Game Design Document (GDD)

Game Title: Cat Collector

1. Game Overview

Cat Collector is a simple 2D collecting game where the player moves around inside a garden and tries to collect as many good cats as possible. At the same time, the player must avoid the bad cats because they will reduce the score. The game has a countdown timer, and the goal is to get the highest score before time runs out. The game is played inside a canvas area, and all the graphics are drawn using the Canvas API.

2. Game Concept

The idea is to make a relaxing and cute game where the player moves a cat collector character around to catch different cats. Good cats will add points, but bad cats will take away points. The game ends after the timer reaches zero.

3. Target Audience

This game is meant for anyone who likes simple, casual games. It does not require fast reflexes or advanced skills. Even beginners can play it easily because the controls are simple!

4. Game Mechanics

The player can move using the arrow keys or WASD keys. Cats will spawn randomly on the canvas every second. Some cats are normal cats that give one point, and some are bad cats that remove one point. Cats disappear after a few seconds if the player doesn't collect them. The player must move around to collect them before they vanish.

5. Controls

Arrow Up or W: Move Up

Arrow Down or S: Move Down

Arrow Left or A: Move Left

Arrow Right or D: Move Right

Start Game button: Starts the game

Restart Game button: Restarts everything

6. Scoring System

Collecting a normal cat gives +1 point.

Collecting a bad cat gives -1 point.

The final score is shown when the timer ends. The game also shows the highest score the player has achieved.

7. Game Loop

The game loop runs using requestAnimationFrame.

During each loop:

- The player's movement is updated
- Collisions are checked
- Cats that are too old are removed
- The Canvas API draws everything on the screen

The loop continues until the timer reaches zero.

8. Win or Lose Condition

There is no winning condition. It is more like a high-score game. The game ends when the timer reaches zero, and the score is shown on the screen. The player can try again to beat their high score.

9. Technical Details

The game uses JavaScript with the Canvas API. The main techniques used include drawing images, clearing the canvas every frame, and handling keyboard events. Data structures like arrays are used to store all the spawned cats. Functions are used to organize the code.

10. Debugging Notes

During development, some issues happened with the player movement not working because the canvas didn't have focus. This was fixed by adding tabindex and calling canvas.focus(). There were also bugs with cats not despawning properly, and wrong collision detection, but they were corrected by adjusting the hitbox logic.