Problem J. Smallest on the Stack

Time limit	1000 ms
Mem limit	1572864 kB
Code length Limit	50000 B
OS	Linux

Every Christmas the good old man can go to every house in the world and leave gifts for the children who have been good throughout the year, but this is only possible because of his magic gift bag. It would be impossible for Santa to carry all the presents in his bag, the volume and weight of them all makes this obviously unfeasible. What actually happens is that your bag is a kind of magical portal to your gift factory at the North Pole. Where the presents are stacked by their elves and Noel always takes the gift from the top of that pile when he accesses his magical bag.

Gifts have a numerical measure of the degree of fun they can provide children, and Santa is always concerned with the least fun gift he will deliver throughout the night because he does not want any child to feel bad about it. you receive. However, this can not be done in advance because throughout the night as the good old man takes gifts from the pile to deliver, others are still being made and placed on the pile. So the most he can know is the value of the least fun present on the stack up to that point.

Your task is, given the sequence of operations done on the stack of gifts, answer Santa's queries about the value of the least entertaining gift on the stack thus far.

Input

The first line of the input contains an integer N ($1 \leq N \leq 10^6$) corresponding to the number of operations performed on the present stack. The operations can be of three types: "*PUSH* V" where V ($1 \leq V \leq 10^9$) is an integer representing the degree of fun of the present being placed on the stack; "*POP*" which represents that Santa Claus is taking a gift from the cell to deliver and "*MIN*" representing a Noel query to know the smallest gift value in the stack.

Output

The output consists of a line containing an integer with the smallest present value in the stack for queries of type "MIN" or "EMPTY" for "MIN" and "POP" operations when the stack is empty.

Example

Input:

11

PUSH 5

PUSH 7

PUSH 3

PUSH 8

PUSH 10

MIN

POP

POP

MIN

POP

MIN

Output:

3

3

5

Example

Input:

9

PUSH 100

PUSH 50

MIN

PUSH 45

MIN

POP

MIN

POP

MIN

Output:

50

45

50

100