Prompt: Python simple 4 week project

Idea 6#
Snake Game

- Use pygame.
- Add score tracking, levels, or fun twists (powerups, obstacles).

4-Week Snake Game

Week 1 – Foundations

- Install/setup pygame.
- Make a window with a fixed size
- Draw the snake as a rectangle that moves in one direction.
- basic key input (arrow keys to change direction).

Goal: You can move the snake around the screen.

Week 2 – Mechanics

- Add food (randomly spawned square).
- Make snake grow when it eats food.
- Keep score in the corner of the screen.
- Game over when snake hits the wall.

Goal: Playable basic snake game (but snake doesn't collide with itself).

Week 3 – Game Over & Extras

- Add self-collision detection (if snake hits its own body then game over).
- Add restart option after game ends.
- Simple improvement(better colors, background, maybe snake segments with alternating shades).

Goal: Fully functional Snake game.

Week 4 – Add ons/Final debugging

Week 1 Goal

A snake (just a few rectangles) that you can move around the screen with the arrow keys.

Step-by-Step Breakdown

Day 1 – Setup pygame + Window

1. Install pygame (if not yet):

pip install pygame

Week 1 – Snake Foundations

1. **Initialize Game**
    - Import pygame, sys, random.

- Initialize pygame (pygame.init()).
- Set window dimensions (e.g., WIDTH=600, HEIGHT=400).
- Create display (pygame.display.set_mode).
- Define colors (BLACK, GREEN, RED, etc).
- Set CELL_SIZE = 20.

2. **Snake Setup**
    - Represent snake as a list of coordinate tuples:
3. **Game Loop**
    - While game is running:
        i. Handle **events**:
            1. Quit event → close game.
            2. Arrow keys → update snake's direction (up, down, left, right).
        ii. Update **snake position**:
            1. Compute new head = current head + direction.
            2. Insert head at front of snake list.
            3. Remove last segment (so snake keeps length).
        iii. **Render**:
            1. Clear screen.

2. Draw each segment of the snake.
3. Update display.

Control speed (clock.tick(10) for FPS).

End of Week 1: Snake moves around, controllable with arrow keys.

Week 2 – Food & Scoring

1. **Add Food**
    - Spawn food at random grid location:
    - Draw food as a red rectangle.
2. **Check Snake Eating Food**
    - If snake's new head == food position:
        i. Don't pop() tail (snake grows by 1).
        ii. Increase score by +1.
        iii. Respawn food at new random location (that doesn't overlap snake).
3. **Wall Collision**
    - If new head goes outside screen boundaries → Game Over.
4. **Render Score**

- Use pygame.font to render text at top-left corner.

✅ End of Week 2: You can play a full snake game with growing snake, score count, and wall collision.

Week 3 – Self Collision + Restart

1. **Self-Collision Check**
   - After moving snake:
2. **Game Over State**
   - If game over:
     i. Display “Game Over! Press R to restart” message.
     ii. Pause movement until player presses R or quits.
3. **Restart Mechanic**
   - On pressing R:
     i. Reset snake to starting position/length.
     ii. Reset direction, score, and respawn food.
     iii. Resume loop.
4. **Visual Polish**
   - Alternate snake body colors (green shades).
   - Center “Game Over” text.

End of Week 3: Full snake clone that grows, tracks score, dies when hitting walls or itself, and can restart without quitting.

- **Week 1:** Snake moves.
- **Week 2:** Add food + scoring + wall collision.
- **Week 3:** Add self-collision + restart system.