Big Matrix Small Determinant

Time limit: *2000 ms*
Memory limit: *256 MB*

Construct a square matrix with N rows and N columns consisting of nonnegative integers from 0 to 10^{18}, such that its determinant is equal to 1, and there are exactly A_i odd numbers in the i-th row for each i from 1 to N, or report there isn't such a matrix.

Standard input

The first line contains a single integer N. Each of the next N lines contains a single integer A_i.

Standard output

If there is no solution, output -1.

Otherwise, print N lines, each consisting of N integers, representing the values of the constructed matrix. If there are multiple solutions, print any.

Constraints and notes

- $2 \leq N \leq 50$
- $1 \leq A_i \leq N$
- For 40% of the test files, $N \leq 17$.

Input	Output
2 1 1	1 0 0 1
2 2 1	1 1 0 1
4 3 3 3 3	1 1 1 0 1 1 2 1 1 0 1 1 2 1 3 3
3 2 2 2	-1
3 3 1 3	-1