spiral123 - solution

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Solution for at most 40 points

The problem can be solved with backtracking (recursive or iterative), the matrix will be completed in spiral, for each step we have 2 numbers for validation: the number that follows from the 1-2-3 sequence (depending on what was used the last time) and 0. If we make a diagonal, then we change the direction. At each change of direction a row or a column is already completed, so we can make partial validations in order to improve the algorithm. When we find the first solution, we print and stop the program.

0	1	0	2	3
0	2	3	0	1
1	3	0	0	2
3	0	2	1	0
2	0	1	3	0

Solution for 100 points

We pre-process the initial squares for n = 5, 6, 7, 8, 9, 10 (manual or backtracking). For n>10 the solution is obtained from the **(n-6)x(n-6)** spiral123 and a 6 x 6 spiral123 segmented in four 3x3 sub-matrix as in the image bellow. With these 4 sub-matrix will be completed the four corners of (n-6)x(n-6) spiral123 and we have the required **nxn** spiral123.

1	2	0	3	0	0
3	0	1	0	2	0
0	0	0	2	3	1
0	1	3	0	0	2
0	3	2	1	0	0
2	0	0	0	1	3

This way we make an 11x11 spiral123.

1	2	0						3	0	0
3	0	1						0	2	0
0	0	0						2	3	1
			0	1	0	2	3			
			0	2	3	0	1			
			1	3	0	0	2			
			3	0	2	1	0			
			2	0	1	3	0			

0	1	3						0	0	2
0	3	2						1	0	0
2	0	0						0	1	3

Remarks: We can always build a nxn spiral123, if n≥5.