

Bitwise Puzzle

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

Yuki gives you three non-negative integers a , b , and c . You can perform the following operations up to $k = 64$ times:

1. $a \leftarrow a \cdot 2$;
2. $b \leftarrow \lfloor \frac{b}{2} \rfloor$;
3. $a \leftarrow a \oplus b$, where \oplus denotes the bitwise XOR;
4. $b \leftarrow b \oplus a$.

Please make $a = b = c$ within no more than k operations, or report that there is no valid solution. It can be proven that under the constraints of the problem, there will be a valid solution that does not exceed $k = 64$ operations if a valid solution exists.

Input

Each test contains multiple test cases. The first line of input contains a single integer t ($1 \leq t \leq 10^4$) — the number of test cases. The description of the test cases follows.

The first and only line of input of each test case contains three integers a , b , and c ($0 \leq a, b, c < 2^{31}$).

Output

For each test case:

- If there is no valid solution, output a single line containing an integer -1 ;
- Otherwise, output two lines. The first line contains an integer p ($0 \leq p \leq k$), describing the number of operations you performed; the second line contains p integers, each in the range $[1, 4]$, indicating the sequence of the indices of the operations you performed.

Example

standard input	standard output
4	2
3 5 6	4 1
0 0 1	-1
7 7 7	0
2 9 4	2
	1 2

Note

In the first test case, initially $a = 3$, $b = 5$, $c = 6$. After the first operation, $a = 3$, $b = 6$, $c = 6$; after the second operation, $a = b = c = 6$, which meets the requirement.

In the second test case, regardless of how the operations are performed, $a = b = 0$, which cannot satisfy $a = b = c$.