ECE30018 Problem Solving Studio, Fall 2023

C9. Tumor

| Submission due: 9:00 PM, 17 Nov Fri

Tumor

A new kind of cancer is recently discovered. To study its characteristics, a physiologist had cultivated N tumor cells on a tissue of 2-D plane in a Petri dish. Today the physiologist opened the Petri dish and found that tumor cells had been grown up in various sizes, and blood vessels are developed to connect some of tumor cells. The physiologist discovered that the blood vessels of these tumor cells have the following characteristics:

- a blood vessel is always constructed upon tissue, and
- a blood vessel is connecting only two tumor cells, and
- a blood vessel never crosses another blood vessel

The physiologist measured the weight of each tumor cell and identified all pairs of tumor cells connected to each other with a blood vessel. A set of tumor cells forms a *tumor cluster* if every pair of these tumor cells is connected with a blood vessel. The weight of a tumor cluster is the sum of weights of its component tumor cells.

Write a program that finds the maximum tumor cluster weight for given tumor cell weights and tumor cell connections (i.e., blood vessels).

Input

- Input is given as text via the standard input
- The first line has two positive integers N and B for $2 \leq N \leq 450$ and $1 \leq B \leq 900$. The number tumor cells is N, and the number of the developed blood vessels is B.
- From the second to the (N+1)-th lines, each line gives a tumor weight between 100 and 10000. The integer at the (i+1)-th line is the weight of the i-th tumor cell.
- From the (N+2)-th to the (N+B+1)-th lines, each line contains a pair of tumor IDs that are connected by a blood vessel

Output

- Print the maximum weight of a tumor cluser. Your program should return the answer within 1.0 second.

Test case examples

Input 1

```
4 6
10
500
100
200
1 2
1 3
1 4
2 3
2 4
3 4
```

Output 1

```
810
```

Input 2

```
6 8
150
100
10
200
50
30
1 2
1 3
1 4
2 4
3 5
4 5
4 6
5 6
```

Output 2

```
450
```

Input data

- Input is given as text via the standard input
- The first line has two numbers N and B for $2 \leq n \leq 450$ and $1 \leq B \leq 900$. N is the number tumor cells, and B is the number of the developed blood vessels.
- From the second to the (N+1)-th lines, the (i+1)-th line has one integer between 100 and 10000, that represents the weight of the i-th tumor cell.
- From the (N+2)-th to the (N+B+1)-th lines, each line contains a pair of tumor ID's that are connected by a blood vessel

Output data

- Print the maximum weight of a tumor cluser. Your program should return the answer within 1.0 second.

Test case example

Input

```
4 6
10
500
100
200
1 2
1 3
1 4
2 3
2 4
3 4
```

Output

```
810
```

C9 Teams

Team No.	Members
901	박민지, 백건하
902	소병찬, 최소미
903	이준명, 오인혁
904	최혜림, 전혜림
905	최정겸, 이신원
906	박세찬, 이원빈
907	유건민, 나보림
908	강하림, 백하현