


Perfect Pizza (recipe)

During hard lockdown times, everyone's darkest side comes out from the mist! In Giorgio's case, that means compulsive and competitive cooking: he now wants to prepare the *perfect pizza*, and there's nothing that can stop him!



Figure 1: Giorgio working on the perfect pizza.

However, achieving such a goal is not a simple matter, and he is still stuck on deciding the perfect balance of the N ingredients (numbered with $i = 0 \dots N - 1$). He found M trusted websites, numbered with $j = 0 \dots M - 1$, each of them proposing different weights P_{ij} (in milligrams) for the various ingredients. The situation is made even more confusing by the fact that the doses on each website refer to a different total weight, and thus cannot be easily combined! To get out of the impasse, there is but one solution: convert each recipe to a total of 1 kg (10^6 mg), by multiplying each weight for an appropriate factor, and then average out all the resulting weights for each ingredient across the various recipes. Help Giorgio compute the perfect pizza recipe!


 Among the attachments of this task you may find a template file `recipe.*` with a sample incomplete implementation.

Input

The first line contains the two integers N and M . The following M lines each contain the N integers P_{ij} .

Output

You need to write a single line with N integer: the averaged weights of the ingredients across recipes converted to 1 kg total.

 The averaged weights might **not** be integer values. Use variables of `double` type (C/C++/Pascal) to compute intermediate results. Then, truncate the final result `r` to an integer number of milligrams through `(int)r` (C/C++) or `trunc(r)` (Pascal).

Constraints

- $1 \leq N, M \leq 1000$.
- $0 \leq P_{ij} \leq 10^6$ for each $i = 0 \dots N - 1$.

Scoring

Your program will be tested against several test cases grouped in subtasks. In order to obtain the score of a subtask, your program needs to correctly solve all of its test cases.

- **Subtask 1** (0 points) Examples.
- **Subtask 2** (10 points) $N = 1$.
- **Subtask 3** (20 points) $M = 1$.
- **Subtask 4** (30 points) $M = 2$.
- **Subtask 5** (40 points) No additional limitations.

Examples

input	output
4 1 400000 50000 10000 40000	800000 100000 20000 80000
4 2 400000 50000 10000 40000 600000 200000 60000 140000	700000 150000 40000 110000

Explanation

In the **first sample case**, there is a single website, whose recipe adds up to 500 grams. In order to refer it to 1 kilogram, every amount needs to be doubled.

In the **second sample case** there are two websites. The first website is the one in the first sample case. The second has a different recipe, which however is already referred to 1 kilogram. By averaging the recipes referred to 1 kilogram, we obtain for the four ingredients' weights:

$$\begin{aligned} 700\,000 &= (800\,000 + 600\,000)/2 \\ 150\,000 &= (100\,000 + 200\,000)/2 \\ 40\,000 &= (20\,000 + 60\,000)/2 \\ 110\,000 &= (80\,000 + 140\,000)/2 \end{aligned}$$