

Institute of Computer Science
CMSC 22: Object-Oriented Programming
1st Semester, 2021-2022

MINI PROJECT SPECS

Objective

The objective of this project is for you to integrate the OOP concepts that you have learned into a small GUI game. For clarifications or questions about the project, do not hesitate to ask your laboratory instructor.

Problem Domain: Mini Ship Shooting Game

*Use the simple ship shooting game discussed in the lab as your base code.

Upon creation, the ship is given an initial x position equal to 150, initial y position equal to 250 and a randomized initial strength between 100-150. The ship can move by 10 pixels at a time. The ship can also shoot bullets when the spacebar is pressed. The bullets shot by the ship move towards the right side of the screen in a straight line and disappear when the end of the screen is reached. The bullet's damage is equal to the current ship strength.

Many disturbed fish appear from the right side of the screen in random positions. A fish glides towards the left side and back. A fish is initially *alive* and has a random movement speed between 1-5, inclusive. At the start, there are 7 fish but 3 more are spawned every 5 seconds.

When a fish hits the ship, the ship's strength is reduced by 30, and the fish dies and disappears. When the ship's strength reaches 0, the game is over and the ship loses. When a fish is hit by the ship's bullet, it immediately dies and disappears from the screen.

The game lasts for one minute. If the ship is still alive, the ship wins. A screen appears to display if the ship wins or loses. The total number of fish that were killed are also displayed.

The Boss Fish

When the game time reaches 30 seconds, the Boss Fish will appear at the right side of the screen. The boss fish is bigger than normal fish and reduces the ship's strength by 50 when it hits the ship. The Boss Fish is initially *alive*, has a random movement speed between 1-5, inclusive, and has a health of 3000. Everytime the ship's bullet hits the boss fish, the boss fish's health is reduced by the ship's strength. When the Boss Fish's health reaches 0, the Boss Fish dies and disappears.

The Power-ups

Throughout the game, power-ups appear at random locations on the left half of the screen at 10-second intervals. These can be collected by the ship. Power-ups disappear after 5 seconds if uncollected. The game should implement these two power-up:

- Pearl - adds 50 strength to ship
- Star - provides immortality to the ship for 3 secs

(Optional) Additional power-ups can be added aside from the above listed (ask lab instructor for power-up approval).

The Game Status Bar

The game screen should display the game data at the top of the screen. The game should display the following data:

- Countdown timer
- Current strength of the ship
- Number of fish killed

(Optional) Additional information can be displayed aside from the three listed above.

The Game Output

There should be a Welcome Screen containing the following:

- Designed Welcome Screen
- New Game Button
 - When clicked, the game stage scene/window should appear
- Instructions Button

- When clicked, the game Instructions scene/window should appear
- About Button
 - When clicked, the scene/window about the developer(s) of the game should appear
 - Cite your references here (cmssc22 base code, images used, and other references)

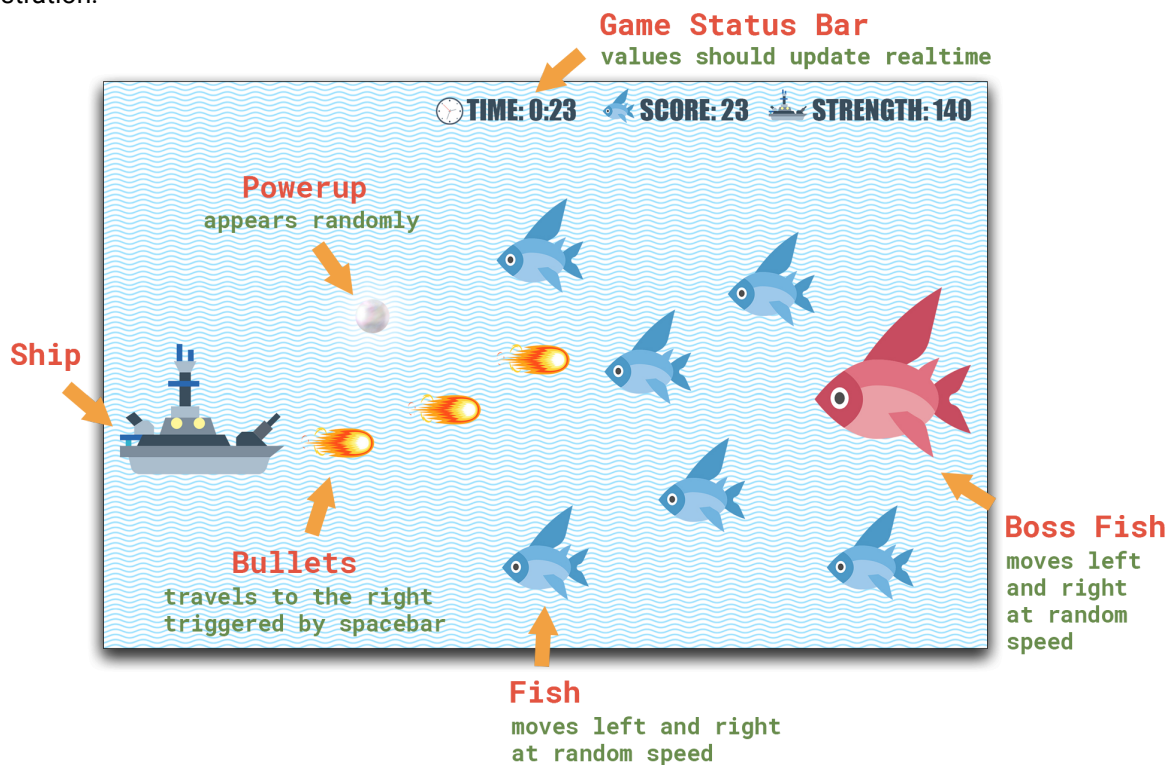
A template is provided for this mini project. You are **REQUIRED** to modify the theme of the game and you cannot use the same ship-fish concept provided in the template. For instance, you may want the ship to be Naruto and the fish to be mist ninjas. The required power-ups can be renamed and you can also add additional power ups as you want. Along with changing the theme, you should also modify the Classes and Interfaces appropriately based on the context of your game.

Start from the template code provided: 09_LAB_MINI_PROJ_TEMPLATE.zip

There are code snippets left for you to fill out to reach the output in the sample video: 09_LAB_MINI_PROJECT_VID

From there, you will start incorporating other objects required in the above problem specification.

Game illustration:



Milestone:

Due: December 06, 2021 Monday 11:59 pm

You are to provide an update on your plans and progress on your project. Please refer to the Google Form that will be posted in your respective lab classroom.

Final Mini Project Submission:

Due: December 18, 2021 Saturday 11:59 pm

Eclipse Project name: Surname1Surname2Project

Example: GarciaGomezProject or GomezProject

Filename: <surname1>_<surname2>_project.zip

Example: garcia_gomez_project.zip or gomez_project.zip

Submit to Google Classroom on Mini Project

All Mini projects must be presented during the presentation schedule set by the CMSC 22 team.

Presentation details to follow.