Hard Learning

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	512 megabytes

Young Nick has a literature lesson tomorrow. His homework is to learn a poem by heart. Nick is a well known procrastinator, so he is going to start learning the poem just before the lesson, as late as possible.

The poem consists of n stanzas. It takes exactly one minute to learn any stanza by heart and exactly one minute to declaim it afterwards. As you may know, the more times you learn a stanza, the longer you remember it. Nick knows that if he learns some stanza for the k-th time (not necessary in a row) then he will be able to declaim it during next k^2 minutes. For example, if he learns a stanza for the first time, he must declaim it immediately. If he learns it once again later, he will have three minutes to start declaiming before he forgets it. After next learning he will have eight minutes, and so on. It does not matter what happens between successive attempts to learn a stanza, only their number matters.

Nick knows that he will start declaiming the poem as soon as the lesson starts. He must declaim all n stanzas one by one. How much time before the lesson does Nick need to learn all stanzas and declaim the poem successfully?

Input

A single integer n ($1 \le n \le 10\,000$): the number of stanzas in the poem.

Output

In the first line print an integer k: the minimum number of minutes required to learn the whole poem to be able to declaim it. In the next line print k integers from 1 to n: the order in which Nick should learn stanzas to be able to declaim it from 1-st to n-th.

Examples

standard input	standard output
1	1 1
4	8 1 2 3 4 1 2 3 4