

# Challenge to the Reader

Input file:            **standard input**  
Output file:           **standard output**  
Time limit:            1 second  
Memory limit:         256 megabytes

A mathematician from ancient times left behind a riddle for future generations. Carved into stone lies a challenge about numbers and operations : Any number can be represented using a sequence of + and - signs applied to the numbers 1, 2, 3, ...

You, a bright and curious mind from the future, decide to take up this challenge and makes it even more challenging.

Given an integer  $X$ , your task is to express it in the form  $1 \pm 2 \pm 3 \pm 4 \pm \dots \pm N$  so that the result equals  $X$  and  $N$  is the smallest number.

## Input

The first line contains a single integer  $t$  ( $1 \leq t \leq 1000$ ) — the number of test cases.

Each testcase contains a single line of one integer  $X$  ( $|X| \leq 2 \cdot 10^5$  )

It is guaranteed that the sum  $|X|$  over all test cases does not exceed  $2 \cdot 10^5$ .

## Output

For each testcase:

First, print a line with an integer  $N$ .

Then print **one valid expression** in the format  $1 + 2 - 3 + 4 - 5 \dots N$ . No spaces are allowed, and the sequence must include all numbers from 1 to  $N$ .

If there are many expressions, output any of them.

## Example

standard input	standard output
5	3
0	1+2-3
-2	4
1	1-2+3-4
4	1
-6	1
	4
	1+2-3+4
	7
	1+2+3-4+5-6-7