# SOMALIAN PIRATE SIMULATOR

1. **Introduction**

a. The International Maritime Bureau reported that over the period 2005-2012 nearly 1,000 ships were fired at, chased, boarded, or hijacked by pirates. According to the IMB these pirates often operate from bases in Somalia. Our team has been tasked with the creation of a featureless, gridded, map to simulate interactions between navel patrols, merchant shipping, and pirate attacks. This simulation is intended to help the IMB study the likelihood of pirate attacks as a first step to eliminating future pirate attacks off of the coast of Somalia.

**2. Software Overview**

a. This is a simulation of Somalian pirate ships. In the Simulation you will see three different kinds of ships.
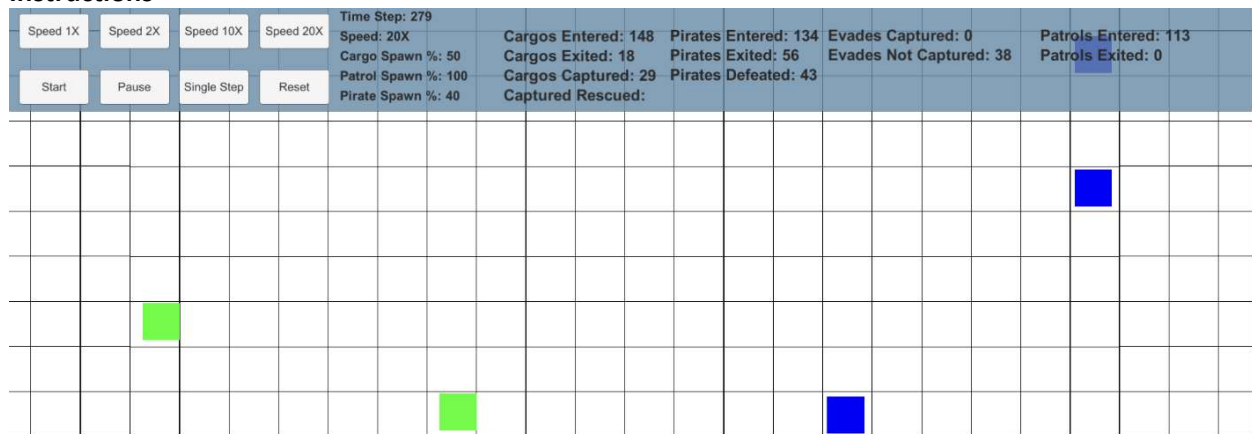
🔴 Pirate

🟦 Cargo

🟩 Patrol

1. 🟨 Captured

b. Ship Functionality
   1. Pirates will travel from the bottom of the screen to the top of the screen.
   2. Cargo ships will travel from left to right across the screen.
   3. Patrol ships will travel from right to left across the screen.
   4. Captured ships will travel from the top of the screen to the bottom of the screen.

# Instructions



At the top of the screen you will see a panel that will contain all the controls, counters, and information needed during the simulation. The Speed buttons are listed as 'Speed 1X', 'Speed 2X', 'Speed 10X', 'Speed 20X', these will change the speed of the simulation. Below you have a 'Start' and 'Pause' button and a Single Step button which will step the simulation frame by frame. You also can reset the simulation by clicking the' Reset' Button.

1. **Starting the Simulation**
   a. Click the speed you would like to start the simulation at. (Ex. Speed 1X)
   b. Click the 'Start' button.
2. **Speed Display**
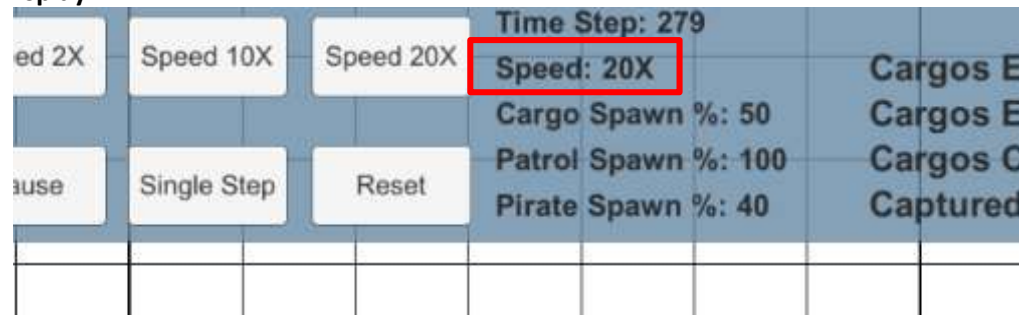
   a. 
   b. This will allow you to know how fast the current speed is.
3. **Changing the speed**
   a. Click on one of the four speed buttons at the top left of the panel.
      i. Speed 1X will be 1 frame per second.
      ii. Speed 2X will be 2 frames per second.
      iii. Speed 10X will be 10 frames per second.
      iv. Speed 20X will be 20 frames per second.
4. **Changing the probability that a ship will spawn.**
   a. Change the cargo spawn probability
      i. Pressing the '1' on your keyboard will change the probability to the default state '50%'.
      ii. Pressing the '2' on your keyboard will change the probability to '75%'.
      iii. Pressing the '3' on your keyboard will change the probability to '75%'.
   b. Change the patrol spawn probability
      i. Pressing the '4' on your keyboard will change the probability to the default state '25%'.
      ii. Pressing the '5' on your keyboard will change the probability to '50%'.

iii. Pressing the '6' on your keyboard will change the probability to '100%'.

   c. Change the pirate spawn probability

      i. Pressing the '7' on your keyboard will change the probability to the default state '40%'.

      ii. Pressing the '8' on your keyboard will change the probability to '75%'.

      iii. Pressing the '9' on your keyboard will change the probability to '100%'.

**5. Spawn Probability Display**



   a.
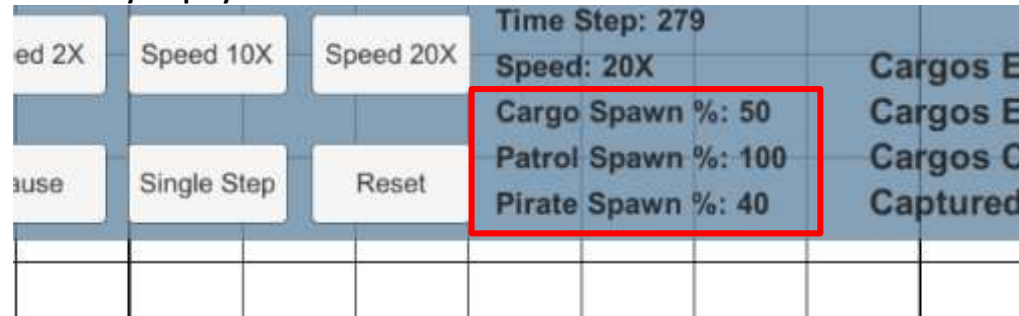
   b. This will allow you to know the current spawn probabilities of the ships.

**6. Cargo Counter Display**
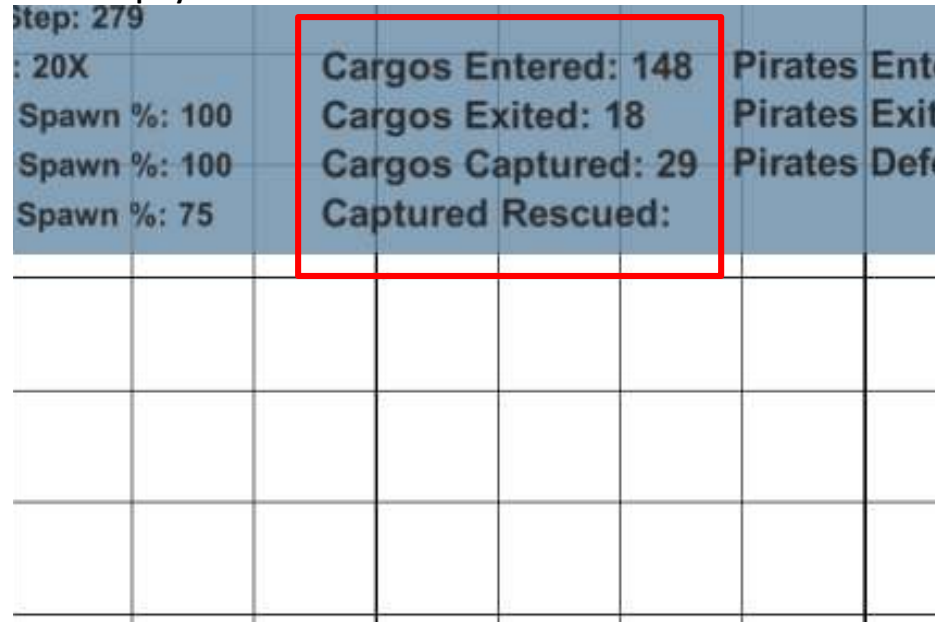


   a.

   b. Cargos Entered: How many cargo ships have entered the simulation

   c. Cargos Exited: How many cargo ships have exited the simulation

   d. Cargos Captured: How many cargo ships have been captured by a pirate ship

   e. Captured Rescued: How many cargo ships that have been captured that were then rescued by a patrol ship

**7. Pirate Counter Display**

rgos Entered: 148 | Pirates Entered: 134 | Evades Ca
rgos Exited: 18 | Pirates Exited: 56 | Evades No
rgos Captured: 29 | Pirates Defeated: 43
otured Rescued:

a.
b. Pirate Entered: How many pirate ships have entered the simulation
c. Pirate Exited: How many pirate ships have exited the simulation
d. Pirate Defeated: How many pirate ships have been defeated by a patrol ship

8. **Evade Counter Display**

Entered: 134 | Evades Captured: 0 | Patrols E
Exited: 56 | Evades Not Captured: 38 | Patrols E
Defeated: 43

a.
b. Evades Captured: How many cargo ships that evaded a pirate ship have been captured
c. Evades Not Captured: How many cargo ships that evaded a pirate ship have not been captured

9. **Patrol Counter Display**

a. 

es Captured: 0
es Not Captured: 38

Patrols Entered: 113
Patrols Exited: 0
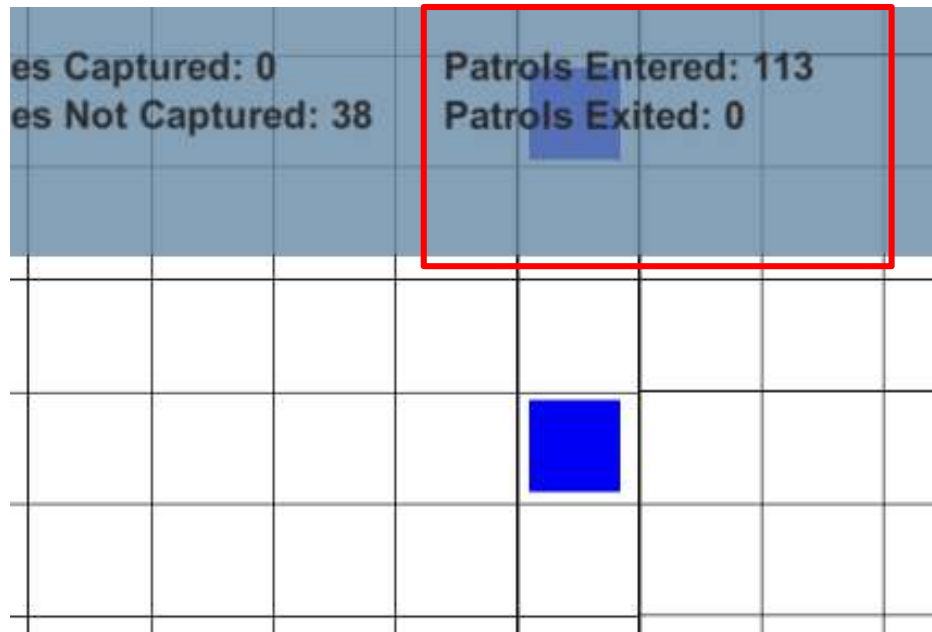
b. Patrols Entered: How many patrol ships have entered the simulation
c. Patrols Exited: How many patrol ships have exited the simulation