Based Porridge
Problem ID: basedporridge

Computer science students, like kindergarteners, care a lot about fair outcomes: irregardless of whether this is achieved through helping the low or keeping down the high. You are hosting a sittning in Basen for N students. There are K kinds of porridge and you have prepared a_i meals of the ith kind. Of course, everyone loves porridge. But some students prefer some kinds to others, in fact, student i will derive h_{ij} happiness from eating the jth kind of porridge. To maximize fairness while still being a good host, you want to serve everyone a meal while minimizing the difference in happiness between the most and least satisfied students. What is the minimum possible difference?

Input

The first line has two integers N and K ($2 \leq K \leq N \leq 75$), the number of students and the number of kinds of porridge. The second line contains the K integers a_i ($1 \leq a_i \leq N$, $\sum a_i = N$), the available number of meals of porridge kind i. Finally, there are N lines each containing the K integers h_{ij} ($1 \leq h_{ij} \leq 10^9$), the happiness derived by person i from porridge kind j.

Output

Output the minimum possible difference in happiness between the most and least satisfied students.

Scoring

Your solution will be tested on a set of test groups, each worth a number of points. To get the points for a test group you need to solve all test cases in the test group. Your final score will be the maximum score of a single submission.

Group	Points	Constraints
1	50	$K = 2$
2	50	No further constraints

Sample Input 1

```
3 2
2 1
4 5
2 1
4 2
```

Sample Output 1

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2
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