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**Project 5 Milestone 1**

Project description: I'm creating a Naval warfare simulator in which ships follow a set course & fire their naval cannons at enemy ships. (The cannon firing is tentative) The ships will move in "squadrons" with designated leaders which are the battleships. Follower ships are the destroyers & cruisers.   
The scene will include water, islands, and some trees. The ships will include some models made by myself and some taken from online. Since ship movement is very different from regular character movement, I will make use of some techniques I came up with myself. Such as calculating stopping distances to stop a ship exactly at its target, using calculus to slow down a ship enough to make a turn, etc. Also, ships do not face backwards when they move in reverse, they simply reverse while facing forwards. Implementing this took quite a lot of debugging, I ended up using quite a clean and simple technique which involved finding the change in the normal vector of the direction of movement and its change over time.

The two "teams" will be the United States and Japan, featuring real ships from WWII. These ships will target each other when they sense another ship of the opposite team within firing range.   
Ships will have to maintain a constant spacing from each other to maintain their formation.  
Ships will also be able to be programmed to move towards a certain target using mouse clicks.   
**My work plan**

**Week 1:**  
Day 1: movement & forces, wave physics, turning physics, stopping distances, reversing (DONE)  
Day 2: AI movement, boundary checking, path following (IN PROGRESS)   
Day 3: flocking,leader following (PARTIALLY IMPLEMENTED)  
Day 4: AI debugging  
Day 5: Cannon firing, damage system, ships sinking, projectile physics

**Week 2:**   
Animations, particles, more debugging, texturing, polish, sound effects

**Question 1:**  
Archipelago of islands with lots of sea, water, sunset.

**Question 2:**   
 WWII battleships, they move around in squadrons using leader follow, path follow, and flocking. When they sense enemies in their firing range, they shoot their naval cannons at them.

**Question 3:**   
Yes, ships will pursue their leaders and maintain formation. The shape of the formation will change dynamically with the situation of the battle (if time allows) Ships will NOT pursue enemies with movement (ships don't usually do that in naval battles unless the battle is overwhelmingly one-sided. They will also follow a set path depending on which team they're on (US & Japan)

**Question 4:**

The player will have control over their own battleship that can fire and deal damage to any other ship in the scene. Ships will retaliate to the player if fired at (If time allows)   
The player can also press space to get an aerial view of the whole map along with color indicators for teams, and debug lines for heading, etc. The camera smoothly transitions between third person and fourth person views.(already implemented)  
  
**INSTRUCTIONS TO USE:**

WASD to maneuver the ship

Space to switch camera views