

## **Introduction:**

The Snake Game is a classic game that has been played on a variety of platforms for many years. It is a simple game in which the player controls a snake that moves around a grid-like board, eating food and growing longer. The goal is to avoid running into the snake's own body, while trying to get as high a score as possible.

## **Objectives:**

The objective of this project was to develop a simple Snake Game in Python using solely the PyOpenGL Library. The game was developed with the following objectives in mind:

- To create a simple, yet engaging game for users to play.
- To implement the fundamental game mechanics of Snake Game.
- To implement the Mid-Point Line and Circle drawing Algorithms inside the game.

## **Methodology:**

The Snake Game was developed using the Python programming language, along with the PyOpenGL library for game development. The game was developed following a structured approach, which included the following steps:

- Designing the game mechanics
- Implementing the game logic

## Game Mechanics:

The Snake Game is a simple game with straightforward mechanics. The player controls a snake that moves around the board, eating food and growing longer. The snake moves in a straight line until the player changes direction. If the snake eats food, it grows longer, and the player's score increases. The game ends if the snake hits its own body.

## Game Logic:

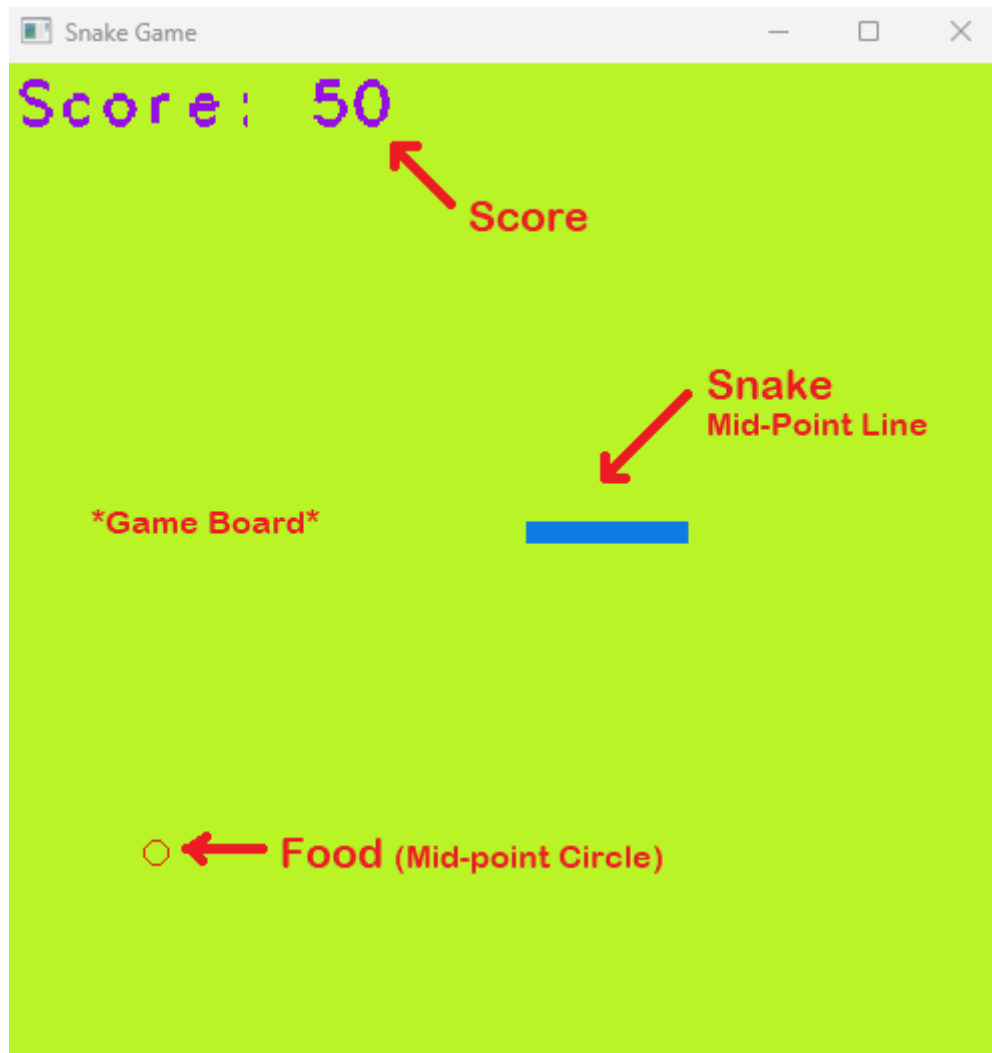
The game logic includes the following key elements:

1. **The game board:** The game board is a 500 x 500 OpenGL display on which the snake can move around.
2. **The snake:** The snake is the main character of the game. It moves around the board, eating food and growing longer. The Snake is created using the Midpoint Line drawing algorithm.
3. **Food:** The food appears randomly on the board. There are two types of food, one type is a square that is drawn using the Midpoint Line Drawing Algorithm and another one is a circle drawn using the Midpoint Circle Drawing Algorithm. The snake must eat the food to grow longer and increase the score.
4. **Score:** The player's score increases each time the snake eats food.
5. **Game Over:** The game ends if the snake hits its own body. A Game Over text along with the score is displayed at the end.

## User Interface:

The user interface of the Snake Game includes the following elements:

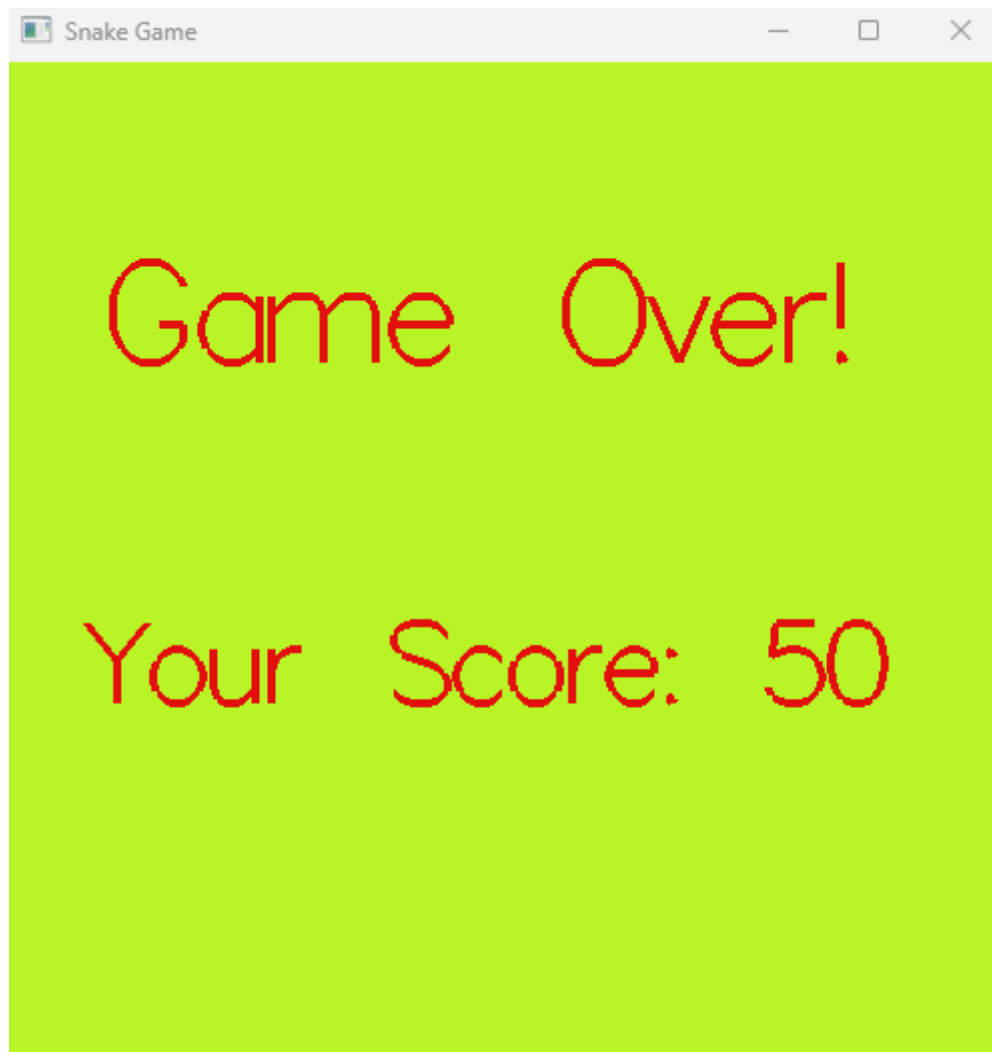
**The game board:** The game board is displayed on the screen, and it shows the snake, food, and score.



**Controls:** The player can control the snake's movement using both the arrow keys and also the keyboard movement control keys "wasd".

**Scoreboard:** The player's score is displayed on the top left corner of the screen.

**Game Over screen:** When the game ends, a game over screen is displayed with the final score.



## **Conclusion**

The Snake Game is a simple and engaging game that can be developed using the PyOpenGL library. The game includes basic game mechanics and logic that enhance the user experience. Developing the Snake Game was a fun and rewarding experience, and it can be used as a starting point for developing more complex games.