

Two-star Contest

Input file: **standard input**
Output file: **standard output**
Time limit: 2 seconds
Memory limit: 1024 megabytes

Education experts are going to rate n contests due to whatever reasons. The experts have already decided on the rating of each contest, where the i -th contest is rated as a s_i -star contest.

It is said that each contest is rated according to m properties, where the j -th property of the i -th contest is indicated as $p_{i,j}$, whose value ranges from 0 to k (both inclusive). The score of a contest is calculated as the sum of all its m properties. That is, let v_i be the score of the i -th contest, we have $v_i = \sum_{j=1}^m p_{i,j}$.

It would be natural for a contest with more stars to have a higher score. The experts require that, for any two contests $1 \leq i, j \leq n$, if $s_i > s_j$, then there must be $v_i > v_j$. Unfortunately, the experts forgot to collect values for some (or even all) properties of some contests. As the assistant of the experts, you're required to fill in the missing values so that the constraint stated above holds for any two contests.

Input

There are multiple test cases. The first line of the input contains an integer T indicating the number of test cases. For each test case:

The first line contains three integers n , m , and k ($2 \leq n \leq 4 \times 10^5$, $1 \leq m \leq 4 \times 10^5$, $n \times m \leq 4 \times 10^5$, $1 \leq k \leq 10^9$) indicating the number of contests, the number of properties of each contest, and the upper bound of the value of each property.

For the following n lines, the i -th line first contains an integer s_i ($1 \leq s_i \leq 10^9$) indicating the number of stars the i -th contest is rated. Then m integers $p_{i,1}, p_{i,2}, \dots, p_{i,m}$ follow ($-1 \leq p_{i,j} \leq k$). If $p_{i,j} = -1$ then the value of the j -th property of the i -th contest is missing and it is your quest to fill it in; Otherwise if $p_{i,j} \geq 0$ then the value of the j -th property of the i -th contest is given and you should not change it.

It's guaranteed that the sum of $n \times m$ of all test cases will not exceed 4×10^5 .

Output

For each test case:

If it is possible to fill in all the missing properties while satisfying the constraint, first output **Yes** in one line. Then output n lines where the i -th line contains m integers $q_{i,1}, q_{i,2}, \dots, q_{i,m}$ ($0 \leq q_{i,j} \leq k$) separated by a space, indicating the m properties of the i -th contest after you fill in the missing values. If $p_{i,j} = -1$ then $q_{i,j}$ should be the value you fill in; Otherwise if $p_{i,j} \geq 0$ then $q_{i,j} = p_{i,j}$. If there are multiple valid answers, you can output any of them.

If it is not possible to satisfy the constraint, just output **No** in one line.

Example

standard input	standard output
5	Yes
3 4 5	1 3 5 4
5 1 3 -1 -1	0 5 0 5
2 -1 5 -1 5	3 3 2 4
3 3 -1 -1 4	No
2 3 10	Yes
10000 5 0 -1	1 2 3
1 10 10 10	4 5 6
2 3 10	No
10 1 2 3	Yes
100 4 5 6	2024 5 26
2 3 10	11 45 14
100 1 2 3	
10 4 5 6	
2 3 10000	
100 -1 -1 -1	
1 -1 -1 -1	

Note

For the second sample test case, even if we fill the only -1 with the maximum possible value 10, the score of the first contest is still only 15, which is not larger than the score 30 of the second contest.