

Stacking of Dominos Problem

Problem: For any integer $n > 0$, we are forming a stack of dominos with the first domino at $(0,0)$, each domino must either sit directly on one below or else overlap by half its length and the stack must be contained in the first quadrant.

For any n , how many such stacks are there?

For $n = 1$, there is clearly only 1 such stack;



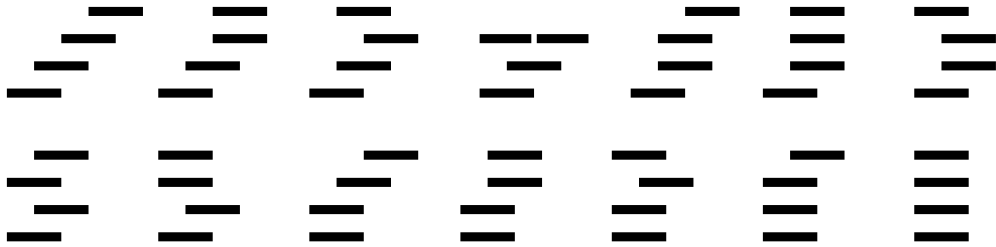
For $n = 2$, there are 2 such stacks:



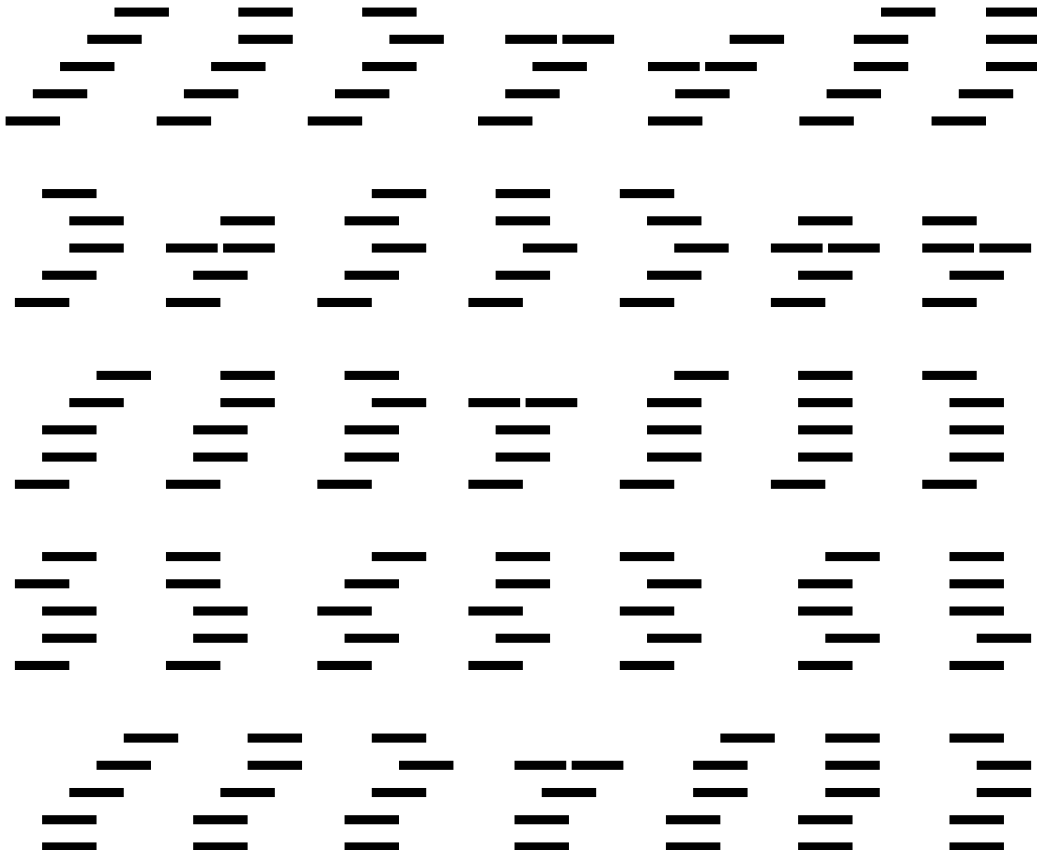
For $n = 3$, there are 5 such stacks:



For $n = 4$, there are 14 such stacks:



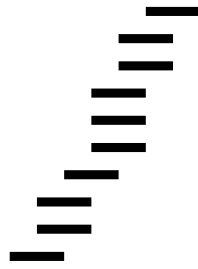
For $n = 5$, there are 42 such stacks:



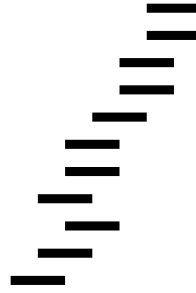
2. Construct balanced strings of brackets corresponding to the following stacking of dominos:



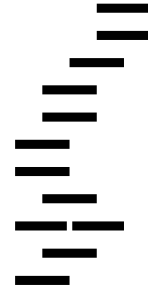
(i)



(ii)



(iii)



(iv)

Solution.

The corresponding balanced strings of brackets are:

- (i) LLLRRLRLLRRRLLRR
- (ii) LLRLLLRLRLLRLLRRRRRR
- (iii) LLLRLLRLLLRLRLLRRRRRR
- (iv) LLLRRLLRRLRLLRLLRLLRLLRRRR