CSC 413 Project Documentation

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CSC413.02

https://github.com/csc413-SFSU-Souza/csc413-tankgame-ledenean

Table of Contents

1   Introduction

1.1   Project Overview

This project is an implementation of a Tank Game, where there are two tanks, and the goal of the game is to defeat the other tank by shooting at them. The game includes two separate controls for each tank, three power ups, and two types of walls. Each player has three lives, and it takes four hits to lose a life. Once a player loses all their lives, the game will end and offer to restart or exit the game window.

1.2   Technical Overview

The goal of the project is to practice object-oriented programming. This project is an implementation of a Tank game. The game allows for two users to play on a single keyboard, with separate controls for each player. The game includes three types of power ups, a health bar and circles that signify each player's remaining lives and health. The program checks for collisions, and sets what action to take when colliding with game objects. Each collision is accompanied by a sound and animation. In addition, the game implementation includes a split screen for each player and a mini map to show an overview of the map.

1.3   Summary of Work Completed

I was able to complete collisions, bullets shooting, split screen, minimap, sounds, and animations. Essentially everything required is completed, except there is a minor issue with collisions where at certain angles of the walls, the tanks may glitch and get stuck until the user is able to break free.

2   Development Environment

Version of Java: 13

IDE Used: IntelliJ IDEA

3   How to Build/Import your Project

Import into IntelliJ IDEA with "csc413-tankgame-ledenean" as the root folder.

Must mark the "resources" folder directory as "Resources root".

4   How to Run your Project

Run program by making configuration of the main function of the Launcher file.

5   Assumption Made

I assumed that the user would not try to spam the shooting button, and that they would not attempt to hoard all the powerups. Due to this, I did not implement a condition where the powerups will lose effectiveness after a certain amount of time.

6   Implementation Discussion

My design choice when implementing this project was that the abstract class GameObjects, would be used by every possible game object, such as the tanks, bullets, walls, and powerups. By doing so, anything placed inside the GameObjects would be available across all objects. Meanwhile, I

included a Wall class and a PowerUps class, where the Wall class would hold the unbreakable and breakable walls, and the PowerUps class would hold the plus-one-life, speed boost, and rocket power ups. Collisions are checked in the GameWorld file, but actions for each collision are based on what class each game object belongs to.

6.1   Class Diagram
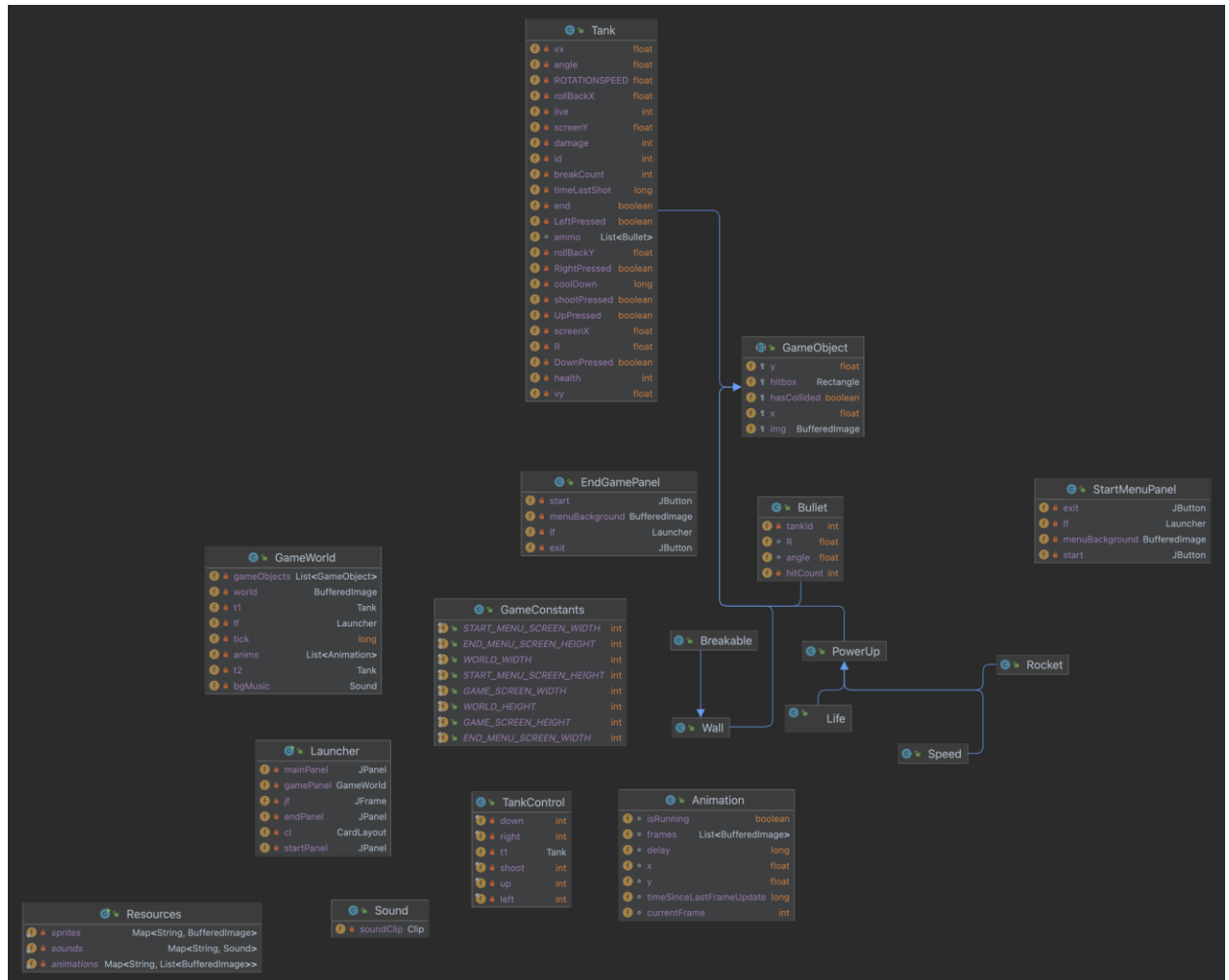
7   Project Reflection

The project was exciting to make, but I was unable to put as much time forth for it due to my other course projects. Despite being initially excited for this project, it turned out to be another stressful project on my plate since I had to create a File System in another class. Realistically, even though we were given more than a month to do this Tank Game, I was only able to put in a little over a week's worth of work. Outside of time management, the project was relatively straight forward except for the collisions portion. The collision part took me a lot longer than the rest of the project, but after spending over three days trying to figure how to make the tank not go over the walls,

everything else was relatively easy to figure out. Although the project was stressful due to the lack of time I had, there is a sense of accomplishment and relief when I finally got the game working as intended. Similar to how someone would grow attached to a prized possession, that is how I feel about this tank game.

8   Project Conclusion/Results

Project is finished with collisions, sounds, and animations working. The only thing to look out for is the collision between walls and tanks, where at certain angles of the walls, the tank might get stuck and take a bit of effort to remove itself from the wall. Outside of this complication, the tank should be colliding with the walls as intended of the game.