

Accountant

FIC

John Smyth is an accountant in Future Investment Company (FIC). FIC controls millions of start-ups worldwide.

Let's check start-ups

John got the task to check if financial report summarizing incomes of all start-ups is correct. He has to check each line of the report and say if this is consistent with previous entries. If particular line is not consistent with previous entries, John needs to cross out the line, print its number and not include further in the analysis.

How much time do we have?

John has seen that number of lines in the financial report can be even 10^6 . So if he wants to compare each line with all previous ones he would have to perform over 10^{11} . Even if he performs each comparison every second he would finish after 3 200 years. He does have so much time... Can you help?

Input

The first line contains 1 value

$$1 \leq n \leq 10^6$$

meaning number of lines in the report

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In the next n line there is one of 2 types of financial records:

Record of type: v

$$v \ s \ i$$

meaning that start-up s has the income i . We know that

$$1 \leq s \leq 10^6 \quad (\text{start-up id})$$

$$-10^{12} \leq i \leq 10^{12} \quad (\text{income of the start-up – can be negative unfortunately})$$

Record of type: d

$$d \ s1 \ s2 \ i$$

meaning that start-up $s1$ has bigger income than start-up $s2$ and difference is i . We know that

$$1 \leq s1, s2 \leq 10^6 \quad (\text{start-up id})$$

$$1 \leq i \leq 10^{12} \quad (\text{value of } s1 - s2)$$

We also know that any value in (difference in income, income) will never exceed 10^{17} .

Output

Your program shall print all number of lines that do not match the previous ones. Of course values from those lines we do not consider in the future.

Example 1

Input

14 *(Report has 5 lines)*
d 6 3 4 *(Line #1: Start-up 6 has bigger income than start-up 3 – difference is 4)*
d 3 6 1 *(Line #2: Start-up 3 has bigger income than start-up 6 – difference is 1)*
v 3 10 *(Line #3: Start-up 3 has income equal 10)*
v 6 15 *(Line #4: Start-up 6 has income equal 15)*
d 3 9 2 *(Line #5: Start-up 3 has bigger income than start-up 9 – difference is 2)*
v 9 7 *(Line #6: Start-up 9 has income equal 7)*
v 9 8 *(Line #7: Start-up 9 has income equal 8)*
d 8 3 9 *(Line #8: Start-up 8 has bigger income than start-up 3 – difference is 9)*
d 8 6 5 *(Line #9: Start-up 8 has bigger income than start-up 6 – difference is 5)*
d 8 6 4 *(Line #10: Start-up 8 has bigger income than start-up 6 – difference is 4)*
v 8 18 *(Line #11: Start-up 8 has income equal 18)*
v 8 19 *(Line #12: Start-up 8 has income equal 19)*
d 8 9 10 *(Line #13: Start-up 8 has bigger income than start-up 9 – difference is 10)*
d 8 9 11 *(Line #14: Start-up 8 has bigger income than start-up 9 – difference is 11)*

Output

2
4
6
10
11
13

Explanation

Line #2 is incorrect according to line #1

Line #4 is incorrect according to line #3

Line #6 is incorrect according to line #5 and line #3

Line #10 is incorrect according to line #8 and line #1

Line #11 is incorrect according to line #8 and line #3

Line #13 is incorrect according to line #8 and line #5