

OOP Final Report

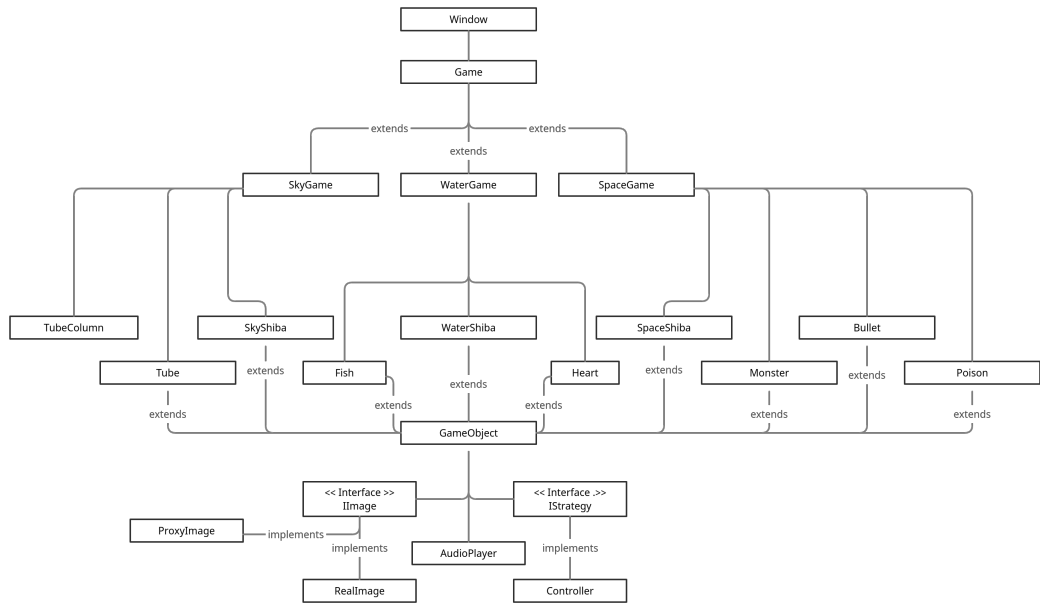
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1 Team Member & Responsibility

- B07902009 尚沂瑾: Take responsibility of the main structure of round 3 and report.
- B07902074 張嫻姑: Take responsibility of the main structure of round 1 and the combinations of three rounds.
- B07902085 張琪: Take responsibility of the main structure of round 2 and report.

2 Classes Relation

- Window: Setup the window of the game, new a game object in the main function and start the game.
- Game: An abstract class extended by SkyGame, WaterGame, SpaceGame. Define all the mutual methods of game classes, including showing the game screen, controlling the movement of game objects, restarting and ending the game, and so on.
 - SkyGame: Extend the abstract class Game.
 - WaterGame: Extend the abstract class Game. Add new method "addFish" in order to generate the obstacle fish randomly.
 - SpaceGame: Extend the abstract class Game. Add new method "addMonster" and "addPoison" in order to generate the monster obstacle and poison obstacle randomly.
- GameObject: An abstract class extended by the class below. Define the attributes of an object, including height and width, as well as the object behavior, such as tick(movement) and render(show on screen).
 - SkyShiba: Extend the abstract class GameObject. Add new method jump.
 - WaterShiba: Extend the abstract class GameObject. Add new method up and down.
 - SpaceShiba: Extend the abstract class GameObject. Add new method up, down, and attack.
 - Tube: Extend the abstract class GameObject. Define a unit of a tube.
 - Tube Column: Extend the abstract class GameObject. Define a Tube list consisting of a list of Tube units.
 - Fish: Extend the abstract class GameObject.
 - Monster: Extend the abstract class GameObject.
 - Heart: Extend the abstract class GameObject.
 - Poison: Extend the abstract class GameObject.
 - Bullet: Extend the abstract class GameObject.
- AudioPlayer: A class implement background music. Define play, stop, loopPlay, and close methods.
- Controller: Control the behavior of shiba when encounter different key events.



3 Design Advantages

3.1 OCP on game object

In every round, we have different game object. For example, tubes in round 1, fish in round 2, monsters in round 3, hearts in round 2 & 3, and so on. Due to our ocp design of these game object, we could add/delete one game object by simply modifying the corresponding game class without modifying other game objects' behaviors.

3.2 Able to add a new game round easily

One can add a new game round simply by adding new game classes and the required game objects. In aspects of the round order, one can modify few parts of the game class to accomplish.

3.3 Put emphasis on details

We put a lot emphasis on the details of players' feelings and experiences. We have joyful background musics as well as exquisite game screen. For instance, we adjust the angle of the dog object in order to make it look like it is really flying/swimming up and down. Moreover, we add moving fire to the back of the dog in round 1 in order to make it look like flying with thruster.

3.4 Multiple mini games

Even though this is a single game, we divide it into several rounds that has different rules. Thus, player would feel like they're playing multiple games at once. But we still have an underlying story line, such that a player wouldn't feel that these games are not related or too different.

4 Design Disadvantages

4.1 Game difficulty

Because the position and speed of the obstacles are set to be random, our game doesn't have a set difficulty.

4.2 Not able to stop/quit the game

We didn't design a pause button to suspend the game or quit the game.

4.3 Not able to choose round

The game is designed to be played non-stop, there is no option to choose round. So a player must win current round to play the next round.

5 Other Packages

None used.

6 Pre-Download

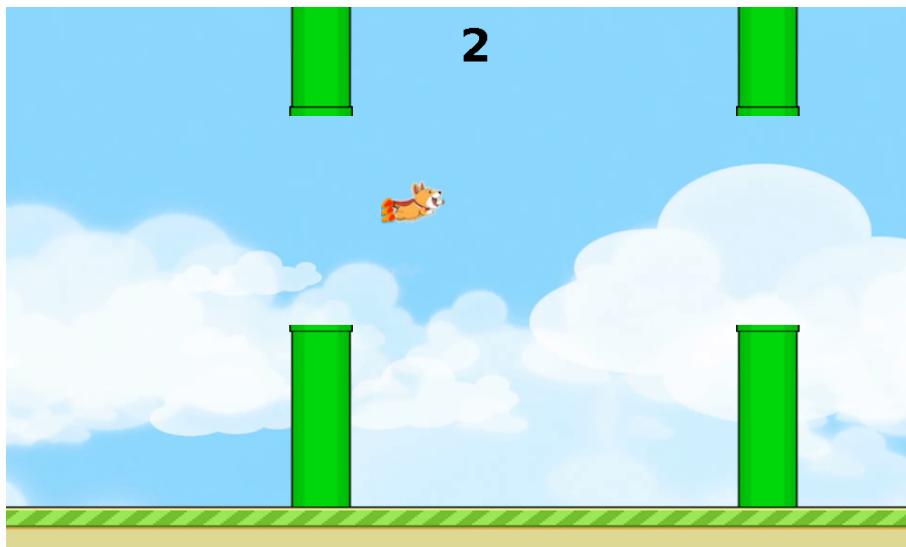
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7 How to Play

- Press Enter to start the game.
- Round 1 rules:
 - Press Space to fly and avoid the tubes.
 - Avoid 15 tubes to pass.
- Round 2 rules:
 - Press Up & Down to avoid the obstacles.
 - Collect 3 hearts to pass.
- Round 3 rules:
 - Press Up & Down to avoid the monster.
 - Press Space to shoot bullet and kill the monster.
 - The monster might turn into heart or poison.
 - Collect 3 hearts and avoid the poison to win.

8 Game Screen

8.1 Round 1



8.2 Round 2



8.3 Round 3



9 References

- audio reference
- animation reference
- image reference