Primes Square

Problem description

Can you arrange the numbers $1, \ldots, n^2$ in a $n \times n$-matrix such that the column and row sums are prime numbers?

Input

A number $n \leq 5$ followed by an $n \times n$-matrix of numbers in the range $\{0, 1, \ldots, n^2\}$.

Output

A $n \times n$-matrix containing exactly the numbers $\{1, \ldots, n^2\}$. It has to coincide with the input at every position that does not contain a zero and the row sums and column sums have to be prime numbers.

Sample input/output

Input	Output
4 5 0 0 15 0 0 0 7 0 0 0 0 9 0 8 0	5 11 12 15 16 6 14 7 1 2 13 3 9 10 8 4