D. Tournament Construction

time limit per test: 2 seconds
memory limit per test: 512 megabytes
input: standard input
output: standard output

Ivan is reading a book about tournaments. He knows that a tournament is an oriented graph with exactly one oriented edge between each pair of vertices. The score of a vertex is the number of edges going outside this vertex.

Yesterday Ivan learned Landau's criterion: there is tournament with scores $d_1 \le d_2 \le ... \le d_n$ if and only if for all $1 \le k < n$ and .

Now, Ivan wanna solve following problem: given a **set** of numbers $S = \{a_1, a_2, ..., a_m\}$, is there a tournament with given set of scores? I.e. is there tournament with sequence of scores $d_1, d_2, ..., d_n$ such that if we remove duplicates in scores, we obtain the required set $\{a_1, a_2, ..., a_m\}$?

Find a tournament with **minimum** possible number of vertices.

Input

The first line contains a single integer m $(1 \le m \le 31)$.

The next line contains m distinct integers $a_1, a_2, ..., a_m$ $(0 \le a_i \le 30)$ — elements of the set S. It is guaranteed that all elements of the set are distinct.

Output

If there are no such tournaments, print string "= (" (without quotes).

Otherwise, print an integer n — the number of vertices in the tournament.

Then print n lines with n characters — matrix of the tournament. The j-th element in the i-th row should be 1 if the edge between the i-th and the j-th vertices is oriented towards the j-th vertex, and 0 otherwise. The main diagonal should contain only zeros.

Examples

input
2 1 2

output
4 0011 1001 0100 0010

input
2 0 3

output
6 000111 100011 110001 011001 001101 000000