

A. Oversized Pancake Flipper

- B. Tidy Numbers
- C. Bathroom Stalls
- D. Fashion Show

Contest Analysis
Questions asked

Submissions

Oversized Pancake Flipper

5pt	Not attempted 19627/23633 users correct (83%)
10pt	Not attempted 17799/19074 users correct (93%)

Tidy Numbers

5pt	Not attempted 24252/26070 users correct (93%)
15pt	Not attempted 17755/22161 users correct (80%)

Bathroom Stalls

5pt	Not attempted 13982/16042 users correct (87%)
10pt	Not attempted 10822/13226 users correct (82%)
15pt	Not attempted 5954/8864 users correct (67%)

Fashion Show

10pt	Not attempted 996/2522 users correct (39%)
25pt	Not attempted 591/843 users correct (70%)

Top Scores

FatalEagle	100
ACMonster	100
y0105w49	100
johnsgs	100
HellKitsune123	100
SergeyRogulenko	100
spnautilus	100
BudAlNik	100
mjy0724	100
pwild	100

Problem A. Oversized Pancake Flipper

This contest is open for practice. You can try every problem as many times as you like, though we won't keep track of which problems you solve. Read the [Quick-Start Guide](#) to get started.

Small input
5 points

Solve A-small

Large input
10 points

Solve A-large

Problem

Last year, the Infinite House of Pancakes introduced a new kind of pancake. It has a happy face made of chocolate chips on one side (the "happy side"), and nothing on the other side (the "blank side").

You are the head cook on duty. The pancakes are cooked in a single row over a hot surface. As part of its infinite efforts to maximize efficiency, the House has recently given you an oversized pancake flipper that flips exactly **K** consecutive pancakes. That is, in that range of **K** pancakes, it changes every happy-side pancake to a blank-side pancake, and vice versa; it does *not* change the left-to-right order of those pancakes.

You cannot flip fewer than **K** pancakes at a time with the flipper, even at the ends of the row (since there are raised borders on both sides of the cooking surface). For example, you can flip the first **K** pancakes, but not the first **K** - 1 pancakes.

Your apprentice cook, who is still learning the job, just used the old-fashioned single-pancake flipper to flip some individual pancakes and then ran to the restroom with it, right before the time when customers come to visit the kitchen. You only have the oversized pancake flipper left, and you need to use it quickly to leave all the cooking pancakes happy side up, so that the customers leave feeling happy with their visit.

Given the current state of the pancakes, calculate the minimum number of uses of the oversized pancake flipper needed to leave all pancakes happy side up, or state that there is no way to do it.

Input

The first line of the input gives the number of test cases, **T**. **T** test cases follow. Each consists of one line with a string **S** and an integer **K**. **S** represents the row of pancakes: each of its characters is either + (which represents a pancake that is initially happy side up) or - (which represents a pancake that is initially blank side up).

Output

For each test case, output one line containing Case #*x*: *y*, where *x* is the test case number (starting from 1) and *y* is either IMPOSSIBLE if there is no way to get all the pancakes happy side up, or an integer representing the the minimum number of times you will need to use the oversized pancake flipper to do it.

Limits

1 ≤ **T** ≤ 100.
Every character in **S** is either + or -.
2 ≤ **K** ≤ length of **S**.

Small dataset

2 ≤ length of **S** ≤ 10.

Large dataset

2 ≤ length of **S** ≤ 1000.

Sample

Input	Output
3	Case #1: 3
---++- 3	Case #2: 0
+++++ 4	Case #3: IMPOSSIBLE
-+-+- 4	

In Case #1, you can get all the pancakes happy side up by first flipping the leftmost 3 pancakes, getting to +++-+-, then the rightmost 3, getting to +++-+-, and finally the 3 pancakes that remain blank side up. There are other ways to do it with 3 flips or more, but none with fewer than 3 flips.

In Case #2, all of the pancakes are already happy side up, so there is no need to flip any of them.

In Case #3, there is no way to make the second and third pancakes from the left have the same side up, because any flip flips them both. Therefore, there is no way to make all of the pancakes happy side up.

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