E - Max Matrix 2

Editorial (/contests/abc433/tasks/abc433_e/editorial)

Time Limit: 2 sec / Memory Limit: 1024 MiB

Score : 450 points

Problem Statement

You are given integers N, M, a sequence of N integers $X = (X_1, X_2, \ldots, X_N)$, and a sequence of M integers $Y = (Y_1, Y_2, \ldots, Y_M)$.

Determine whether there exists an N row by M column integer matrix $A = (A_{i,j})\ (1 \leq i \leq N,\ 1 \leq j \leq M)$ that satisfies all of the following conditions, and if so, find one such matrix.

- $1 \leq A_{i,j} \leq N \times M$
- All $N \times M$ elements of $A_{i,j}$ are distinct.
- $\max\limits_{1 \leq j \leq M} A_{i,j} = X_i$ for $i = 1, 2, \ldots, N$.
- $\max\limits_{1 \leq i \leq N} A_{i,j} = Y_j$ for $j = 1, 2, \ldots, M$.

You are given T test cases; solve each of them.

Constraints

- $1 \leq T \leq 10^5$
- $1 \leq N, M$
- The sum of $N \times M$ over all test cases is at most 2×10^5.
- $1 \leq X_i, Y_j \leq N \times M$
- All input values are integers.

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Input

The input is given from Standard Input in the following format:

$$
\begin{aligned}
&T \\
&\mathrm{case}_1 \\
&\mathrm{case}_2 \\
&\vdots \\
&\mathrm{case}_T
\end{aligned}
$$

Each test case is given in the following format:

$$
\begin{aligned}
&N \quad M \\
&X_1 \quad X_2 \quad \ldots \quad X_N \\
&Y_1 \quad Y_2 \quad \ldots \quad Y_M
\end{aligned}
$$

Output

Output the answers for the test cases in order, separated by newlines.

For each test case, if there is no A that satisfies all the conditions, output `No`.

Otherwise, output A that satisfies all the conditions in the following format:

`Yes`

$$
\begin{aligned}
&A_{1,1} \quad A_{1,2} \quad \ldots \quad A_{1,M} \\
&A_{2,1} \quad A_{2,2} \quad \ldots \quad A_{2,M} \\
&\vdots \\
&A_{N,1} \quad A_{N,2} \quad \ldots \quad A_{N,M}
\end{aligned}
$$

If there are multiple A that satisfy the conditions, any of them will be accepted.

Sample Input 1

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```
3
2 3
5 6
5 3 6
3 3
5 4 6
6 2 4
5 4
18 20 19 14 17
18 20 14 15
```

Sample Output 1 Copy

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```
Yes
5 1 4
2 3 6
No
Yes
18 12 4 9
13 20 1 10
16 19 6 8
2 5 14 3
11 17 7 15
```

Consider the first test case.

In the sample output, all elements of A are between 1 and 6 and are distinct, and furthermore,

- $\max\limits_{1\le j\le 3} A_{1,j} = \max\{5,1,4\} = 5 = X_1$
- $\max\limits_{1\le j\le 3} A_{2,j} = \max\{2,3,6\} = 6 = X_2$
- $\max\limits_{1\le i\le 2} A_{i,1} = \max\{5,2\} = 5 = Y_1$
- $\max\limits_{1\le i\le 2} A_{i,2} = \max\{1,3\} = 3 = Y_2$
- $\max\limits_{1\le i\le 2} A_{i,3} = \max\{4,6\} = 6 = Y_3$

so all conditions are satisfied.

Other outputs, such as the following, are also accepted.

```
Yes
5 3 1
4 2 6
```

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