Eshani Mishra

Term Project Design

My project is a game where the player controls a diver to move through the ocean setting of the game. The player can increase their score by collecting coins. The player has 3 lives and the game ends when all 3 lives are lost. Lives are lost when the player collides with certain types of obstacles. When a life is lost, the player will start blinking and an explosion graphic will appear on screen for a few seconds. After it was suggested during the User Study A-Thon, I also added different levels to my game, even though this was not in the original project proposal. There are 3 levels of difficulty in the game, as the difficulty increases, the amount of obstacles encountered by the player also increases.

This game was implemented using pygame. All of the obstacles, as well as the diver inherit from a superclass InteractiveObject, which inherits from the pygame Sprite class. Collision dectection using pygame Rect attributes is used to check for when the diver hits an obstacle. Most objects in the game are animated by looping through a list of images in the update function of the objects. There are three subclasses of the class Fish, which represent a type of obstacle. The NonDangerousFish don’t cause the diver to lose a life when there’s a collision, instead a function called diverDiver is called and this functions pushes the diver away from the fish by changing its x and y attributes. Therefore the diver is diverted from its original path. The DangerousFish obstacles, which are represented as sharks in the game, cause the diver to lose a life after a collision. The AnglerFish also cause the diver to lose a life. The AnglerFish also have a function called followDiver, which gets the location of the diver and begins to move in that direction. When the diver gets a certain distance away from the AnglerFish, the AnglerFish begins to follow the diver. If the diver collides with the AnglerFish and loses a life, the AnglerFish then stops following the diver by turning the canFollow attribute to False.

To make it appear as the diver is falling downwards into the ocean, all of the objects in the game are constantly moving upwards, using a function called shiftWorld and a variable called worldShift. When the player is moving downwards, the worldShift will increase to make it seem like the player is moving down faster, and when the player is moving up, the worldShift becomes smaller.

Sometimes the player will encounter an obstacle called a Cave where the player’s path is divided into two. Both paths are dark and the player has to use the “f” key to activate a flashlight in order to see the obstacles behind the dark paths. This works by displaying a series of yellow arcs on screen, which are sprites called LightRay. When these sprites collide with the caves, the alpha transparency of the caves is changed so that they slowly become less opaque and the player is able to see the obstacles behind them.

The game originally also had a shooting function, as described in the proposal, but I decided to eliminate this because the bullets were unlikely to hit their intended target as all objects were constantly moving.

After one game ends, the player can return to the home screen and see scores from past games. The scores page lists the top ten scores from all the games that have been played.