Term Project - Tank Game and Lazarus Game

CSC 413-01
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https://github.com/csc413-01-su18/csc413-tankgame-emmayint

https://github.com/csc413-01-su18/csc413-secondgame-emmayint

Introduction

Project Overview

Tank Game

The tank game comprises of a game board of background, unbreakable walls and breakable walls, powerups and two tanks that are controlled by two players. The thanks can move forward, backward, rotate, and shoot bullets that collide with walls and the other tank.

The entry point of the game is TankWorld class, represented by a static TankWorld object, which contains ArrayLists of all game objects, a HashMap of all images to load, a frameTracker, a Sound object and a maplayout object. The TankWorld instance update the game frame by frame and paint the frames as long as the game is not over.

The GameObject class is the root of all objects that appear in the game, including tanks, bullets, explosions, backgrounds, unbreakable walls and breakable walls. All game objects contains the fields of a Rectangle that keeps track of the object's location and is used to detect collisions, an Image field to get and paint the image of the object. The speed is a Point object that's for the object the move around in the coordinates. And a boolean type show that can remove the object from the GameWorld.

All the game objects and game world, UI elements implement the Observer indirectly. The controller and modifiable classes extends Observable directly or indirectly. Observer update the observable objects when the Observable objects change. The InputHandler class handles the users' inputs and update the state of PlayerTank objects.

The HealthDisplay draw the rectangles that represents the health and the circles that represent the lives of the players. The Maplayout parse the input from a text file and add the game objects to the game world accordingly.

Second Game - Lazarus

The second game is implemented reusing the tank game. The LazarusWorld extends the same abstract class as TankWorld, the Background and StopButton classes extends the FixedObject and GameObject classes. The Box class extends the Tank class, and the Lazarus class extends the PlayerTank class.

Development environment.

Version of Java Used

My current version is Java 8 Update 151

IDE Used

The environment for executing and developing is NetBeans 8.2

Libraries Used

Java API Observer, Observable, JPanel.

How to build or import your game in the IDE you used.

Git clone https://github.com/csc413-01-su18... to download the program to local computer.
Open NetBeans, click File(menu bar) → New Project, choose java in Categories and Java Project with Existing Sources in Projects. Click next. Pick project name and project folder. Click next. Drag the file source file into Source Package Folders. Click finish and the project will appear. Right click project and click Build.

How to run your project

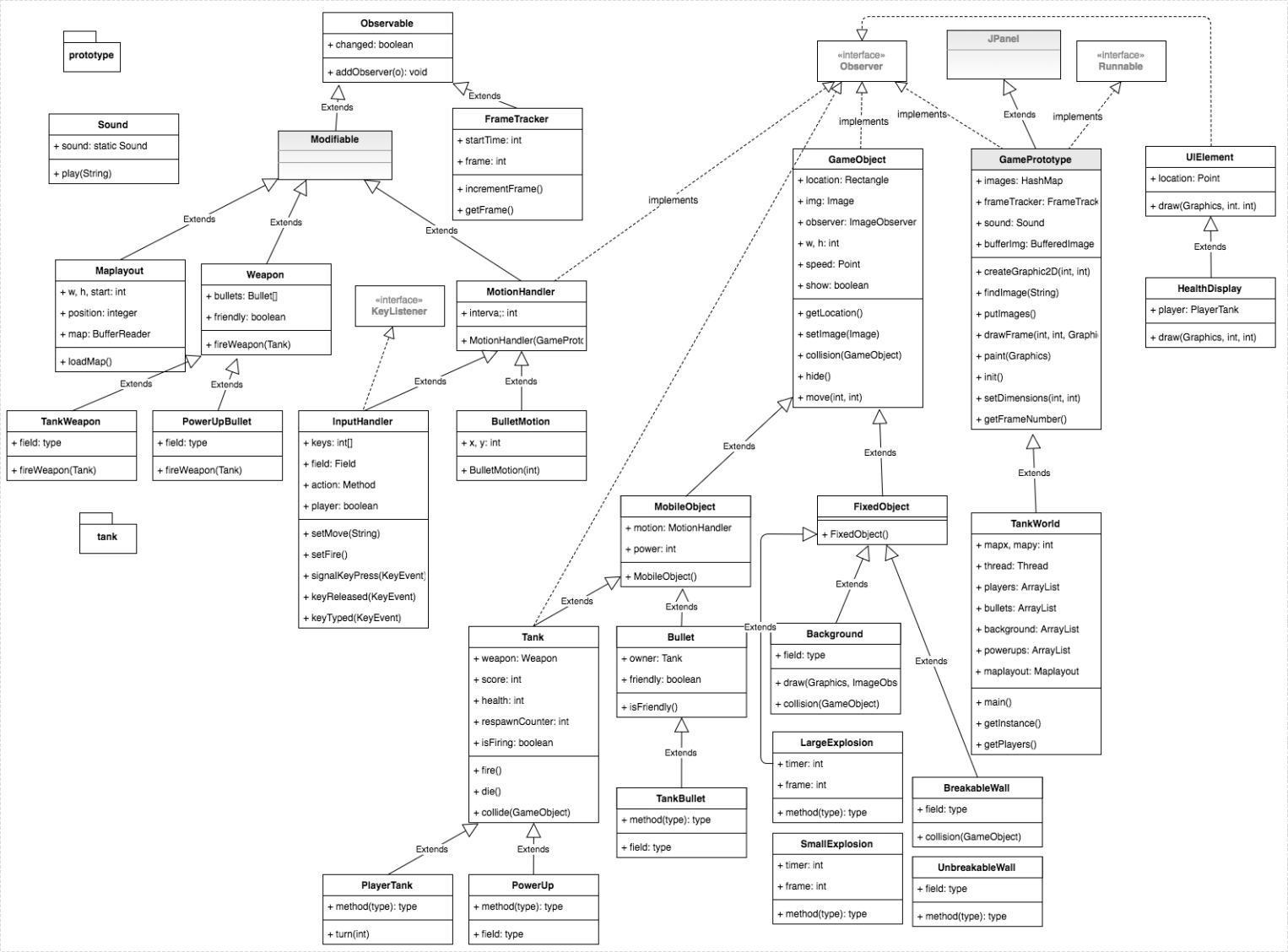
In NetBeans menu bar, click Run → Run Project.
Or run the jar file in the jar folder.

Controls

Tank Game- Player 1: W, S, A, D keys to move around, space key to fire. Player 2: arrow keys to move around, return key to fime.
Player wins by killing the other tank.
Lazarus- left, right arrow keys to move around. Can jum one box vertically. Player wins when get to one of the stop button.

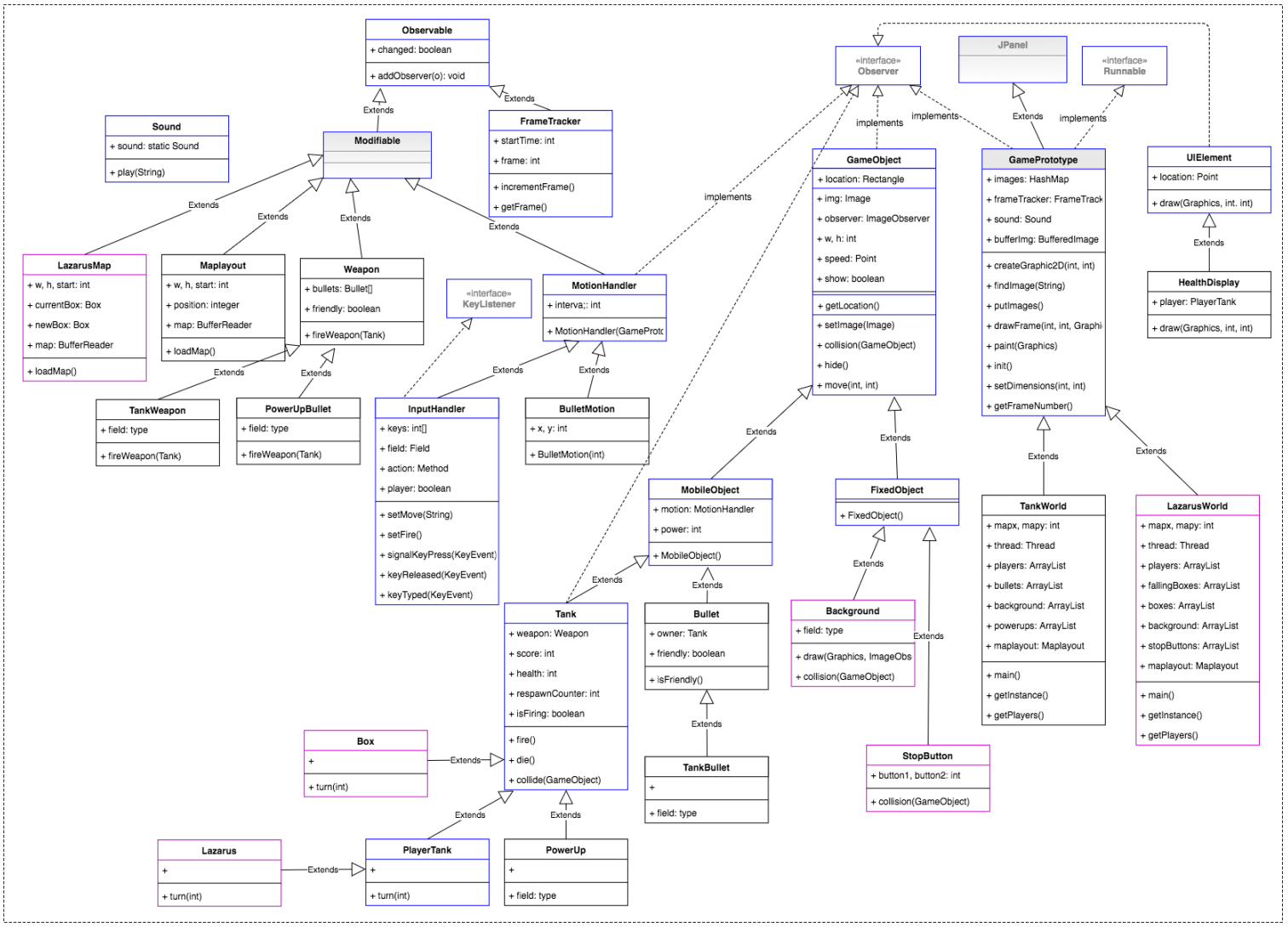
Implementation Discussion

Tank Game



Lazarus Game

The classes are in purple borders are specific to Lazarus game.
The classes in **black** borders specific to Tank game
The classes shared among Tank game and Lazarus are in blue borders.



Project reflection

This is the largest java project i've done so far. I practices design patterns and the GUI aspects of java language. To make the first game reuseable for the second game, I designed a few abstract classes. They seemed reasonable when I first started, but the extension hierarchy is a little excessive when i actually implemented the second game.