

4076 Length Test System

A length test system (LTS) was invented by Little_Y. The system contains N rods with positive integral length. Let's record the length of these rods as L_1, L_2, \dots, L_N ($L_1 < L_2 < \dots < L_N$).

The system can figure out the length of LX if and only if at least one of the following conditions below is satisfied:

1. LX equals to $L_q - L_p$ ($0 < p < q < N + 1$)
2. LX equals to $L_p + L_N - L_q$ ($0 < p < q < N$)
3. LX equals to L_p ($0 < p < N + 1$)

In order to measure the quality of a LTS, we have to introduce the capacity of this system. The capacity C of a LTS is a maximum integer while all length from 1 to C can be figured out in this system.

Usually, a consumer requires Little_Y to produce a system with the capacity no less than an expected C . In order to save rods, Little_Y wants to use minimum number of rods to satisfy his consumer.

Input

The input contains multiple test cases. Each test case contains one line with a single integer C ($0 < C \leq 90$) which is the expected capacity.

Output

For each test case, output two lines. The first line contains a single integer N which is the number of rods to be used in the system. The second line contains N integers in increasing order which stand for the length of the rods. Two adjacent numbers are separated by a space. If there're several solutions, output any of them.

Explanation of the sample case

```
1 = 1
2 = 3 - 1
3 = 3
4 = 7 - 3
5 = 1 + 7 - 3
6 = 7 - 1
7 = 7
```

Sample Input

```
7
```

Sample Output

```
3
1 3 7
```