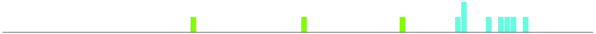
C: Cangaroo



Problem Author: Abe Wits

- **Problem:** Given a $n \times m$ grid with marked locations, what is the minimum amount of 2×2 cans needed to cover all marked locations?

Statistics: 11 submissions, 3 accepted, 8 unknown

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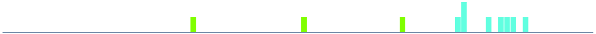

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- **Solution:** Do DP and calculate what the minimal number of cans is needed if you fill up the last r rows for a given can placement of the top row.
  For calculating the next row, iterate over all rows that support a can placement and take the best.

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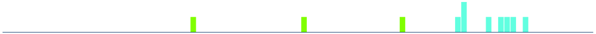

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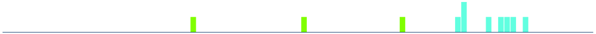

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- Number of can placements is F_{m+1}, the $(m+1)$th Fibonacci number.
  Time complexity: $\mathcal{O}\left(n \cdot F_{m+1}^2\right) = \mathcal{O}\left(n \cdot 3.3^m\right)$ when using bitmasks.

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