

Problem F. Sum

Input file: *standard input*
Output file: *standard output*
Time limit: 3 seconds
Memory limit: 512 mebibytes

Given a rectangular array a of size $n \times m$ and a prime number p , find two rectangular arrays, b of size $K \times n$ and c of size $K \times m$, such that:

1. $0 \leq b_{i,j} < p$ ($\forall 1 \leq i \leq K, 1 \leq j \leq n$);
2. $0 \leq c_{i,j} < p$ ($\forall 1 \leq i \leq K, 1 \leq j \leq m$);
3. $\sum_{j=1}^n b_{i,j} \geq 1$ ($\forall 1 \leq i \leq K$);
4. $\sum_{j=1}^m c_{i,j} \geq 1$ ($\forall 1 \leq i \leq K$);
5. $\sum_{l=1}^K b_{l,i} \cdot c_{l,j} \equiv a_{i,j} \pmod{p}$ ($\forall 1 \leq i \leq n, 1 \leq j \leq m$).

Input

The first line of input contains four integers n, m, K, p ($1 \leq n \cdot m, K \cdot n, K \cdot m \leq 10^5$; $2 \leq p \leq 10^9 + 7$; p is prime).

The i -th of the following n lines contains m integers $a_{i,1}, a_{i,2}, \dots, a_{i,m}$ ($0 \leq a_{i,j} < p$).

Output

If there is no solution, output a line "No solution!".

Otherwise, output K lines, i -th of which contains $n + m$ integers $b_{i,1}, b_{i,2}, \dots, b_{i,n}, c_{i,1}, c_{i,2}, \dots, c_{i,m}$.

If there are several possible answers, print any one of them.

Examples

standard input	standard output
1 1 1 97 0	No solution!
3 3 1 97 1 2 3 2 4 6 3 6 9	1 2 3 1 2 3