

Be Positive

Input file: **standard input**
Output file: **standard output**
Time limit: 2 seconds
Memory limit: 1024 megabytes

Find the lexicographically smallest permutation $p_0, p_1, p_2, \dots, p_{n-1}$ of $0, 1, 2, \dots, (n - 1)$ satisfying the following constraint: For all $0 \leq i < n$, $p_0 \oplus p_1 \oplus \dots \oplus p_i > 0$. Here \oplus is the bitwise exclusive or operation.

We say an integer sequence p_0, p_1, \dots, p_{n-1} of length n is lexicographically smaller than another integer sequence q_0, q_1, \dots, q_{n-1} of length n , if there exists an integer $0 \leq k < n$ such that $p_i = q_i$ for all $0 \leq i < k$ and $p_k < q_k$.

Input

There are multiple test cases. The first line of the input contains an integer T indicating the number of test cases. For each test case:

The first and only line contains an integer n ($1 \leq n \leq 10^6$).

It's guaranteed that the sum of n of all test cases does not exceed 10^6 .

Output

For each test case output one line containing n integers separated by a space, indicating the lexicographically smallest permutation satisfying the constraint. If there is no such permutation, output `impossible` instead.

Example

standard input	standard output
4	impossible
1	1 0
2	1 0 2
3	impossible
4	