Difficulty: 3/4 Interest: 3/4

Consider a puzzle on a (blank) $n \times m$ board, where each column and row has a number denoting the number of markers that should go in that column or row. The player's goal is to fill in the grid in such a way that the row/column "histograms" are satisfied.

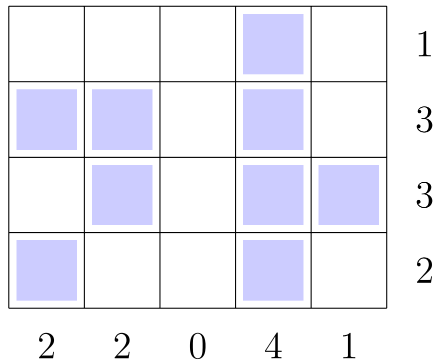

Figure 1: Example of a solution to the puzzle $(2, 2, 0, 4, 1) \times (1, 3, 3, 2)$. Is the solution unique?

Question. What is a procedure for determining if a grid has a solution? If it has a unique solution?

Related.

1. What if the game is played on a d-dimensional hypercube?
2. What if the game is played on a triangle? Tetrahedron?
3. What is the greatest amount of ambiguity a non-unique board can have? (i.e. what is the greatest number of solutions?)
4. How many maximally ambiguous boards exist?
5. How many distinct boards exist up to dihedral action? Up to torus action?
6. What if multiple markers can be put in each cell?

References.

https://oeis.org/A297077