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***Boundary Value Analysis (BVA)***

**Test Case 1:** **Minimum Boundary for x and y**

* **Description**: Test the function with x=0 and y=0, which is the top-left corner of the grid.
* **Expected Outcome**: The function should draw lines and dots as per screenData[i] at this corner without accessing out-of-bounds data.

**Test Case 2:** **Just Inside Lower Boundary for x and y**

* **Description**: Test the function with x=1 and y=1.
* **Expected Outcome**: Lines or dots should be drawn correctly based on screenData[i] at this slightly offset location from the top-left corner, testing that small positive coordinates are handled properly.

**Test Case 3:** **Maximum Boundary for x and y Within Grid Size**

* **Description**: Test the function with x = SCREEN\_SIZE - BLOCK\_SIZE and y = SCREEN\_SIZE - BLOCK\_SIZE, which is the bottom-right corner of the grid.
* **Expected Outcome**: The function should still operate correctly, drawing the maze elements as specified by screenData[i] at this boundary.

**Test Case 4:** **Just Outside Boundary for x and y**

* **Description**: Test the function with x = SCREEN\_SIZE and y = SCREEN\_SIZE, which is just outside the valid grid.
* **Expected Outcome**: The function should not attempt to draw outside the screen area, preventing out-of-bounds access.

**Test Case 5:** **Minimum Value for screenData[i] Bit Flag**

* **Description**: Set screenData[i] = 0, where none of the flags (1, 2, 4, 8, 16) are set.
* **Expected Outcome**: No lines or dots should be drawn for this block, as no bits are set.

**Test Case 6:** **Single Bit Flag Set (Left Wall)**

* **Description**: Set screenData[i] = 1, which only enables the left wall.
* **Expected Outcome**: Only a vertical line on the left side of the block at (x,y) should be drawn.

**Test Case 7:** **Single Bit Flag Set (Top Wall)**

* **Description**: Set screenData[i] = 2 , which only enables the top wall.
* **Expected Outcome**: Only a horizontal line on the top side of the block at (x,y) should be drawn.

**Test Case 8:** **Multiple Bit Flags Set (All Walls)**

* **Description**: Set screenData[i] = 15, enabling all four walls but not the dot.
* **Expected Outcome**: Lines should be drawn on all four sides of the block at (x,y).

**Test Case 9:** **Dot Only**

* **Description**: Set screenData[i] = 16, enabling only the dot in the center of the block.
* **Expected Outcome**: Only the dot should be drawn at (x+11, y+11) within the block.

**Test Case 10:** **Maximum Value for screenData[i]** **Bit Flag (All Elements)**

* **Description**: Set screenData[i] = 31, enabling all walls and the dot.
* **Expected Outcome**: Lines should be drawn on all four sides of the block, and a dot should appear at (x+11, y+11).

***Equivalence Class Partitioning (ECP)***

**Test Case 1: Valid Maze Block with All Walls and Dot (ECP - Full Block)**

* **Input:** screenData[i] = 31 (binary 11111), meaning all walls (left, top, right, and bottom) and the dot are enabled.
* **Expected Outcome:** Lines should be drawn on all four sides of the block, and a dot should be placed in the center at (x + 11, y + 11).

**Test Case 2: Valid Maze Block with No Walls and No Dot (ECP - Empty Block)**

* **Input:** screenData[i] = 0, meaning no walls and no dot.
* **Expected Outcome:** No lines or dots should be drawn for this block.

**Test Case 3: Valid Maze Block with Only Left and Top Walls (ECP - Partial Walls)**

* **Input:** screenData[i] = 3 (binary 0011), enabling only the left and top walls.
* **Expected Outcome:** Only a vertical line on the left and a horizontal line on the top of the block should be drawn.

**Test Case 4: Valid Maze Block with Only the Dot Enabled (ECP - Dot Only)**

* **Input:** screenData[i] = 16 (binary 10000), enabling only the dot.
* **Expected Outcome:** Only a dot should be drawn in the center of the block at (x + 11, y + 11).

**Test Case 5: Out-of-Range screenData[i] Value (ECP - Invalid Input)**

* **Input:** screenData[i] = -1 or any non-expected integer value.
* **Expected Outcome:** The function should either ignore this block or handle it gracefully without attempting to draw invalid elements, avoiding any errors.

**Test Case 6: Screen Data with All Walls Except the Dot (ECP - Walls Only)**

* **Input:** screenData[i] = 15 (binary 01111), enabling only the four walls.
* **Expected Outcome:** Lines should be drawn on all four sides of the block, but no dot should be drawn in the center.

**Test Case 7: Screen Data with Only the Right Wall (ECP - Single Wall)**

* **Input:** screenData[i] = 4 (binary 00100), enabling only the right wall.
* **Expected Outcome:** Only a vertical line on the right side of the block should be drawn.

**Test Case 8: Screen Data with Right and Bottom Walls (ECP - Adjacent Walls)**

* **Input:** screenData[i] = 12 (binary 01100), enabling only the right and bottom walls.
* **Expected Outcome:** Only a vertical line on the right side and a horizontal line on the bottom of the block should be drawn.

**Test Case 9: Valid Maze Block with Multiple Elements Enabled Randomly (ECP - Mixed Elements)**

* **Input:** screenData[i] = 9 (binary 01001), enabling the left wall and the bottom wall only.
* **Expected Outcome:** Only a vertical line on the left and a horizontal line on the bottom side of the block should be drawn.

**Test Case 10: Screen Data with Only Top and Bottom Walls (ECP - Opposite Walls)**

* **Input:** screenData[i] = 10 (binary 01010), enabling only the top and bottom walls.
* **Expected Outcome:** Only a horizontal line on the top and bottom of the block should be drawn.