Introduction

Title: Snake Game
Genre: Arcade
Platform: Desktop (Windows/Mac/Linux)
Technology: Python 3.13
Libraries: pygame

Objective:
The player controls a snake, which grows in length when it eats apples. The goal is to score as many points as possible without colliding with the snake's own body or the game boundaries.

Gameplay Mechanics (Project Functionality)

- The snake moves continuously in one of four directions (up, down, left, right).
- The player uses arrow keys to change the direction of the snake.
- Each time the snake eats food, it grows by one unit and the score increases.
- The game ends if the snake:
    - Hits the wall (screen boundary).
    - Collides with itself.

Snake

- Moves by adding a new head in the direction of movement and removing the tail.
- Grows by skipping the removal of the tail.

Food

- Randomly appears within the grid boundaries.
- Must not appear on the snake's body.

Score

- Each food item increases the score by 1.
- Displayed at the top-left or top-right corner of the screen.

Design Process

I decided to create a snake game for this project because it reminded me of my childhood and playing a modernized version of snake on my computer. It has truly been a difficult, yet exciting journey creating this game and I'm enjoying it in full. I have dealt with some issues with figuring out how to run python and set up the game, but I have watched some YouTube videos, and it helped me a lot.

Project Development

Pseudocode

INITIALIZE game window and grid size

INITIALIZE snake position and length

INITIALIZE food at random position

SET initial direction to RIGHT

SET score to 0

WHILE game is running:

  CHECK for user input

    IF arrow key pressed:

CHANGE direction (if not opposite)

MOVE snake in the current direction:

ADD new head to snake's body

IF snake eats food:

INCREASE score

GENERATE new food at random position

ELSE:

REMOVE tail segment

CHECK for collisions:

IF snake head hits wall OR itself:

END game

DRAW game elements:

DRAW snake

DRAW food

DISPLAY score

UPDATE screen

DELAY for consistent speed (e.g., using time or pygame clock)

DISPLAY game over message

QUIT game

This is my pseudocode, it is just my flowchart in depth. Explaining cause and effects of the movements of the snake from the player. Theres the snake, food(apple), and collision (either the snake hitting itself or the walls).

Flowchart (Condensed)

```
+------------------+  | Start Game | +------------------+  | v +------------------+  | Initialize Snake | +------------------+  | v +------------------+  | Generate Food | +------------------+  | v +------------------------+  | While Game Not Over: | | - Handle Input | | - Move Snake | | - Check Collision | | - Check Food Collection | | - Draw Everything | +------------------------+  | v +------------------+  | Game Over Screen | | - Show Score | | - Option: Retry | +------------------+  | v +------------------+  | Restart or Quit | +------------------+
```

snake_game/

├── main.py   # Entry point

├── game.py   # Core game logic (snake, food, collision)

├── snake.py   # Snake class

├── food.py   # Food class

├── config.py   # Constants (e.g., screen size, colors)

├── assets/   # (Optional) images/sounds

This is my flowchart which displays the overall function of how the game is played and ends. It's a pretty simple layout, but snake games have a simple way of themselves. My game is for everyone and it's simple and fun.