

## Assignment Ten – Mini-Grid Hints

Generally, obtaining the mini-grids is the most challenging piece to this assignment. Here are some hints to help you figure this out and potentially avoid meeting Mr. Bubbles.

The grid requires nested loops to iterate over the row and column of the mini-grid and some mathmagic to figure out where to start. My main hint here is to think about the mini-grids as forming their own rows and columns, both starting at 0. So a size 4 puzzle (4x4) would have a 2x2 mini-grid formation. The (row, col) value for a cell can be manipulated to give you the mini-grid (row, col) with the help of the square root of the puzzle size. Then you can use the mini-grid (row, col) and manipulate it mathmagically to get the upper leftmost cell in the mini-grid to start iterating from.

1. Compute square root of board size
2. Determine mini-grid row value
3. Determine mini-grid col value
4. Determine mini-grid upper left row starting value
5. Determine mini-grid upper left col starting value
6. Determine the mini-grid ending row value
7. Determine the mini-grid ending column value

Steps 2 & 3 use the same basic math operation. Steps 4 & 5 use the same basic math operation. Steps 6 \* 7 also use the same basic math operations, with needing two per step.

As a further hint, the operand on the right of the operation can always be the same value in steps 2 - 5. Steps 6 & 7 also can be structured this way, except there will be an additional operation needed.

Okay, okay, here a final hint. Of the five possible basic math operations, I only needed three in steps 2 - 7.

Below is a representation of how the normal puzzle rows and columns convert to the mini-grid rows and columns. The 2D array is always the same, which matches the normal layout.

Normal Puzzle Row & Column Layout						Mini-Grid Row & Column Puzzle Layout					
		0	1	2	3			0	1		
0			4	1			0				
1		1	3					1	3		
2			2						2		
3				3	2					3	2