

❗ C++?clang++18?

SATSKY remembers, whenever the team was heading to somewhere, in the streets or metro station or anywhere, it often occurs that laurxh "walks away without looking back, as if he had made some determination"(goes far ahead), while Genius_dream concentrates on her phone and drops too far behind. In this case, SATSKY prefers to track the middle point of two teammates' locations, or at least find a place where he can see his teammates both, especially when around the corner and they can't see each other.

Formally:

- Give you an n -sided polygon P , of which each point $P_{1 \sim n}$ is of integer coordinates and given in **counterclockwise order**;
- And give you two more integer points A and B , inside the polygon (**boundary not included**) **guaranteed**;
- Call "point X can be seen from point Y (in P)" **if and only if the whole segment connecting two points, except two endpoints, is inside P strictly (and doesn't intersect with any of edge of P naturally)** ;
- You need to find out:
 - For each point of polygon (i from 1 to n), can it (P_i) be seen from point A ?
 - For each point of polygon (i from 1 to n), can it (P_i) be seen from point B ?
 - Is there a point C inside the polygon (**boundary not included**) to see A and B **simultaneously** ?

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Then following n lines, the i -th line contains two integers x_i, y_i , representing the x and y coordinates of

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