

**Task «Sum»**

Implement a data structure that stores a set  $S$  of integers that is allowed to perform the following operations:

- $\text{add}(i)$  – add the number  $i$  to the set  $S$  (if it is already there, then the set does not change);
- $\text{sum}(l, r)$  – print the sum of all elements  $x$  from  $S$  that satisfy the inequality  $l \leq x \leq r$ .

The set  $S$  is initially empty.

**Input format**

The first line of the input contains an integer  $n$  – the number of operations ( $1 \leq n \leq 300'000$ ).

The next  $n$  lines contain descriptions of operations. Each operation is either  $\text{«}+ i\text{»}$  or  $\text{«}? l r\text{»}$ .

Operation  $\text{«}? l r\text{»}$  specifies the query  $\text{sum}(l, r)$ .

If the  $\text{«}+ i\text{»}$  operation is the first of all operations, or comes immediately after another  $\text{«}+ \text{»}$  operation, then it specifies an  $\text{add}(i)$  operation.

If it comes immediately after the query  $\text{«}? \text{»}$ , and the result of this query was  $y$ , then the operation is performed  $\text{add}((i + y) \bmod 10^9)$ .

In all queries and adding operations, the parameters are in the range from 0 to  $10^9$ .

**Output format**

For each query print one number – the answer to the query.

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**Sample input:**

```
6
+ 1
+ 3
+ 3
? 2 4
+ 1
? 2 4
```

**Sample output:**

```
3
7
```