ELEC-A7151 Object Oriented Programming with C++

Project Documentation

Angry Birds 2

Group Members:

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I. Overview

a. Scope

The original Angry Birds game was first distributed in 2009. The game requires the player to launch birds toward several pigs to destroy all of them using a slingshot. As players advance through the game, the scenery setting would make it harder for the players to eliminate all the target pigs within certain tries.

In this project, we would follow the same logic as the original game. The player would be able to use the mouse to control the slingshot and thus launch the birds. The birds would then follow certain trajectories to try to strike the target pigs. Information about the game would be shown in real-time. In order to increase the playability of the game, several difficulty levels would be created, with the target pigs surrounded by other materials as potential protections.

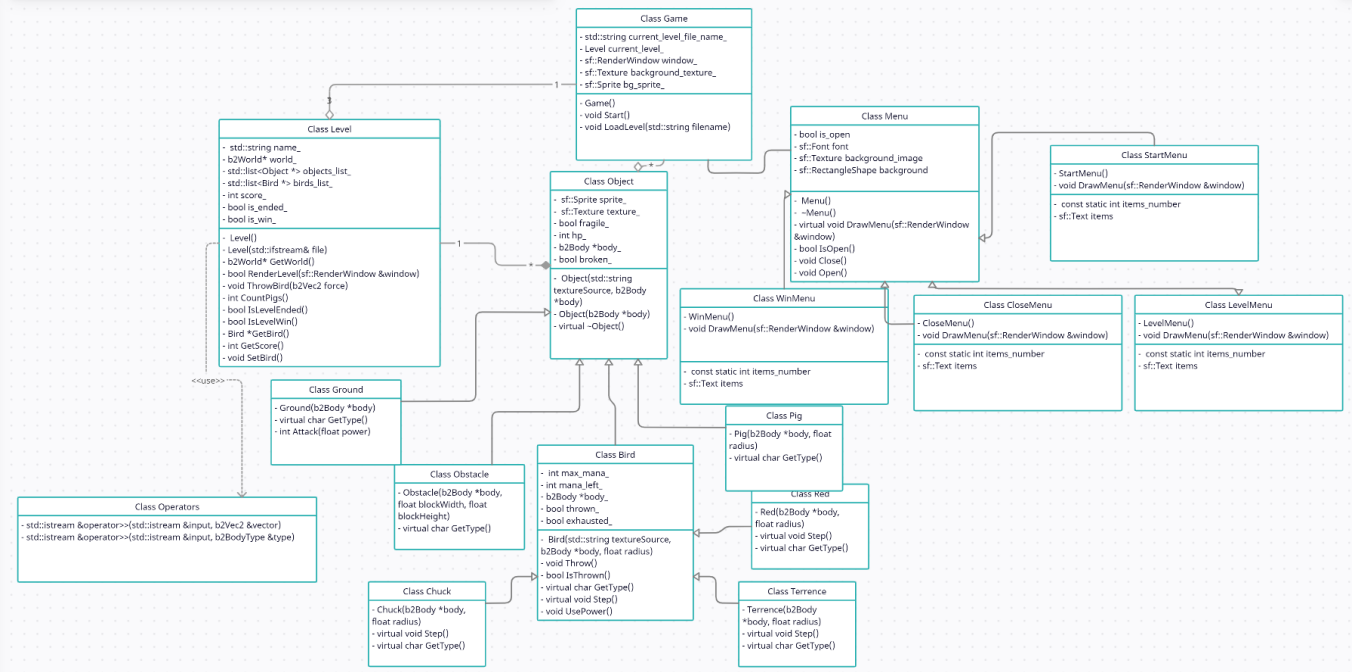
b. Game Features

- The game has basic graphics with no animations, the view follows the bird when it moves aside.
- There are 3 birds with special power including speed up, fly up, and turn back.
- The mouse is used to shoot the bird and use the bird power.
- There are 3 game level with increasing difficulty.
- There are menus for player to interact with.

II. Software Structure

The external libraries that we used are Box2d to create the physical world as well as objects, and SFML to display the game's Interface as well as control the game event.

The class diagram and classes' relationship are as following diagram:



III. Instructions for building and using the software

The instruction for building the game is as follows:

- Clone the repository from the Git using Git Bash.
- Choose the compiler Kit and wait for the cmakelist to finish fetching.
- Using Git Bash to run the following commands:
    - cd build
    - cmake -DBUILD_SHARED_LIBS=OFF ..
    - cmake --build .

After the building is finished, a game_exe.exe file will appear in the build/src folder. From there, you can run it manually in the File Explorer or run the command: ./src/game_exe.exe

The instruction for playing the game is as follows:

- Click Start
- Choose level
- Instead of dragging the bird like original game, this game requires player to click the area close to the bird. The shooting power will be the distance between the clicking

points and the bird, and the shooting direction will be the direction from the clicking point to the bird.

- After winning level 3, the level 1 will start again if the player choose Next as there are only 3 levels.

IV. Testing

The testing process is done throughout the development coding. To run the test, we repeatedly build and run the executable exe file to see if there are any error or the coding have any mistake. This method has some disadvantages, each developer has to write the test code in the main.cpp file by themselves and as the classes of the game are connected, we have to implement one class at a time and cannot simultaneously building the class as the test code cannot be run, this makes the development process very slow. Furthermore, there is no error handling in the code so it hard to figure out bugs and fix them after testing the code.

V. Work log

The project team consist of two persons, and the works division is as follows:

- Week 1+2+3: Building the Object, Bird, Pigs, and Obstacle Class and its logic: Wang Chen.
- Week 1+2+3+4: Organizing meetings and deadlines: Quoc Quang Ngo (5hrs).
- Week 1+2+3+4+5: Documenting the meetings note and the readme file: Quoc Quang Ngo (5hrs).
- Week 1+2: Building the Cmakelist to build the project: Quoc Quang Ngo (10hrs).
- Week 4: Building the Menu Class and its inherit classes: Quoc Quang Ngo (10hrs).
- Week 5: Building the Level Class and Operators Class for reading parameters: Quoc Quang Ngo (15hrs).
- Week 1+2+3+4+5: Building the Game Class including game logic, event, and user interface: Quoc Quang Ngo (15hrs).
- Week 5: Building additional Ground inherit class of Object class: Quoc Quang Ngo (1hrs).

- Week 5: Adjusting the Pigs, Bird, and Obstacle class to suit for the game logic: Quoc Quang Ngo (1hrs).
- Week 5: Writing the Project Documentation: Quoc Quang Ngo (1hrs).