Lights Out

Description: Lights Out is a puzzle game where the goal is to turn off all the lights on a 5x5 grid. Pressing a light toggles it and its adjacent lights.

Features to Implement:

- Display a 5x5 grid with lights (on or off).
- Allow the player to toggle a light and its adjacent lights.
- Check for puzzle completion when all lights are off.
- Handle a restart option.

Full Function Descriptions

Function: `initialize_grid`

- Initializes a 5x5 grid.
- Randomly assigns each cell a state of either on (1) or off (0).

Function: `print_grid`

- Displays the current state of the game grid to the console.
- Uses specific characters or numbers to represent lights that are on (1) or off (0).

Function: `get_user_input`

- Prompts the player to enter the row and column of the light to toggle.
- Validates and returns the input.

Function: `toggle_light`

- Takes the coordinates of the selected light.
- Toggles the state of the selected light and its adjacent lights (up, down, left, right).
- Ensures that toggling does not go out of the grid boundaries.

Function: `check_win`

- Iterates through the grid.
- Returns `True` if all lights are off (all cells are 0), indicating the player has won.

Function: `play_game`

- Manages the main game loop.
- Initializes the game grid and sets the starting state.

- Continuously updates and displays the grid, handles user input, and checks for win conditions.
- Ends the loop when the player wins or chooses to quit.

Implementation Tips

1. **Grid Representation:** Use a 2D list (list of lists) to represent the 5x5 grid.
2. **Cell States:** Use 1 for lights that are on and 0 for lights that are off.
3. **Toggle Logic:** Ensure toggling affects the selected light and its adjacent lights within the grid boundaries.
4. **User Input:** Ensure input is within bounds and the chosen cell follows the rules.
5. **Game Loop:** Continuously update and display the grid, and handle game state changes based on user actions.
6. **Win Condition:** Regularly check for win conditions after each move.