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TEST
Programming Aptitude Test

TEST ENDS
2018-09-29 00:56:56 UTC

REMAINING
1 day, 7:50:05

Problem B

Binary tomography deals with the problem of reconstructing binary images from a small number of projections. One of its most basic problems is to construct a binary ($\{0,1\}$-valued) matrix with given row and column sums. This is not always possible and your task is to determine when it is.

Input

The first line of input contains two numbers $1 \leq m, n \leq 1000$, the number of rows and columns of the matrix. The next line contains m numbers $0 \leq r_i \leq n$ – the sum of each row in the matrix. The third line contains n numbers $0 \leq c_j \leq m$ – the sum of each column in the matrix.
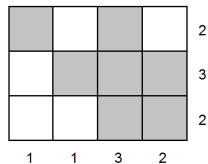
Output

Output "Yes" if there exists an m-by-n matrix $\mathbf{A}$, with each element either beeing 0 or 1, such that

$$\sum_{j=1}^{n} A_{i,j} = r_i \;\; \forall i \in \{1, 2, \ldots, m\} \text{ and } \sum_{i=1}^{m} A_{i,j} = c_j \;\; \forall j \in \{1, 2, \ldots, n\}.$$

Otherwise output "No".

Example

The figure below illustrates a matrix with the row and column sums of sample input 1.

Sample Input 1

```
3 4
2 3 2
1 1 3 2
```

Sample Output 1

```
Yes
```

Sample Input 2

```
3 3
0 0 3
0 0 3
```

Sample Output 2

```
No
```