Game document

Design decisions

Introduction to "Fishing joy" game

We have designed a street-style arcade fishing game called "Fishing Joy".

"Fishing Joy" is a casual game based on fishing, with the ocean as the background and fishing as the core content, creating a happy and colorful ocean world through realistic and gorgeous graphics and easy and casual gameplay. In this game, players use various types of cannons to shoot bullets at fish swimming around on the screen. The game's objective is to catch as many fish as possible to earn gold coins and points.

Gameplay Rules

Game content

Cannon Fire: Players need to use gold coins to operate the cannon. Different types of cannons require different amounts of gold coins for operation.

Catch Fish: Players aim and shoot at fish with their cannon. If the player successfully catches a fish, they will receive gold coins and points.

Winning Conditions

To achieve victory, players must accumulate a certain number of points.

i. If the player runs out of gold coins and has no ammunition left, the game ends in defeat.

ii. If the player accumulates more than 10000 points, they win the game.

Attack introduction

With seven different types of cannons and bullets available, players can strategically choose their weapon to target different fish species. Each bullet has its own critical hit probability and one-hit kill chance, and as players progress in the game, they can upgrade their equipment and increase the damage output, critical hit rate, and one-hit kill chance of each bullet.

It's worth noting that each bullet's damage is calculated separately. For instance, if we disregard the critical hit rate and one-hit kill chance, a bullet with a power of 10 cannot kill a fish with 11 health points.

List of weapons

Cannon Level (cost)	Damage Range	Critical Hit Rate	One-hit Kill Probability
1	10	5.0%	4.0%
2	11-13	6.0%	4.5%
3	12-14	7.0%	5.0%

Cannon Level (cost)	Damage Range	Critical Hit Rate	One-hit Kill Probability
4	13-15	8.0%	5.5%
5	14-16	8.5%	6.0%

Tips :

Critical Hit: If a critical hit occurs, the damage output is doubled.

One-hit Kill: A successful one-hit kill can result in the immediate capture of a fish without having to damage it further.

Fish Introduction

There are 11 different types of fish to catch, ranging from small and easy-to-catch fish like clownfish and catfish to larger, more challenging fish like swordfish and sharks. Each type of fish requires different amounts of damage to be defeated and offers varying amounts of gold coins and points when caught.

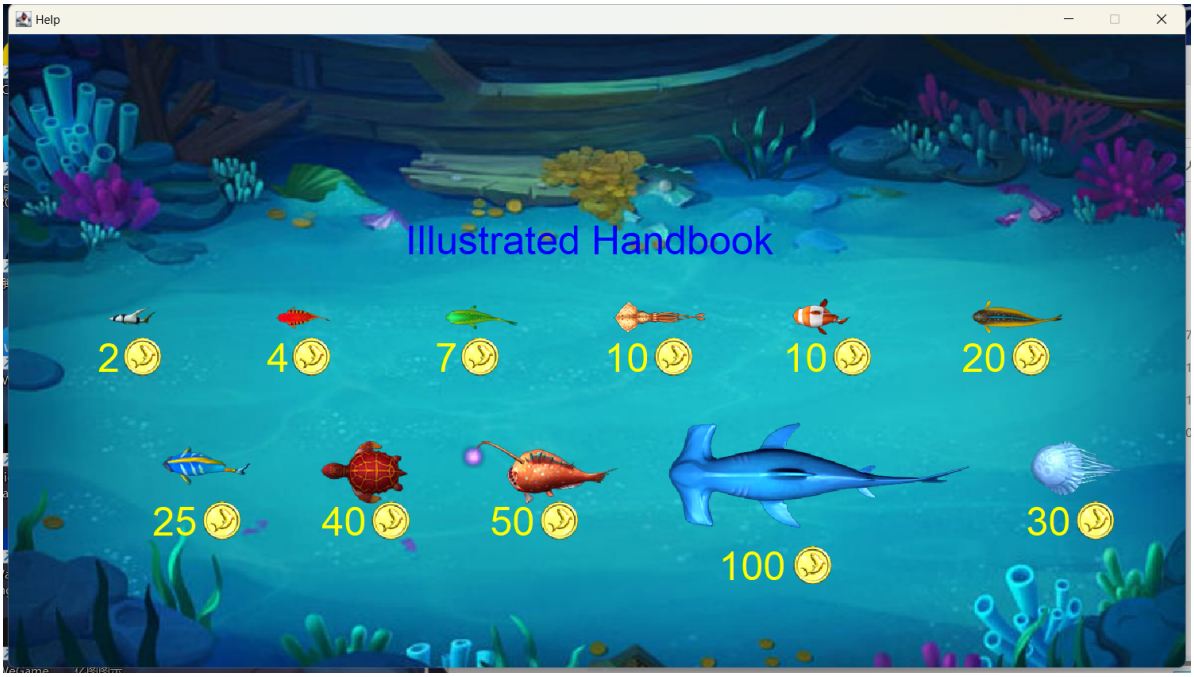
Each type of fish has specific gold coins, scores, swimming speed, and health points.

Refresh Rate

The probability of refresh for other fish is the same except for sharks, which have a relatively low refresh rate.

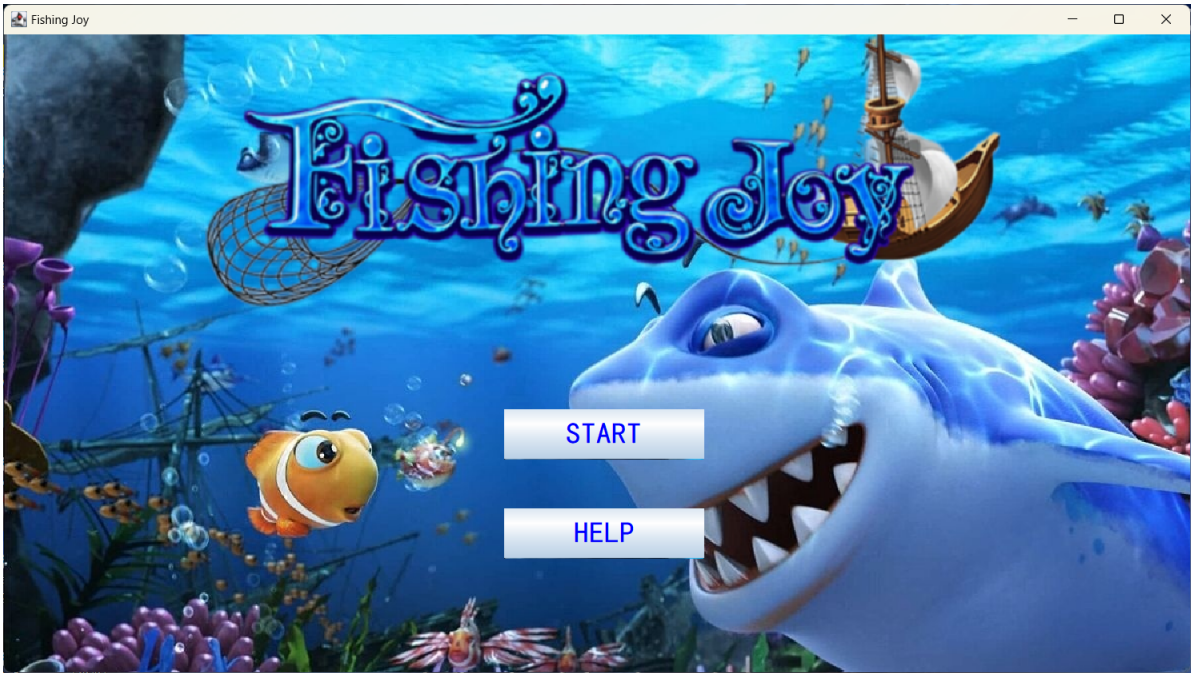
List of enemy

Fish Type	Coins	Speed	Health
1	2	10	10
2	4	8	16
3	7	7	18
4	10	10	24
5	10	7	26
6	20	8	28
7	25	6	30
8	40	3	32
9	50	6	34
10	100	5	36
11	30	10	32



Feature of The Game

There is a starting page in the game, and clicking "Help" will take you to the help page. Clicking on the top right corner will exit the help interface. Click "Start" to enter the game interface.



The classes related to the game screen are "Bullet," "Cannon," "Fish," "Game," "GameEngine," "Gold," and "Net." The main class is the "Game" class, which inherits from "GameEngine." The "Game" class has a "Cannon" and includes "Bullet," "Fish," "Gold," and "Net" by storing them in an ArrayList. There are also relationships between these classes.

For example, in the "Bullet" class, if its movement collides with a fish, it will shoot and generate a "Net" at the designed location, which will then be stored in the ArrayList of "Game." If a fish is caught, gold coins will be generated at the location of the capture and stored in the "Game."

Challenges faced during the project

The first challenge was with the class "GameEngine" which is a single thread, and the movement of many objects is in one function. Therefore, it is not possible to call the "Thread.sleep()" function among them. This posed a problem for me when dealing with fish twitching after being caught.

When a fish is caught, two images alternate with each other. However, if the "Thread.sleep()" function is not called, the twitching of the fish happens so quickly that the user cannot see it. Later, I thought of solving this problem by using time. For example, when a fish is caught, remember the time, and then create the twitching animation within the next 200ms. This solved the problem. The same approach was used for the gold coin animation later on.

How to improve it in future

Here are some ways to increase the playability of this game:

Fish swimming direction: Currently, we can only make fish swim in fixed directions. We hope that in the future, fish can swim from various directions.

Fish waves: Introduce different waves of fish, with varying sizes and swimming speeds, to make the game more challenging for players.

Power-ups: Add power-ups that temporarily improve the player's cannon or net, such as increasing the firing rate or doubling the coin reward.

Multiplayer mode: Allow multiple players to play simultaneously, either cooperatively or competitively.

Boss battles: Introduce powerful boss fish that require special tactics to defeat.

Achievements: Implement achievements for different milestones, such as catching a certain number of fish or earning a specific amount of coins.

Different environments: Offer various backgrounds and settings - such as different bodies of water or even out-of-water locations - to keep players engaged and interested.

Division of labor

Name: Fangxiao Cui

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work: work on the main game page, including fish swimming, bullet shooting, and dynamic effects when a fish is caught.

Name: FeiFan He

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work: Design the game start page, gold coin explosion animation, fishing net capture animation, and success or failure prompts.

Name: Yiqing Li

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work: Be responsible for creating the game help page and designing the game rules.

Name: Haochen Tang

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work: Handle the cannon switching, updating remaining gold coins, and calculating scores.