B. Little Pony and Harmony Chest

Princess Twilight went to Celestia and Luna's old castle to research the chest from the Elements of Harmony.

A sequence of positive integers b_i is harmony if and only if for every two elements of the sequence their greatest common divisor equals 1. According to an ancient book, the key of the chest is a harmony sequence b_i which minimizes the following expression:

You are given sequence a_i, help Princess Twilight to find the key.

Input
The first line contains an integer n ($1 \le n \le 100$) — the number of elements of the sequences a and b. The next line contains n integers $a_1, a_2, ..., a_n$ ($1 \le a_i \le 30$).

Output
Output the key — sequence b_i that minimizes the sum described above. If there are multiple optimal sequences, you can output any of them.

Examples

input
5
1 1 1 1 1

output
1 1 1 1 1

input
5
1 6 4 2 8

output
1 5 3 1 8