SNAKE GAME

A PYTHON PROJECT

TECHNOLOGY USED

- PYTHON –
  - A PROGRAMMING LANGUAGE USING WHICH THIS GAME HAS BEEN DEVELOUPED.
  - WE USED TWO MODULES OF PYTHON I.E PYGAME AND RANDOM
- PYGAME MODULE :
  - A Python library used for game development, managing the game window, inputs, and rendering
- RANDOM MODULE
  - Generates random positions for food to create unpredictable gameplay.

CORE GAME MECHANICS

- Food Collection:
  - The snake grows by collecting food, increasing the player's score.

- Collision Detection:
  - Game ends when the snake hits the boundary.

- Score Calculation:
  - Points are awarded for every piece of food collected, shown in the top-left corner of the screen

VISUAL ENHANCEMENTS

- Implemented dynamic sizing: The snake's body segments shrink towards the tail for a more visually appealing effect.
- Background image: A custom background image was added for a more engaging game environment.
- Background Music: Added continuous background music using the Pygame mixer

KEY CODE SNIPPETS

- **Snake Movement Logic:**

```
if event.key == pygame.K_RIGHT:
    velocity_x = init_velocity
    velocity_y = 0
```

- **Collision Detection with Food:**

```
if abs(x - food_x) < 10 and abs(y - food_y) < 10:
    score += 1
    food_x = random.randint(0, game_width - snake_size)
```

- **Boundary Collision Detection:**

```
if x < 0 or x > game_width - size or y < 0 or y > game_height - size:
    over_game = True
```

FUTURE ENHANCEMENTS

- **Adding Levels: Introducing levels with increasing difficulty and new challenges.**
- **Implementing Power-ups: Adding special items that affect the snake's speed or size.**
- **Mobile/Browser Version: Developing a mobile-friendly or web-based version of the game.**
- **New Snake Skins: Offering different snake designs or colors to enhance visual appeal.**

PROJECT OVERVIEW

- The Snake Game Project is a simple yet engaging game developed using Python and the Pygame library. In this game, the player controls a snake that moves around the screen to collect food, growing in length with each piece eaten. The objective is to avoid collisions with the boundaries while maximizing the score by collecting as much food as possible. The game features smooth controls, a dynamic snake size effect, a custom background image, and background music to enhance the user experience. The project demonstrates core game development concepts such as collision detection, movement handling, and rendering graphics.