

Final Project

Design Document

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Introduction

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Pseudocode

This is for your pseudocode. Please provide it and explain it.

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Introduction

This project is a simplified version of the classic arcade game Pac-Man, developed using Python and the Pygame library. It involves navigating a character called Pac through a board, collecting food pellets and avoiding walls. The game utilizes game development concepts like collision, timed movement, sprite rendering, and score tracking.

Project Functionality

Player Movement: Pac-Man moves one square at a time in a chosen direction and continues in that

Pellets & Scoring: Small pellets ('.') give 10 points; large power pellets ('o') give 50 points. Pellets disappear once collected.

Maze Design: A grid is created using a list where characters like #, ., and o represent walls, and food

Win Condition: When all food has been collected, the game ends with a win message.

Random Food Spawning Food can respawn at random intervals in empty spaces.

Tunnel: There is an opening on both sides of the maze where Pacman can enter and teleport to each side.

Graphics: Png used for Pac man and RGB colors are used for render walls, food, and background.

Design Process

Project Development

Pseudocode

Import Libraries: Pygame, sys, random

Initialize Pygame

Set constants: Screen width, screen height, cell size, fps, colors, starting direction, starting position, starting score.

Load screen and caption

Design Game Board

Draw Board

Draw Pacman

Define function to move Pac-Man

- If direction is LEFT and the space to the left is not a wall:

 - Move Pac-Man one space to the left

- Else if direction is RIGHT and the space to the right is not a wall:

 - Move Pac-Man one space to the right

- Else if direction is UP and the space above is not a wall:

 - Move Pac-Man one space up

- Else if direction is DOWN and the space below is not a wall:

 - Move Pac-Man one space down

- If Pac-Man lands on a small pellet ('.'):

 - Remove the pellet from the board

 - Add 10 points to the score

- Else if Pac-Man lands on a power pellet ('o'):

 - Remove the pellet from the board

 - Add 50 points to the score

Define function to check if all food is eaten

For each row in the game board:

- If the row contains a small pellet or a power pellet:

 - Return False (food still exists)

If no rows contain food:

Return True (all food is gone)

Begin main game loop:

Check for events:

 If the window is closed:

 Set running to False

 If a key is pressed:

 If the key is LEFT: set direction to LEFT

 If the key is RIGHT: set direction to RIGHT

 If the key is DOWN: set direction to DOWN

 If the key is UP: set direction to UP

 If a key is released:

 Set Pac-Man's direction to none

Check if all food is eaten:

 If true, display "You Win!" and end the game

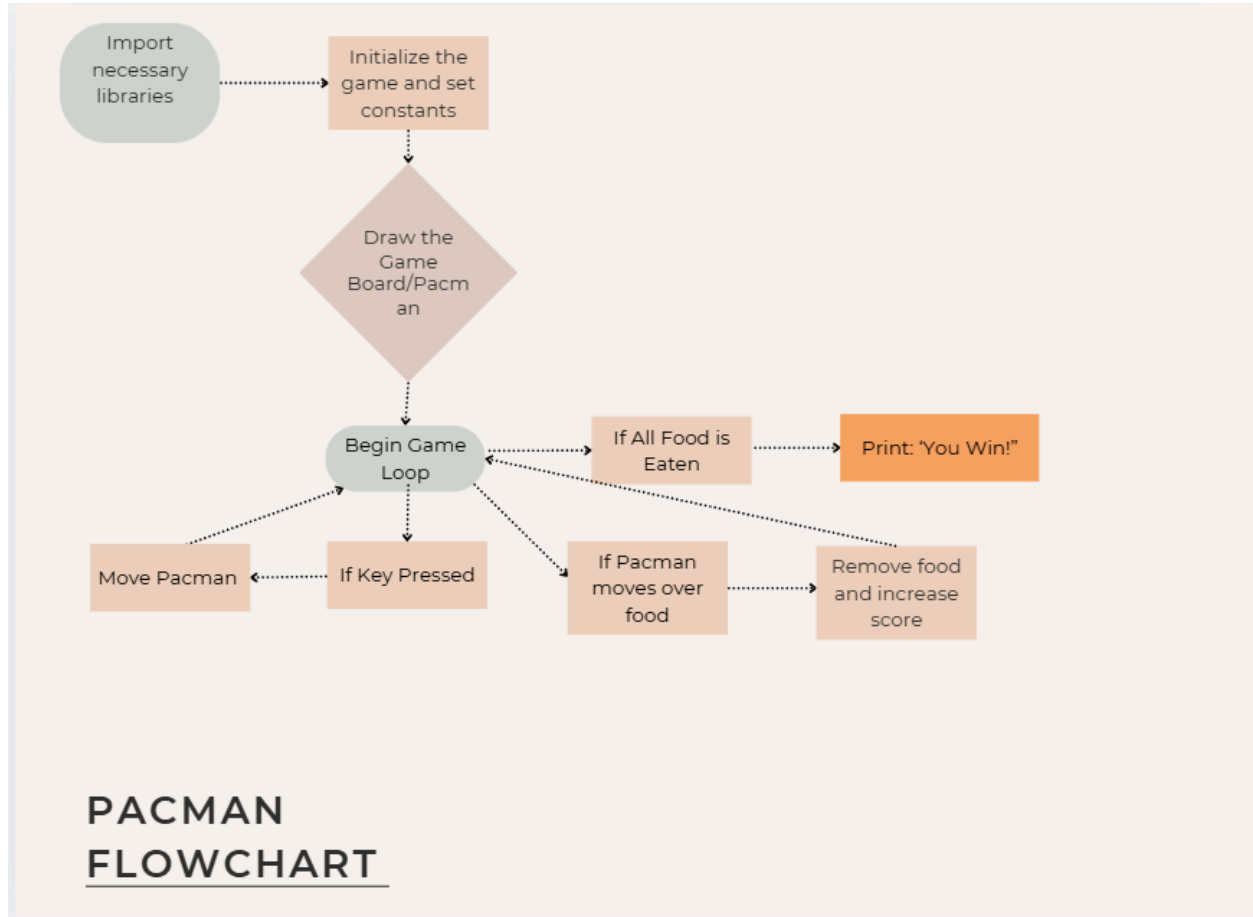
Clear the screen

Draw the game board

Draw Pac-Man

Exit the game and close the window

Flowchart



Requirements

This is for keeping track of the requirements you fulfilled during the final project. Please discuss each of the objectives/requirements listed in the final project assignment and how your final project meets/exceeds them.

Requirements:

☒ **Board Size / Play Area:**

- The game should be played on a window containing at least a 10-by-10 tile set
- Dots Should be in all valid titles for the Pac-man to be.

☒ **Pac-Man Movement:**

- The Pac-man should move in one of four directions (up, down, left, right).
- The player should control the direction using the arrow keys.
- **Incomplete:** There should be a path to the outside of the screen, and the Pac-man should be able to travel from one side to the other.

☒ ~~Food Generation:~~

- **Incomplete:** Food should appear randomly on the game screen after some random number of seconds.

☒ ~~Collision detection:~~

- Pac-Man's score increases when running into a dot or fruit
- The dot disappears
- **Incomplete:** The fruit disappears and the timer for the next fruit to spawn begins.

☒ ~~Game Over and Score:~~

- Display a game over message when all dots are collected.
- **Incomplete:** Display the player's score, which is based on how much food and dots the Pac-man has collected.

☒ ~~Restart Option:~~

- **Incomplete:** There should be an option to replay the game after a game over.