Game plan: "Crocodile's Starry Sky Adventure"

Game background

In a starry universe, a brave crocodile lost control of his spaceship and is falling down. Players need to help the crocodile avoid stars and meteors, collect gold coins, and successfully land on the blue water. Be careful! The crocodile must land at a safe speed, otherwise it will break.

Game goal

Control the crocodile to descend safely in the starry sky.

Avoid dangerous stars and meteors.

Collect all the gold coins to get high scores.

Land safely on the water surface, making sure the descent speed is within a safe range (less than 5).

Game mechanics

1. Core gameplay

Control:

Players control the crocodile's left and right movement (left and right keys) and upward jump (up key) through the keyboard arrow keys.

The up key (ArrowUp) is used for a short upward thrust to help players adjust speed or position.

Gravity simulation:

The game has a built-in gravity system, and the crocodile will continue to accelerate downward to simulate a real free fall.

Speed management:

Players need to slow down the descent speed by controlling the upward thrust to ensure that the crocodile touches the water surface at a safe speed.

2. Obstacles

Stars:

Stars are distributed in the map. Once the crocodile touches a star, the game fails directly.

Stars are randomly generated and their positions are updated each time the game is played.

Meteors:

Meteors slide down from the top of the screen, and their trajectories change constantly.

Players need to avoid them in time to avoid being hit.

3. Rewards

Coins:

Coins are randomly distributed in the starry sky, and players need to collect them through precise operations.

Each coin adds 10 points, and collecting all coins will trigger additional rewards.

4. Landing mechanism

When the crocodile touches the water:

If the descent speed is too high (>5), the game fails.

If you land safely and collect all the coins, the fireworks will be triggered to celebrate.

Level design

1. Start interface

The welcome interface displays the game name and gameplay instructions.

The player presses the space bar to start the game.

2. Game progress

The crocodile gradually descends from the top of the screen.

As the game progresses, the number and speed of meteors will gradually increase, increasing the challenge.

3. Ending interface

After success or failure, summary information is displayed:

Successful landing: Evaluation is given based on the number of gold coins collected and speed.

Game failure: Prompt the reason for failure (such as hitting a star or too high speed).

Press the R key to restart the game.

Game world

1. Environment

Background: A deep blue starry sky dotted with twinkling stars.

Water surface: There is a sparkling water surface at the bottom, and the player needs to land the crocodile here.

Dynamic effects:

Splash: When the crocodile lands, a splash particle effect will be triggered.

Fireworks: When all goals are completed, there will be a fireworks celebration effect.

2. Elements

Crocodile:

Cartoon-style crocodile image with cute expressions and details (such as smiling faces, back scales, etc.).

Stars and meteors:

Stars are static obstacles and are randomly distributed.

Meteors are dynamic and will continue to slide down from the top of the screen.

Coins:

The coins are designed in golden color with a " ¥ " symbol in the center to increase the fun.

Technical details

1. Game logic

Use gameState variables to manage game states:

'start': start interface.

'play': main game logic.

'end': end interface.

Each state calls the corresponding rendering and logic functions.

2. Dynamic update

Physical simulation:

Vertical speed is controlled by gravity and adjusted by upwardThrust when the user presses the up key.

Collision detection:

Use the dist() function to detect the distance between the crocodile and the stars and coins.

Particle effects:

Water splashes and fireworks use particle systems to simulate natural effects through dynamic positions, transparency, and life cycles.

3. Random generation

Coins:

Randomly distributed in the area from the middle of the screen to above the water surface to ensure reasonable challenges.

Stars and meteors:

The position of stars is fixed and randomly generated each time the game is played.

The meteor slides at a certain speed and resets its position after leaving the screen.

Task list

1. Design and art

Draw the crocodile character and related elements.

Add water ripples and starry sky background.

2. Coding development

Implement basic movement and gravity systems.

Write the generation and collision detection of gold coins and obstacles.

Implement particle effects (water splashes and fireworks).

Add dynamic trajectory of meteors.

3. Testing and optimization

Adjust speed and gravity values to ensure the balance of game difficulty.

Check the accuracy of collision detection.

Optimize the generation algorithm of meteors and gold coins to avoid overlap.

4. Release and feedback

Package the program for players to experience.

Collect player feedback to further optimize the gameplay.

Summary

Through this plan, we can clearly grasp the goals and implementation steps of the game. "Crocodile's Star Adventure" is not only an entertainment game, but also an in-depth exploration of physical simulation, animation and game logic. Next, let's enter the development stage and gradually turn this plan into reality!