Problem G
Matrix

Input: Standard Input
Output: Standard Output
Time Limit: 2 Seconds

[Preliminaries]
(He who has already studied linear algebra may skip this part)
A matrix is composed of n*n elements. Formally,

$$A = \begin{bmatrix} a_{11} & a_{12} & \cdots & a_{1n} \\ a_{21} & a_{22} & \cdots & a_{2n} \\ \vdots & & & \vdots \\ a_{n1} & a_{n2} & \cdots & a_{nn} \end{bmatrix}$$ is an n*n matrix.

for example, $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ is a 2*2 matrix.

Two operations on matrices will be used in this problem:
1. A + k (A is an n*n matrix, k is an integer)
all the elements in the MAIN diagonal is added by k. that is

$$A + k = \begin{bmatrix} a_{11} & a_{12} & \cdots & a_{1n} \\ a_{21} & a_{22} & \cdots & a_{2n} \\ \vdots & & & \vdots \\ a_{n1} & a_{n2} & \cdots & a_{nn} \end{bmatrix} = \begin{bmatrix} a_{11}+k & a_{12} & \cdots & a_{1n} \\ a_{21} & a_{22}+k & \cdots & a_{2n} \\ \vdots & & & \vdots \\ a_{n1} & a_{n2} & \cdots & a_{nn}+k \end{bmatrix}$$

For example,
$\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} + 5 = \begin{bmatrix} 6 & 2 \\ 3 & 9 \end{bmatrix}$. A-k is defined A+(-k), so $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} - 5 = \begin{bmatrix} -4 & 2 \\ 3 & -1 \end{bmatrix}$

2. A*B(both A and B are n*n matrices)

let $A = \begin{bmatrix} a_{11} & a_{12} & \cdots & a_{1n} \\ a_{21} & a_{22} & \cdots & a_{2n} \\ \vdots & & & \vdots \\ a_{n1} & a_{n2} & \cdots & a_{nn} \end{bmatrix}$, $B = \begin{bmatrix} b_{11} & b_{12} & \cdots & b_{1n} \\ b_{21} & b_{22} & \cdots & b_{2n} \\ \vdots & & & \vdots \\ b_{n1} & b_{n2} & \cdots & b_{nn} \end{bmatrix}$,

and $C = A \times B = \begin{bmatrix} c_{11} & c_{12} & \cdots & c_{1n} \\ c_{21} & c_{22} & \cdots & c_{2n} \\ \vdots & & & \vdots \\ c_{n1} & c_{n2} & \cdots & c_{nn} \end{bmatrix}$,

then we have:

$$c_{ij} = \sum_{k=1}^{n} a_{ik} b_{kj} = a_{i1} b_{1j} + a_{i2} b_{2j} + \cdots + a_{in} b_{nj}$$

For example,

$$\begin{bmatrix}1 & 2\\3 & 4\end{bmatrix}\times\begin{bmatrix}5 & 6\\7 & 8\end{bmatrix}=\begin{bmatrix}5+14 & 6+16\\15+28 & 18+32\end{bmatrix}=\begin{bmatrix}19 & 22\\43 & 50\end{bmatrix}$$

Well, I have no time to explain why matrix multiplication is defined like this. Please just remember it.

[Problem]
Find a matrix root of this equation:
$(A + k_1)(A+k_2)(A+k_3)...(A+k_m) = O$ where $k_1,k_2...k_m$ are distinct integers.
That is, EVERY ELEMENT OF the matrix computed from the left is zero.
for example,

$A=\begin{bmatrix}1 & 4\\2 & 3\end{bmatrix}$ is a matrix root of the equation(A+1)(A-5) = O, since

$$(A+1)(A-5)=\begin{bmatrix}2 & 4\\2 & 4\end{bmatrix}\times\begin{bmatrix}-4 & 4\\2 & -2\end{bmatrix}=\begin{bmatrix}-8+8 & 8-8\\-8+8 & 8-8\end{bmatrix}=\begin{bmatrix}0 & 0\\0 & 0\end{bmatrix}$$

It can be proven that there are infinitely many solutions, however, I do not like trivial answer, so your answer must have at least (n*n)/2 non-zero elements.

Input

The first line contains the number of tests t(1<=t<=15). Each case contains two lines. The first line contains an integer m(1<=m<=30). The second line contains m integeres, representing $k_1,k_2...k_m$ respectively. Absolute values of the integers are no greater than 100.

Output

For each test case, if no answer can be found, print -1. otherwise print n, indicating that you found an n*n matrix root. the following n lines should be the matrix. It is guaranteed that if there is an answer, the smallest possible n is not greater than 50, so your n should also NOT be greater than 50. The absolute value of integers you gave should not be larger than 1000.

Sample Input	Output for Sample Input
2 2 1 -5 2 1 -5	2 1 4 2 3 2 1 4 2 3

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