note @144 133 views

PA3 - 3002 Discussion Thread

City Capture Game

Description

Bob is playing a city capture game where the goal of victory is to capture all the cities on the map. The map is formed by the cities and roads between the cities. Firstly, Bob can choos e a city as his domain, then he needs to expand his domain by attacking other cities, and each city can just be attacked once.

Each city has a firmness, and when he successfully attacks city B from city A, he can get a score: firmness(A)+firmness(B). Bob wants to know the best strategy, which is the maximum of the sum of scores after attacking all the cities. Additionally, he also wants to know a second best strategy as plan B. Now he asks you for a help to give him the average value of the t wo strategies.

Note: The second best strategy can be equal to the best strategy under some circumstances.

Input

- The first line is two integers n, m.
- Next n lines: the i-th line is the firmness of city i.
- Next m lines: each line has two integers x, y, which means city x is connected with city y.

For all test cases,

$1 \leq n < 1000$

$0 \leq m < 100000$

$0 < firmness < 50000$

And the input ensures the map is a connected graph.

Output

A number with one decimal place, which stands for the average value of best strategy and second best strategy.

programming

Updated 20 days ago by Yining She (佘以宁)

followup discussions *for lingering questions and comments*

◉ Resolved ○ Unresolved

刘翊航 20 days ago
Does this problem guarantees that the second best strategy always exists?

Does this problem guarantees Bob can always “attack all the cities”?

helpful! | 0

屠珈东 20 days ago
As noted in the description, the second best strategy is actually the best strategy if it doesn’t exist.

Bob can always “attack all the cities” since the input ensures it it a connected graph.

good comment | 0

◉ Resolved ○ Unresolved

张行远 19 days ago What makes a strategy different from another?
In the sample, the output is 52 instead of 56, which means that starting from 19, attack 11 from 19 then attack 7 from 19 is the same strategy as starting from 11, attack 19 from 11 then attack 7 from 19.
So I want to know what makes two strategies different?
helpful! | 0

刘翊航 19 days ago
The span tree has different sets of edges.

helpful! | 1

屠珈东 19 days ago
[Update] Strategies are different set of edges that can “span” all the cities.

good comment | 0

Resolved Unresolved

陈 正 19 days ago
if the max tree have two way to struct,does it means second max tree=max tree?
helpful! | 1

屠珈东 19 days ago
It means the score of the second best strategy is equal to the score of the best strategy.

good comment | 1

Resolved Unresolved

龚 可 17 days ago
`firmness` is integer. Please make this clear, thanks.

helpful! | 0

李 淼 17 days ago Sorry! You are right. Firmness is integer.

good comment | 0

Resolved Unresolved

Anonymous Atom 17 days ago Can Bob move freely in his domain? Or can he visit a city for multiple times if the city is already in his domain?
helpful! | 0

李 淼 17 days ago Yes! You can understand like this.

good comment | 0

Resolved Unresolved

Anonymous Comp 11 days ago
Does the m lines of cities will ensure that there is no case like:

x y
y x

or

x y
x y

?

helpful! | 0

Resolved Unresolved

张瀚宇 11 days ago
Does the m lines of cities will occur case like 5 5? (self loop)
helpful! | 0

Resolved Unresolved

李 淼 7 days ago Note! If you have some cases, which you cannot pass, you can try "double" instead of "float".

good comment | 0