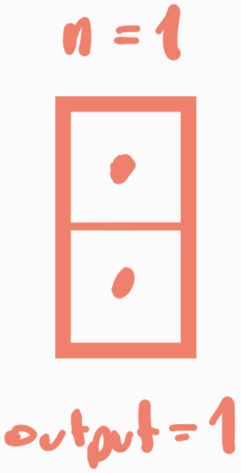
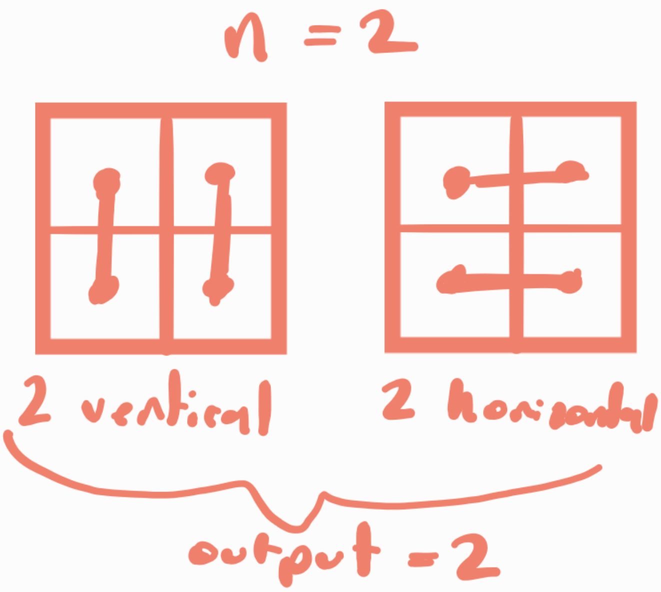
790. Domino and Tromino Tiling

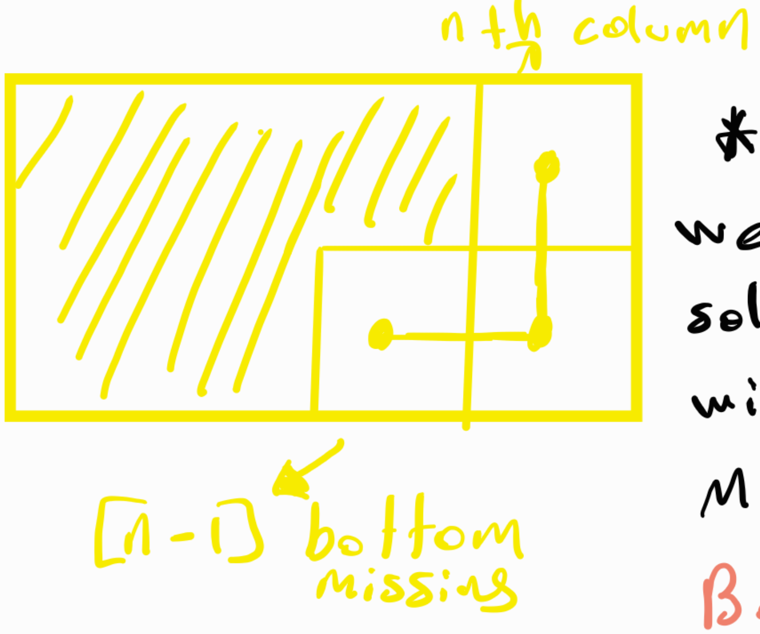
* if the $n < 3$, output will be n





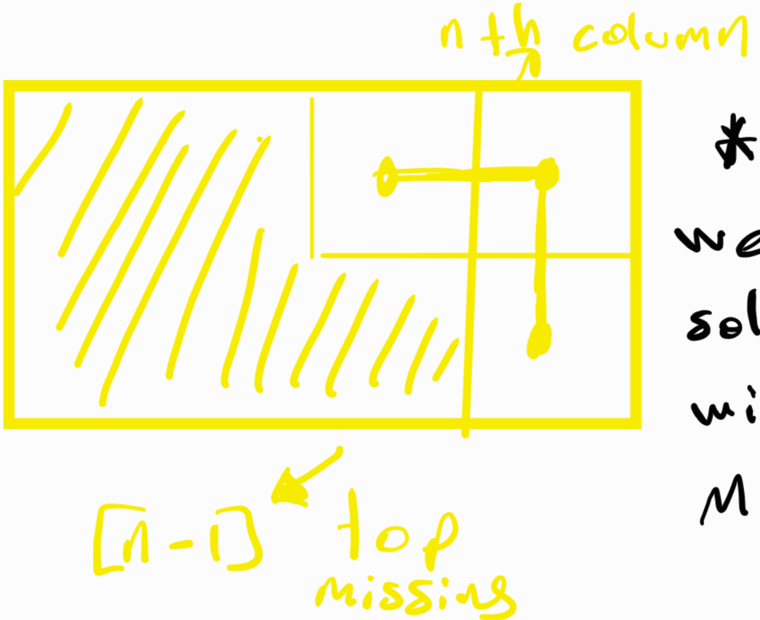
* if this was the case, we would need to solve for (n - 1) full grid. Meaning that; Full[n-1]

* if this was the case, we would need to solve for (n - 2) full grid. Meaning that; Full[n-2]



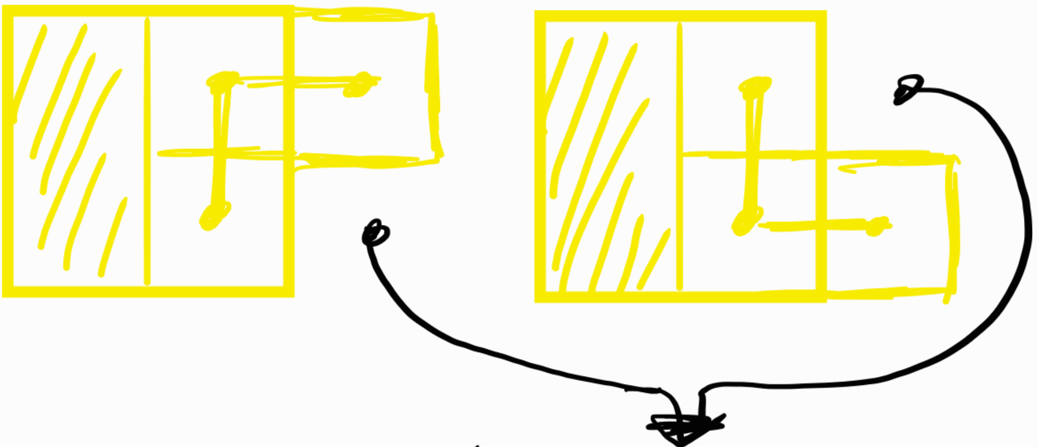
* if this was the case, we would need to solve for (n-1) grid with bottom gap. Meaning that;

BottomMissing[n-1]



* if this was the case, we would need to solve for (n-1) grid with top gap. Meaning that;

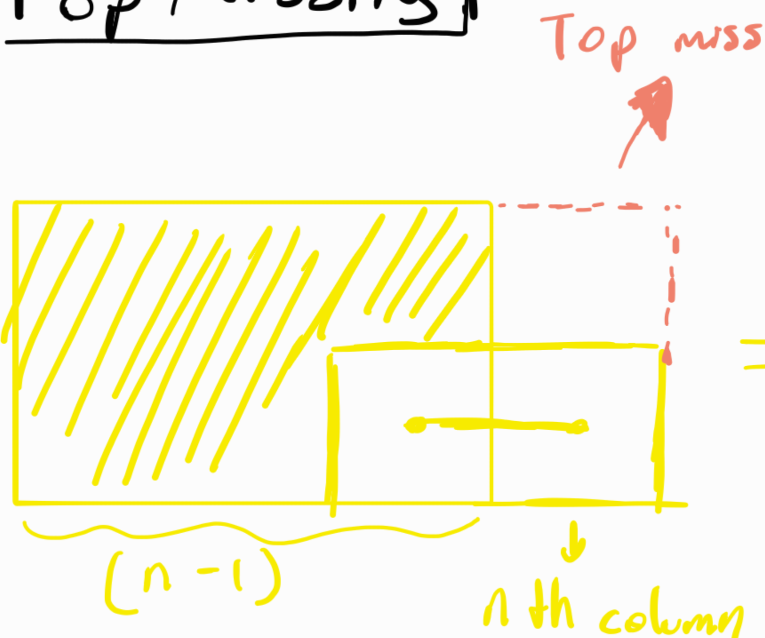
TopMissing[n-1]



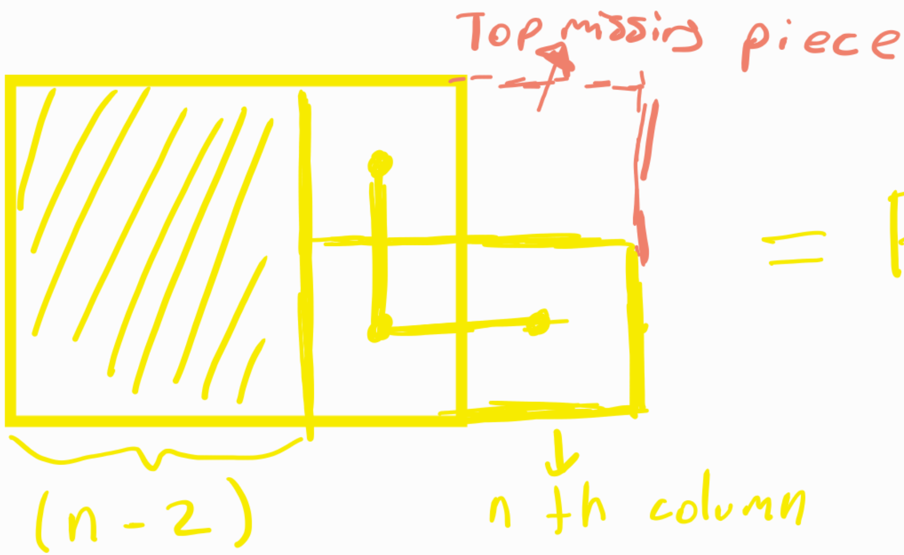
these gaps cannot be filled, so, no solution!

Computation of Top-Bottom Missing Pieces

Top Missing:



= Bottom Missing [n-1]

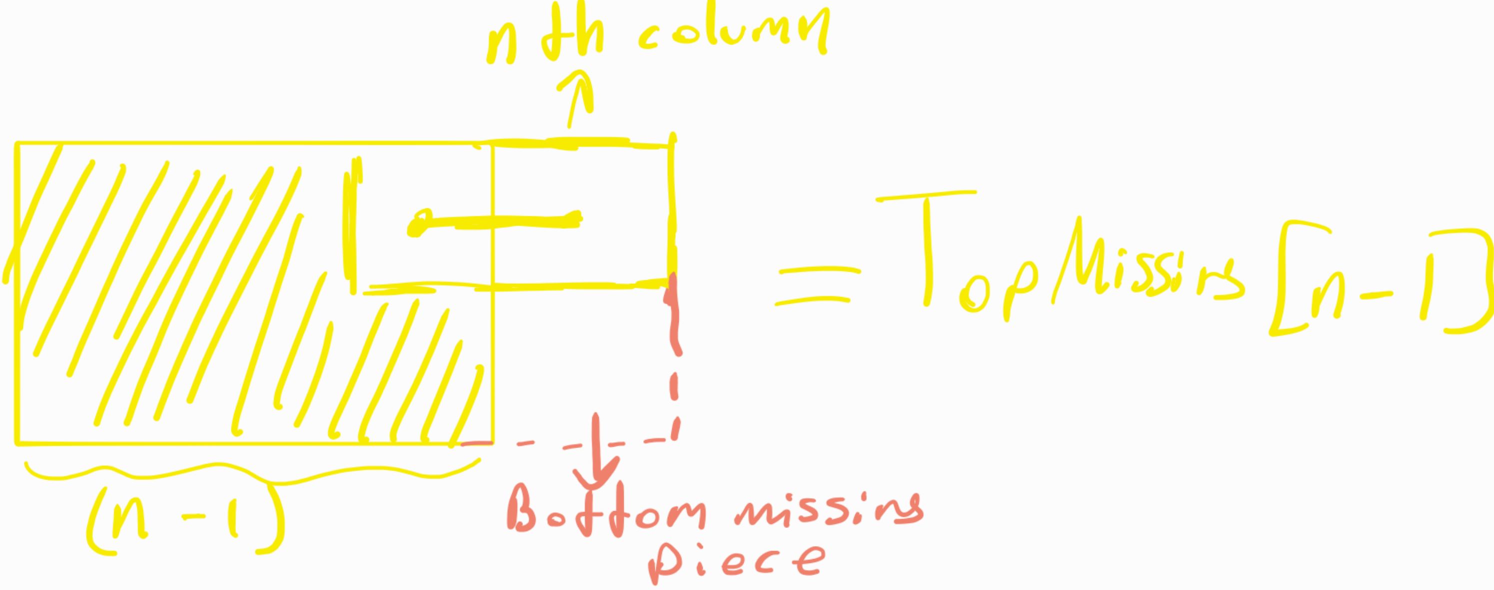


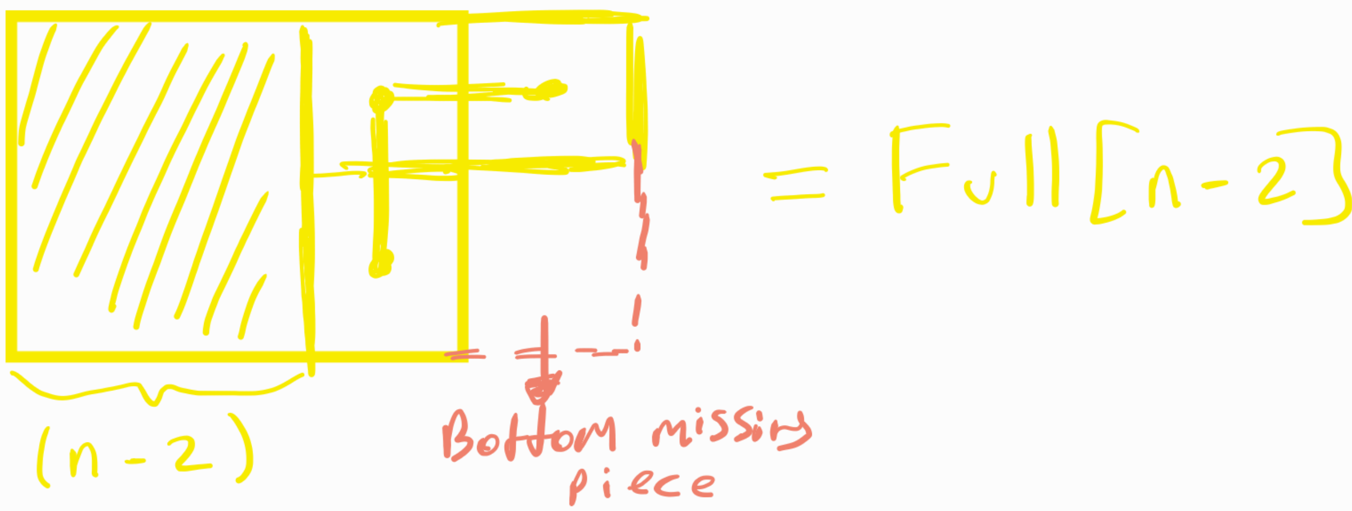
= Full[n-2]

Overall, TopMissing piece can be obtained by these to patterns. So;

• $\text{TopMissing}[n] = \underset{\text{Missing}}{\text{Bottom}}[n-1] + \text{Full}[n-2]$

BottomMissing:





Overall, BottomMissing piece can be obtained by these two patterns. So;

$$\text{BottomMissing}[n] = \text{TopMissing}[n-1] + \text{Full}[n-2]$$

Concluding The Solution

* Initialize,

$F[0] = 1$, $F[1] = 1$

empty grid

Recall; if $n<3$, output $= n$

$T.M[1] = 0$, $B.M[1] = 0$

impossible to insert these when $n = 1$

* Apply the following,

$$Full[n] = Full[n-1] + Full[n-2] + TopMissing[n-1] + BottomMissing[n-1]$$

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