Project Report: Snake Game in C++ with SFML

1. Introduction

The "Snake Game" is a C++ project developed with the Simple and Fast Multimedia Library (SFML). It presents a classic game where players control a snake to consume food while avoiding self-collision and obstacles. The primary aim is to grow the snake's length until a collision terminates the game.

2. Project Overview

2.1. Purpose

The project serves to demonstrate C++ game development using SFML, emphasizing critical concepts such as game loops, collision detection, and user input handling.

2.2. Features

- Four-directional snake movement.
- Random food generation.
- Collision detection with walls and the snake's own body.
- Game over screen with animation.
- Display of the food counter.

2.3. Project Components

The core of the project is the *SnakeGame* class.

3. Key Elements

- Member Variables: Game objects, textures, and state.
- Initialization: Setting up the game, SFML library, including the snake and food.
- Game Loop: Managing game state and updates.
- Event Handling: Capturing user input.
- Collision Detection: Identifying snake collisions.
- Food Interaction: Handling food consumption.
- Generation: Random placement of food and walls.
- Rendering: Drawing game elements.

4. Challenges Faced During Development

- Challenges included the initial overlapping spawn positions of the snake, food, and walls.
- **Solution**: Implementation of a finite loop to ensure a safe spawn distance from the snake, by resetting the spawn location until the elements no longer overlap.

5. Conclusion

The Snake Game project provides a foundation for C++ game development with SFML, offering insights into fundamental game mechanics and practical C++ coding using an external game library-such as SFML.

6. Acknowledgments

Acknowledgments are extended to the following-

- SFML official documentation
- SFML library
- YouTube tutorials on game development
- ChatGPT for guidance and understanding the errors

7. Team Members

- Itish Srivastava (21052592)
- Asmit Sahu (21052574)
- Rajveer Shaw (21052607)
- Amrit Agrawal (21052562)