Problem J. Junk Problem

Input file:	*standard input*
Output file:	*standard output*
Time limit:	1 second
Memory limit:	512 mebibytes

Browsing Wikipedia and reading some random references are the best way to write problems.

Find a subset $S \in \{1, 2, \ldots, n\}$ such that:

- For all pairs (a, b) such that $a, b \in S$ and $a < b$, the values of bitwise XOR of a and b should be distinct.
- $|S| \geq \lfloor \sqrt{0.5n} \rfloor$.

Input

The first line contains an integer n ($1 \leq n \leq 10^7$).

Output

The first line contains an integer m: the size of S.

The second line contains m distinct integers from 1 to n: the elements of the set S in any order.

Example

standard input	standard output
49	4 1 2 3 4