Problem F. A Simple Construction Problem

For a positive integer n, a sequence of length n is called a "red-brick sequence" if it satisfies the following conditions:

- Each of $1, 2, \ldots, n$ appears exactly once in the sequence.
- The sum of every pair of adjacent elements is not a perfect square.

Given an integer n, construct a red-brick sequence of length n.

Input

The first line contains an integer T ($1 \le T \le 10^4$), the number of test cases.

For each test case, the only line contains an integer n ($1 \le n \le 4 \times 10^6$), the required length of the red-brick sequence.

It is guaranteed that the sum of n does not exceed 4×10^6. It can be proved that a solution always exists under the given constraints.

Output

Output T lines, each containing the sequence to be constructed. If there are multiple answers, output any of them.

Example

standard input	standard output
5 1 2 3 4 5	1 1 2 1 2 3 1 2 3 4 1 4 2 3 5

Note

For $n = 5$, if the output sequence is `1 2 3 4 5`, it is a wrong answer because $4 + 5 = 9$ is a perfect square.