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github link for project :- <https://github.com/angadbhardwaj277/C-MAJOR-PROJECT.git>

Snake Game in C - Project Report

1. Introduction

This project implements a classic Snake game using the C programming language. The goal of the game is to control a moving snake inside a bordered grid. The snake grows in length each time it eats the food, and the game ends when the snake collides with the wall or its own body. This project demonstrates important C programming concepts such as loops, conditionals, arrays, structures, and terminal handling.

2. Objectives

The main objectives of the project are:

- Develop an interactive console-based Snake game.
- Practice handling keyboard input and screen rendering without flicker.
- Implement game mechanics such as movement, collision detection, and scoring.
- Use fundamental C programming constructs effectively.

3. Features of the Game

The Snake game includes the following features:

- Non-flickering console rendering using ANSI escape sequences.
- Snake movement controlled via W/A/S/D or arrow keys.
- Food generation at random positions.
- Snake grows when it eats food.
- Game ends when snake hits a wall or itself.
- Score and snake length displayed in real-time.

4. Technologies and Concepts Used

- Programming Language: C
- Terminal control using ANSI escape sequences

- Conditional compilation for Windows and POSIX
- Structures, arrays, loops, functions
- Random number generation using rand()

5. System Requirements

- Operating System: Windows / Linux / macOS
- GCC or any standard C compiler
- Terminal that supports ANSI escape sequences

6. Compilation Instructions

For Linux/macOS:

```
gcc -std=c99 -O2 -o snake_game_noflicker snake_game_noflicker.c
```

For Windows (MinGW):

```
gcc -std=c99 -O2 -o snake_game_noflicker.exe snake_game_noflicker.c
```

7. Game Controls

- W or ↑ : Move Up
- S or ↓ : Move Down
- A or ← : Move Left
- D or → : Move Right
- Q : Quit Game

8. Conclusion

This Snake game project demonstrates how C can be used to create interactive console-based applications. The project highlights concepts such as real-time input handling, game loops, screen rendering, and collision detection. It serves as an excellent exercise for beginners and intermediate learners looking to strengthen their C programming skills.