PA1 - 1001 Discussion Thread

Signal Tower Deployment Plan

Description

Ge Ziwang has now become an engineer, and he needs to design a signal tower deployment plan for the company. Now there are N receiving ends that need to be covered, and he needs to cover these N receiving ends with 2 fixed signal towers. We can set the propagation radius R of each signal tower. Each signal tower can cover the receiving end whose distance between them is less or equal than R. The larger the propagation radius, the greater the cost. The total cost of the two signal towers is defined as $R_1^2 + R_2^2$, where R_1 and R_2 are the propagation radius of the towers. Now you need to help your friend Ge Ziwang to find the minimum total cost by adjusting the propagation radius of the two signal towers.

Input

The first line contains four integers m_1, n_1, m_2 and n_2, which means that the coordinates of the two towers are (m_1, n_1) and (m_2, n_2) respectively. The second line contains one integer N, which is the number of receiving ends. The next N lines, there are two integers x_i and y_i in each line, which stand for the coordinate (x_i, y_i) of each receiving end.

- For 20% cases, $0 \leq N \leq 100$.
- For 60% cases, $0 \leq N \leq 5000$.
- For 100% cases, $0 \leq N \leq 80000$, $|x_i|, |y_i| < 1000 \ \forall i \in [1, N], |m_1|, |n_1|, |m_2|, |n_2| < 1000$.

Output

You need to output an integer, which represents the minimum total cost of the two towers such that all receiving ends are covered.

programming

Updated 2 months ago by Yining She (佘以宁)

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followup discussions *for lingering questions and comments*

⦿ Resolved   ◯ Unresolved

Anonymous Helix 2 months ago   Will I be punished if I accidentally used sort but rewrited it manually afterwards?

helpful! | 0

> **张龙文** 2 months ago
> no
>
> good comment | 0

⦿ Resolved   ◯ Unresolved

Anonymous Mouse 2 months ago
Can we use vector in these problems?
BTW, even string is a stl container, does the banning list contain it?

helpful! | 0

> **张龙文** 2 months ago
> no. no.
>
> good comment | 0