
Sum insertion

P83997_en

Setzè Concurs de Programació de la UPC - Final (2018-09-19)

Please implement an efficient data structure to support just one operation. Let x_1, \dots, x_n be the current elements (natural numbers) in the data structure, all different and in increasing order. Given three parameters $y, i,$ and $j,$ you must insert $z = (y + \sum_{i \leq k \leq j} x_k) \bmod 10^9$ into your data structure. Assume that you start with just one element, with value 0.

Input

Input begins consists of several cases. Each case starts with the number of insertions $m.$ Follow m triples $y i j.$ Assume $1 \leq m \leq 10^5, 0 \leq y < 10^9,$ and $1 \leq i \leq j \leq n.$ The end of input is indicated with a special case with $m = 0.$

Output

For every operation, if z is a new value, insert z and print **I** $z.$ Otherwise, do not insert z and print **R** $z.$ Print a line with 10 dashes at the end of each case.

Sample input

```
4
5 1 1
3 1 1
2 1 2
3 2 3

5
0 1 1
999999999 1 1
1 2 2
999999999 1 2
999999999 1 3

0
```

Sample output

```
I 5
I 3
R 5
I 11
-----
R 0
I 999999999
R 0
I 999999998
I 999999996
-----
```

Problem information

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