

## 2. Lottery (loto)

1 sec / 3 sec

40 points

Juku's grandfather is an eager lottery player and considers himself a successful one, too. Juku is not so sure about the latter part and has been keeping notes on how much his grandfather spends on tickets and how much he collects in winnings.

Write a program to compute three kinds of statistics on grandfather's playing:

- whether he has in total won more or less than he has spent on the tickets;
- when he lost the most money in a single day;
- when he lost the most money over a period of consecutive days.

**Input.** The first line contains  $N$  ( $1 \leq N \leq 50\,000$ ), the number of days Juku has notes for. Each of the following  $N$  lines contains two space-separated integers: the amount  $P_i$  ( $0 \leq P_i \leq 100$ ) that grandfather spent on tickets and the amount  $V_i$  ( $0 \leq V_i \leq 1\,000\,000$ ) that he won on day  $i$  ( $1 \leq i \leq N$ ).

**Output.** The output should consist of exactly three lines, one answer per line.

The first line should contain the word `PLUSSIS`, `MIINUSES`, or `NULLIS` indicating that grandfather's total winnings are, respectively, larger than, smaller than, or equal to, the total amount he has spent on tickets. If your program can't find this answer, output `EI TEA` on the first line.

The second line should contain two space-separated integers  $P$  and  $S$ , where  $P$  is the number of the day when grandfather lost the most money in a single day and  $S$  is the amount he lost that day (the difference between the amount he spent on tickets and the amount he won). It is known that he has lost money on at least one of the days. If there are several days with the maximal amount lost, output any one of them. If your program can't find this answer, output `0 0` on the second line.

The third line should contain three space-separated integers  $P_1$ ,  $P_2$ , and  $S$ , indicating that the most costly period lasted from day  $P_1$  to day  $P_2$  and over that period grandfather's total expenses on tickets exceeded his total winnings by  $S$ . If there are several periods with the maximal amount lost, output any one of them. If your program can't find this answer, output `0 0 0` on the third line.

<b>Example.</b>	Input	Output
	5	PLUSSIS
	1 9	2 9
	9 0	2 4 15
	3 5	
	8 0	
	1 9	

Over the five days, grandfather has spent a total of 22 € on tickets and collected a total of 23 € in winnings, and thus has just barely made a profit.

The most he has lost in a single day is 9 €. This happened on day 2, when he spent 9 € and did not win anything.

From day 2 to day 4, he spent a total of 20 € on tickets and collected a total of just 5 € in winnings, thus losing 15 € overall. There is no period of consecutive days where he would have lost more.

**Grading.** In each test case, the answers to the two first questions are worth 20% each and the answer to the third question is worth 60% of the points. In test cases worth 10 points in

total,  $N \leq 100$ . In test cases worth the next 15 points,  $N \leq 5\,000$ . In test cases worth the last 15 points, there are no additional constraints.