# Geometric Puzzle

Definition of the puzzle

An interior designer is commissioned to cover a wall of a computer scientist's home with tiles. The shape of the wall is a square of size 2^n by 2^n. Computer scientist suggests to use L shaped tiles of size 2 by 2. Since 2^{n+1} cannot be evenly divided by 3 (i.e., the area of the L shaped tile) computer scientist also allows designer to use one 1x1 tile. He also would like to initiate tiling by placing the 1x1 tile randomly.
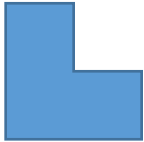
An L-shaped tile

3	3	4	4	9	9	10	10
3	2	2	4	9	8	8	10
5	2	1	1	7	7	8	11
5	5		1	6	7	11	11
19	19	17	6	6	12	14	14
19	18	17	17	12	12	13	14
21	18	18	20	16	13	13	15
21	21	20	20	16	16	15	15

8x8 wall with randomly selected initial 1x1 tile.

The numbers are indicating both L-shaped tiles and their placing order depending on a algorithm that the interior designer come up with. (This algorithm may not be the only one!)

a) Find an algorithm to cover the wall.
b) Write a program in C to find solution for such an operation. Input is coordinate of 1x1 tile and the output is a matrix representing the wall covered by tiles.
   I. Design and implement the program for 8x8 wall
   II. Generalize them for wall size 2^n x 2^n.