Graduate Record Examinations

Description

As a senior student, hanhan is preparing to study abroad. Therefore, he is struggling with Graduate Record Examinations a.k.a. GRE. Especially, English in GRE is the most challenging one for hanhan. Lots of vocabularies are such difficult that you will only meet them once in a lifetime during GRE. Such as assuage, boorish, construe, demure, endemic, frivolous, genial, haughty, inimitable, jargon, kleptomaniac, leery, malleable, nadir, officious, presumptuous, querulous, reticent, stalwart, tantamount, untrammeled, vitriol, waylay, xenophobia, yokel, and zany, etc.

To memorize such many difficult vocabularies, hanhan makes an app called FightingGRE. FightingGRE is an app to let you memorize vocabularies while playing. During the game, you will encounter N stages. For each stage, there is a GRE word showed with its level i on the screen. If you know the word, you will gain 2^i points for this stage. If you don't know the word, your points will decrease by 2^i.

Hanhan starts to test and play his app. But, he doesn't sure whether the point is calculated correctly. Thus, you should help hanhan to calculate the total points of all the N stages. As you may know, hanhan is quite talented. Therefore, his total points after finishing N stages is non-negative. Since the total points may be quite large, you only need to tell hanhan there are how many digits being 1 when the total points is in base 2.

For example, if total points is 6, it's `110` in base 2. Thus, you should report 2 to hanhan. If total points is 8, it's `1000` in base 2. You should report 1 to hanhan.

Input

The first line contains an integer T indicating the total number of test cases.

The first line of each test case contains an integer N indicating that there are N stages during this play. Following N lines each contains space separated character C and integer i. If C is `'+'`, hanhan knows the word whose level is i in this stage. If C is `'-'`, hanhan doesn't know the word whose level is i in this stage.

- $1 \leq N \leq 10^5$
- $1 \leq \sum N \leq 6 \times 10^5$
- $C \in \{\texttt{'+'}, \texttt{'-'}\}$
- $0 \leq i \leq 10^9$

Output

For each test case, output one integer indicating that how many digits being 1 when the total points is in base 2.

Sample Input

```
2
2
+ 2
+ 1
3
+ 3
+ 4
- 4
```

Sample Output

```
2
1
```