COMPACT EVENT: MÕBIUS CLUB

Challenge 3

Problem 1

Mr. Stirling seeks to solve a variant of the 8-queens problem using rooks instead of queens on a triangular board, as depicted in the accompanying image.

1. How many distinct ways can 2 non-attacking rooks be placed on a triangular board of size 4?

2. Can you propose a straightforward (trivial) solution to this problem?

3. Define the recursive formula for $T(n, k)$, which represents the count of placing k non-attacking rooks on a triangular board of size n.

4. (Optional) Additionally, for those seeking an extra challenge, implement a program that generates non-trivial solutions to this problem.

For an added clue, remember that rooks move horizontally and vertically in straight lines on the chessboard.

Good luck in tackling these intriguing rook placement puzzles!