

Final Project Introduction lz2321

1. Title

AI Snake Game

2. Author

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3. Function Introduction

- 3.1. This is a graphics and animation-oriented game. There are two snakes in the game, one is a snake controlled by the player and one is a snake controlled by the AI.
- 3.2. The player can control the snake's movement by using arrow keys on the keyboard. The player can press the space bar to pause and start the game and press ESC to restart the game.
- 3.3. There are 5 kinds of food in the game. The corresponding score of each food is different, and the corresponding probability of producing each food is also different. The higher the score, the lower the probability. Each time 3 to 5 kinds of food is produced on the map, after all the food on the map is eaten by snakes, new food is produced. The “player snake” and “AI snake” can eat food and lengthen with each food it eats. The more food the “snake” controlled by the player eats, the higher the player scores.
- 3.4. There are also many “walls” on the map. The goal is for the snake to avoid eating itself or hitting the “wall” or hitting the “AI snake” even as it gets longer and longer.
- 3.5. In the game, the player can change the game mode. There are three game modes, such as only player snake, only AI snake, player snake and AI snake. The player can change the speed of the player snake, and the player can remove or add the grid and padding.
- 3.6. The right side of the game screen displays your current score, current time spent, current length of the player snake and AI snake, and current amount of food produced.

3.7. Last, the final results, like the score, the time spent, the length of the player snake and AI snake, and the amount of food, are recorded in the database. And the player can view the best and most recent records at any time.

4. Configuration Introduction

4.1. The player needs to ensure MySQL 8.0 or a newer version installed on the computer.

4.2. The project should run on JRE 17 or a newer version, and I recommend IntelliJ IDEA as JVM IDE of this project.

4.3. There are some game map files stored in the map folder. The player can change the name of the map file in the main function of the Scene class, and then the game can load different maps.

4.4. There are pictures of the player snake head and the AI snake head stored in the head folder. There are pictures of the player body and the AI snake body stored in the body folder. There are pictures of 5 kinds of food stored in the food folder. There is a picture of the brick stored in the image folder.

5. Class Introduction

Class Name	Description
PlayerSnake class	Implementation of the player snake
AISnake class	Implementation of the AI snake and path finding algorithm
Body class	Structure of the body node of snakes
Scene class	Implementation of the game interface
Help class	Implementation of the help dialog
Record class	Implementation of the best and recent record dialog
FoodSet class	Implementation of 5 kinds of food
Data	Implementation of recording results in the database

6. Advanced concepts

GUI, Multi-threads, Database, “AI snake” path finding algorithm.