Problem G
Flow Shop
Problem ID: flowshop
Time Limit: 6 seconds

Sean's Swathers makes custom swathers (equipment used to harvest grain). All swathers go through the same basic stages in their construction: for example they all need to have a cutting bar, a grain belt, and a reel fitted. However, these components can be customized based on the buyer's needs, so these various stages may take different amounts of time between different swathers.



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N swathers have been ordered and there are M stages in the manufacturing process. The swathers will each go through the same sequence of stages.

In particular, the processing occurs as follows: For each swather i and each stage j, it takes $P_{i,j}$ units of time to complete stage j for swather i. The workers at each stage may only work on one swather at a time. At the start of the day all swather orders are ready to be processed by the first stage. At any point in the process, if the workers at stage j are idle and there are swathers waiting to be processed at this stage then the workers will pick the swather that has the lowest label (they are labelled from 1 to N). Note that the work on a stage j can only be started after the work on the stage $j-1$ is completed.

Determine the time each swather is completed.

Input

There is only one test case in each file. It begins with a single line containing N and M ($1 \leq N, M \leq 1000$), the number of swathers and stages (respectively). Following this are N lines, each with M integers. The j'th integer of the i'th line is $P_{i,j}$, giving the amount of time it will take for the workers at stage j to complete swather i ($1 \leq P_{i,j} \leq 10^6$).

Output

Output a single line containing N integers $T_1\ T_2\ \ldots\ T_n$ with a single space between consecutive integers. These should be such that stage M for swather i is completed at time T_i.

Sample Input	Sample Output
2 3 1 2 3 3 2 1	6 7

Sample Input	Sample Output
3 2 3 1 4 7 2 5	4 14 19