it gets changed to a snowy background. Another important feature of the game is how the score is implemented. I created a function that checks if the ball and target overlap and I placed a call to the function inside the interval so as the ball passes through it can actually be checked to be overlapping multiple times within a single shot and will actually update the score accordingly. This was not my original plan when constructing this collision feature, but I decided to leave it in to reward players for getting more accurate and direct shots. The more of the target the ball passes through the more points they can get. With this in mind, in my version of the game the user can get anywhere from around 1 up to as many as 6 points in a single shot. When taking into consideration that a player can score that many points per shot I decided to raise the total score to win to 25 points as I concluded that was a fair but equally challenging range for the allotted shots.

**Basic Instructions on Usage:**

Space bar to shoot and then left arrow key to rotate the cannon left and then of course right arrow key to rotate right. Those are the only controls implemented into the game. Whenever you want to start a new game you will need to refresh the page as there is no “play again” or “new game” button.

**Any Special Info to Run the Game:**

Nothing special just simple html and JavaScript file.

**Known Problems or Limitations:**

Learned a lot about JavaScript as this was my first project that dealt with moving objects. I was worried about how I could make the collision checking system but that turned out to not be a very big deal. Some limitations as of now when you shoot the ball off the right bound of the screen the screen attempts to scroll and keep the ball on screen even though it flies off the game board so it creates a very strange and unappealing effect. Another unimplemented feature is that I would’ve liked to have the ball disappear immediately after coming into contact with the target but with the way animations work and my limited knowledge on them I was unable to figure that out so the target will shoot right on through it every time. Lastly, because it shoots the same ball it is not possible to shoot in a rapid-fire manner which initially I would’ve liked to have but it was deemed unnecessary for the scope of the project.