Mock CCC '18 Contest 3 S5 - A Segment Tree Problem

Richard has quit competitive programming and has opened an ice cream stand. Help him run his stand! Here are the operations to support:

`ADD K P` - Richard is now willing to sell K more ice cream cones, each at P dollars.

`ADDRANGE A B` - Richard is now willing to sell one more ice cream cone for each price P between A and B, inclusive.

`BUYAMT Q` - Nick has Q dollars, and buys the maximum number of cones he can, starting from cheapest to most expensive. Report how many cones Nick buys.

`BUYLOW L` - Nick buys the L cheapest cones Richard is selling, or all of them if Richard is selling fewer than L of them. Report the total cost of the cones bought.

`BUYHIGH L` - Nick buys the L most expensive cones Richard is selling, or all of them if Richard is selling fewer than L of them. Report the total cost of the cones bought.

`COST L` - Report the cost of the Lth cheapest cone. If there are fewer than L cones, return `-1`.

`NUMCONES` - Report how many cones Richard is currently selling.

`TOTALCOST` - Report the total cost of every cone that Richard is currently selling.

Constraints

For 2 marks, $N \leq 100$.

For 3 additional marks, there will be no `BUYLOW`, `BUYHIGH`, or `COST` operations.

For 4 additional marks, there will be no `COST` operations.

Input Specification

The first line contains a single positive integer N, the number of operations to support. N will be at most $3 \cdot 10^5$.

Each of the next N lines will contain information for one of the operations, as shown above.

As written above, $0 < K, P \leq 2 \cdot 10^6$, $0 < A \leq B \leq 2 \cdot 10^6$, $0 < L \leq 10^{12}$, and $0 < Q \leq 10^{18}$.

Output Specification

For every operation that demands reporting a value, print out the desired value.

Sample Input

```
8
ADD 5 4
ADDRANGE 1 7
BUYAMT 3
BUYLOW 2
BUYHIGH 2
COST 1
NUMCONES
TOTALCOST
```

Sample Output

```
2
7
13
4
6
25
```