Fenwick Tree

Problem ID: fenwick
CPU Time limit: 4 seconds
Memory limit: 1024 MB
Difficulty: 4.3

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A Fenwick Tree (also known as a Binary Indexed Tree) is a data structure on an array which enables fast ($O(\log n)$) updates and prefix sum queries on the underlying data.

For this problem, implement a Fenwick Tree to support operations of two types: (a) increment an element in the array or (b) query the prefix sum of a portion of the array.

Input

The first line of input contains two integers N, Q, where $1 \le N \le 5\,000\,000$ is the length of the array and $0 \le Q \le 5\,000\,000$ is the number of operations. Then follow Q lines giving the operations. There are two types of operations:

- "`+ i δ`" indicates that $a[i]$ is incremented by δ, where $0 \le i < N$ and $-10^9 \le \delta \le 10^9$ (both are integers)
- "`? i`" is a query for the value of $a[0] + a[1] + \ldots + a[i-1]$, where $0 \le i \le N$ (for $i = 0$ this is interpreted as an empty sum)

You should assume that every array entry is initially 0.

Output

For each query in the input, output one line giving the answer to that query.

Sample Input 1

```
10 4
+ 7 23
? 8
+ 3 17
? 8
```

Sample Output 1

```
23
40
```

Sample Input 2

```
5 4
+ 0 -43
+ 4 1
? 0
? 5
```

Sample Output 2

```
0
-42
```