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Shortest Path in a Dense Graph

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Shortest Path in a Dense Graph

2.0/2.0 points (graded)

Input file:	dense.in
Output file:	dense.out
Time limit:	2 seconds
Memory limit:	256 megabytes

You are given an oriented weighted graph. Find a shortest path between one given vertex to another one.

Input

The first line of the input file contains three integer numbers N , S and F ($1 \leq N \leq 2000$, $1 \leq S, F \leq N$), where N is the number of graph vertices, S is the initial vertex, F is the final vertex.

The following N lines contain N numbers each. These N lines define the adjacency matrix of the given graph. If the j -th number in the i -th of these lines is -1 , this means that there is no edge from vertex i to vertex j . Any non-negative number A_{ij} in this position means that there is an edge from vertex i to vertex j with weight A_{ij} .

Weights of all edges do not exceed 10^9 . All elements on the main diagonal, that is, A_{ii} , are always zeros.

Output

Print the shortest distance between S and F , or -1 if the path from S to F does not exist.

Example

dense.in	dense.out
3 1 2 0 -1 2	6

3 0 -1	
-1 4 0	

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