

C: Cinderella's Chore

Problem author: Jannik Olbrich

Problem

Given a matrix with pairwise distances, place n points on a line such that their distances are as in the matrix (or determine that this is impossible)

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- For a third point, there are only three possibilities:
 - Left of 0,
 - right of $d_{1,2}$, or
 - between 0 and $d_{1,2}$.

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- At most one option can be consistent with both $d_{1,3}$ and $d_{2,3}$!
⇒ Determine which is correct and just continue with the next point.

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⇒ Determine which is correct and just continue with the next point.
- If no option is consistent, the answer is impossible.
- After placing the points, check that they match the distance matrix.
- Shift the coordinates s.t. they are in the allowed range.