Final Project

Design Document

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## Introduction

### Project Functionality

The goal of my snake game is to eat as many pieces of fruit as possible without colliding with the borders of the game and without turning back into the snake itself. There will also be a play button at the very beginning, as well as a restart button when the player fails.

### Design Process

I have been using Chapter 5 of the Brookshear text as well as the tutorials on PyGame and the library tools on the site. My goal was to research as much as I could about PyGame and the snake game itself, and it was interesting seeing Python autofill code when repeating terms.

## Project Development

### Pseudocode

Create game engine

Set screen width and height

Set block size

Create font

Set window title

Set clock

Define Snake class:

Start

Set starting position

Set initial direction

Create head

Create body

Define update method:

For each block in the body:

If the head collides with block:

Snake is dead

If the head hits the border

Snake is dead

If snake is dead:

Return

Append current head to body

Replace my last body block with new body block

Move head in current direction

Remove the last block in the body

Define apple class:

Start

Generate random position within grid

Create apple block

Define update method:

Draw the apple

Define function grid:

For each grid square on screen:

Draw the grid lines

Define function game over screen:

Display "Game Over" message and score

Wait for player to press R to restart or Q to quit

Main game code:

Start events:

If quit event:

Exit game

If the key pressed:

Change snake direction based on key (WASD or arrow keys)

Update and display score

Create snake head

Create snake body

Display score on screen

If snake head collides with apple:

Add new segment to snake body

Spawn a new apple

If snake is dead:

Pause and show game over screen

Reset the game

Continue the game loop

### Flowchart

A diagram of a flowchart

AI-generated content may be incorrect.

### Requirements

1. Board Size/ Play Area:
   1. My game is on a tile set bigger than 10x10.
2. Snake Movement:
   1. The snake moves continuously in each direction, and can be controlled by the arrow keys as well as w, a, s, and d.
3. Snake Growth:
   1. The snake successfully grows each time it consumes a fruit.
4. Food Generation:
   1. The food does randomly generate on the board at the beginning of the game, as well as when a fruit is consumed.
5. Collision Detection:
   1. The game does successfully end if the snake runs into a border or itself.
6. Game Over and Score:
   1. The game displays a game over screen and the score, once the snake collides with itself or the border.
7. Restart Option:
   1. There is the option to restart the game as well as to quit the game entirely.