Mitko hadn‘t been paying attention in Math class again so he found out they had homework when the teacher got up to check for it.

The teacher had given them two arrays of n numbers : a1 , a2 , … , an and b1 ,b2 , … , bn . He had also given them 3 types of operations:

* 1 ind num : this operation changes the arrays like this  
   aind = aind AND num , bind = bind AND num (AND is Bitwise And).
* 2 ind num : this operation changes the arrays like this  
  aind = aind OR num , bind = bind OR num (OR is Bitwise Or).
* 3 ind num : this operation changes the arrays like this  
  aind = aind XOR num , bind = bind XOR num (XOR is Bitwise Exclusive or).

The goal of the homework is to find a sequence of operations after which a1 AND a2 AND … AND an = b1 AND b2 AND … AND bn ;   
a1 OR a2 OR … OR an = b1 OR b2 OR … OR bn ; a1 XOR a2 XOR … XOR an = b1 XOR b2 XOR … XOR bn .

The problem is Mitko sits halfway from the teacher and only has enough time to write 20 operations before the teacher reaches him. That’s why he asks you to write a program **homework.cpp** , which finds up to 20 operations solving the task.

**Input**

The first line of the file **homework.in** contains n – the amount of numbers in the array. The next line contains n numbers: a1 , … , an : the first array. The last line contains n numbers: b1 , … , bn : the second array.

**Output**

On the first line of the file **homework.out** print the number k: the amount of operations. Each of the next k lines must contain 3 numbers : type ind num , describing what operation should be performed. The output must follow the **Output constraints**.

**Input constraints**

**Output constraints**

**Time Limit: 0.25 sec.**

**Memory Limit: 256 MB**

**Sample Test**

|  |  |  |
| --- | --- | --- |
| **Input (homework.in)** | **Output (homework.out)** | **Explanation** |
| 5  2 3 0 2 4  4 2 3 0 1 | 2  1 1 0  2 5 5 | After the first operation the arrays will be:  0 3 0 2 4  0 2 3 0 1  After the second operation the arrays will be:  0 3 0 2 5  0 2 3 0 5  It can be calculated that AND, OR and XOR values are equal for both arrays.  This is not the only possible solution. |