# Function with Many Maximums

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

For a positive integer $a > 0$, let us define the function $f_a : \mathbb{Z}_{\geq 0} \to \mathbb{Z}$:

$$f_a(x) = \begin{cases} a + x, \text{ if } x \leq a \\ 0, \text{ otherwise} \end{cases}$$

You are given a positive integer $b$. Construct the non-empty set of distinct integers $a_1, a_2, \ldots, a_n$, such that the function $f(x) = \sum_{i=1}^{n} f_{a_i}(x)$ has at least $b$ points with the maximum function value. Formally:

$$\left| \left\{ x \in \mathbb{Z}_{\geq 0} : f(x) = \left( \max_{y \in \mathbb{Z}_{\geq 0}} f(y) \right) \right\} \right| \geq b$$

## Input

The only line contains a single integer $b$ ($1 \leq b \leq 100\,000$).

## Output

On the first line, print a single integer $n$ ($1 \leq n \leq 500\,000$) — the size of the array $a$.

On the next line, print $n$ distinct integers $a_1, a_2, \ldots, a_n$ ($1 \leq a_i \leq 10^{12}$).

It is guaranteed that under given constraints the answer exists.

If there are multiple answers, you can print any.

## Example

| standard input | standard output |
|---|---|
| 4 | 5<br>2 3 5 10 12 |

## Note

In the first test, $f(x) = f_2(x) + f_3(x) + f_5(x) + f_{10}(x) + f_{12}(x)$. Maximum value is $\max_{y \in \mathbb{Z}_{\geq 0}} f(y) = 42$. We have 4 points with maximum value $f(2) = f(3) = f(5) = f(10) = 42$.