Problem A - Apple Practice I

To thank all the people at ACM practice for their help, Daniel brought an excessive number of baskets of apples to practice to give everyone. Daniel's apple are placed in a row of n baskets, all labeled from 1 to n, all in a line.

As the new ACM coach, Lucca naturually get's his first choice of basket. Lucca doesn't want other's to think that he's abusing his newfound power as coach, so he's going to choose one of the smallest basket of apples. But Lucca doesn't really want to get the fewest number of apples, so he's going to choose the basket with the fewest elements in a range $[x, y]$ of his choice.

David, who knows Lucca's plan, decided to monkey around with the number of apples in the baskets. Help Lucca, adjust his plan according to the antics of David.

Input

The first line contains a single integer T denoting the number of test cases.

Each test case begins with a single line containing two integers n ($1 \leq n \leq 200,000$) denoting the number of baskets of apples and q ($1 \leq q \leq 200,000$) denoting the number of events. All baskets start with $10,000$ apples in them.

Each of the following q lines begins with a single capital letter followed by two integers specifying the following things that could happen:

- D x d $(1 \leq x \leq y \leq n)(1 \leq d \leq 10^9)$ indicates that David has stolen d apples from basket x. It is guarenteed that there are at least d apples in basket x before David takes them.
- H x h $(1 \leq x \leq y \leq n)(1 \leq h \leq 10^9)$ indicates that David has put h apples into basket x.
- Q x y $(1 \leq x \leq y \leq n)$ indicates that Lucca wants to know how many apples are in the basket with the fewest apples among the baskets labeled from x to y inclusive $(1 \leq x \leq y \leq n)$.

Output

Output for every query Q x y the number of apples in the basket with the minimum number of apples in the range $[x, y]$.

Sample Input

```
2
10 12
Q 1 5
D 3 5
D 5 10000
H 5 22
Q 5 8
D 6 10
D 8 11
H 10 2
Q 6 10
H 5 1000000
Q 4 6
Q 10 10
1 5
Q 1 1
D 1 10000
Q 1 1
H 1 100
Q 1 1
```

Sample Output

```
10000
22
9989
9990
10002
10000
0
100
```