



## Problem Choose Interval

Input file        `stdin`  
Output file      `stdout`

You are given an *infinite* array of zeros with positions indexed by the integers and  $N$  intervals of positions of the form  $[A, B]$ . For every given interval, you have to use one of the following two operations to execute on the array:

**Normal.** Add 1 to all positions in the array from  $A$  to  $B$ .

**Flipped.** Add 1 to all positions in the array *except* those from  $A$  to  $B$ .

You want to choose a type of operation to execute for each interval so that the maximum value stored in the array after applying all operations is minimized.

### Input data

The first line of the input contains the number of intervals  $N$ . The next  $N$  lines each contain two space-separated integers,  $A$  and  $B$ , representing the endpoints of an interval.

### Output data

The first line of the output should contain the maximum value in the array after executing the  $N$  operations optimally.

The second line should contain a binary string of length  $N$ , with the  $i$ th character being 0 if the  $i$ th used operation was flipped and 1 if it was normal.

If there are multiple ways of choosing the operations optimally, any valid solution is accepted.

### Restrictions

- $1 \leq N \leq 200\,000$
- $1 \leq A \leq B \leq 2N$

#	Points	Restrictions
1	7	$N \leq 20$
2	24	$N \leq 150$
3	21	$N \leq 1\,000$
4	34	$N \leq 50\,000$
5	14	No further restrictions.

### Examples

Input file	Output file	Explanations
5 10 10 6 6 1 7 2 5 2 7	2 11110	Another valid answer would be: 2 11011