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Term Project Proposal

My project is a game, made using Pygame, in which the player controls a scuba diver that moves downwards into the ocean, while avoiding obstacles in the way. The main objective of the game is to stay alive as long as possible with three lives. When the player loses a life, the diver temporary becomes black and white and blinks to indicate that one life has been lost. When the diver is black and white and blinking, it cannot be affect by any obstacles, and it cannot collect coins. The amount of points gained by the player is determined by how many coins the player collects. The game continues until the player uses up all of their lives. The objects in the game are always moving upwards, this gives the appearance that the player is moving downwards. In the game, the player can control the movement of the diver using the arrow keys. The game begins with the main menu, this shows the play and help options, as well as scores and settings.

The types of obstacles encountered by the player in the game are non-dangerous fish, dangerous fish, an anglerfish, naval mines, and caves. The three types of fish, as well as the diver and the coins have multiple images so it looks like they are moving. All of these obstacles, and the diver will have a superclass called InteractiveObject which extends the Sprite class and sets the (x,y) positions of each object, as well as an image, which is a Surface, that stores how the object is drawn and a Rect which stores the position of the object. Collisions between the obstacles and the diver are handled in different ways depending on the type of obstacle. All three types of fish move across the screen from right to left, or left to right. They are randomly generated at points on the left or right of the screen depending on which way they are moving. Non-dangerous fish are the most frequently generated, then dangerous fish, and lastly anglerfish are generated the least frequently. If the diver hits a non dangerous fish, the diver bounces off the fish and is diverted from its path, no lives are lost. If the diver hits a dangerous fish, one life is lost and the game continues if the player still has lives remaining. There is a class Fish, which controls movement across the screen. NonDangerousFish and DangerousFish are subclasses of Fish, and AnglerFish is a subclass of DangerousFish, with several other features. If the diver gets less than a certain distance away from the anglerfish, it begins to follow the diver. When the diver gets far away from the anglerfish, it stops following the diver. Collisions with anglerfish are the same as collisions with dangerous fish. Mines are stationary obstacles, placed at a random position on the screen, as long as that position is not within the position of the rect of the diver. A collision with a mine causes one life to be lost. The last type of obstacle is a dark cave. The cave creates two paths for the player to follow, one path is clear of obstacles and the other has a mine or an anglerfish. Caves are generated at the bottom of the screen, they are first drawn with a dark cover, so the player cannot tell which path to take. The diver has to use to a method, flashlightOn to see which path to take. The light from the flashlight is drawn on the screen as arcs originating at the position of the diver. The arcs are sprites, and when they collide with the caves, the dark cover of the caves becomes transparent and the player can see which path to take. This is implemented by changing the alpha transparency of the dark cover.

Another feature that the player will have is the ability to use shoot a laser at a dangerous fish to make it disappear. However the player will only be able to use the laser a limited number of times. When the player hits space, an arrow will appear on the screen and then they player can use the keyboard to aim the laser and shoot it, again using space.

When the game ends, the screen shows the final score, and has the options to quit or return to the main menu.