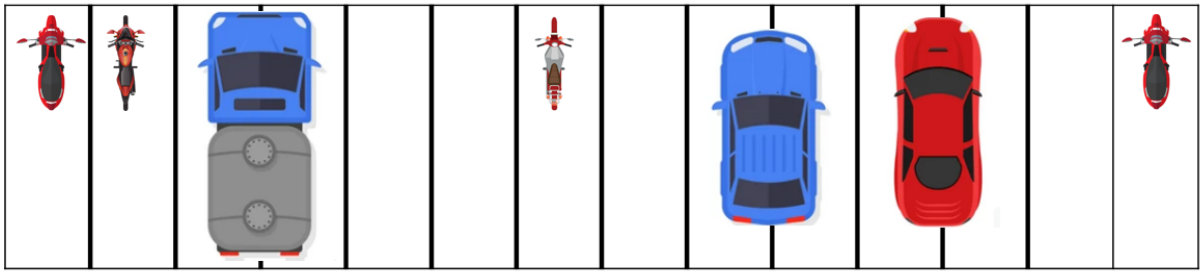
Problem G
Parking

Time Limit: **1 second**
Mem limit: **256 Megabytes**

Today, Mr. Tipu has a thesis defense at Ho Chi Minh University of Science, so he has driven his car to the University campus. The University parking lot is a line of n **parking zone**. Each zone has one meter in width, which fits one motorcycle. A car occupies exactly two adjacent zones of total width of two meters. The figure below illustrates the University parking lot.



Mr. Tipu wants to park his car in the parking lot, but some of the parking zones are occupied by other vehicles. Additionally, there are **a queue of k vehicles** that are trying to enter the parking lot in front of Mr. Tipu. The vehicles in the queue when entering the parking lot will occupy any empty zones: **one for a motorcycle and two adjacent zones for a single car**. In case there is no space left, all the current vehicles in the queue leave the University and not occupying any zone.

Because the thesis defense time is approaching, Mr. Tipu is in hurry. Fortunately, the people in the queue is very nice and they offer Mr. Tipu to enter the parking lot before them. Mr. Tipu doesn't want to take advantage of that so he wonder how many vehicles in front of him that he would pass to enter the parking lot on time, given that he will be late definitely in case there is no parking zones left that fit his car in the parking lot.

Note that the people in the queue may choose their parking zone for their vehicles imperfectly that leave no place for Mr. Tipu's car.

Given a parking lot of n parking zones, some of which are occupied, and a queue of k vehicles (could be motorcycles or cars) apart from Mr. Tipu's car, please help Mr. Tipu identify for each i from 0 to k, will Mr. Tipu be able to park his car, in case he enters the parking lot after the first i vehicles in the queue.

Input

There are several tests in each test case.

The first line contains a single integer t – the number of tests in the input $(1 \le t \le 50\,000)$.

Each test consists of two lines.

The first of these two lines is a string of n characters $(1 \le n \le 10^5)$, which can be '`.`' or '`X`'. The i^{th} character denotes the status of the i^{th} zone: '`.`' for empty and '`x`' for occupied.

The second of the two lines consist of k characters $(1 \le k \le n)$, which can be '`M`' or '`C`', denoting motorcycle or car, respectively. The first character represents the first vehicle at the head of the queue and the last character is at the tail.

Output

The output contains t lines. Each line contains $k+1$ characters, which can be '`Y`' or '`N`'. For each i from 0 to k print '`Y`', if Mr. Tipu can find a parking zone for his car, entering after the first i vehicles in the queue, no matter which zones they occupy, and print '`N`' otherwise.

Sample input

Sample output

Sample input	Sample output
1 XXXX..X.XXXX.X MM	YNN
3 ..... MMMC .X..X. MMM ..... CCCM	YYYNN YNNN YYNNN

Explanation

In the first sample, Mr. Tipu can park his car in the two empty parking zones in case he enter the parking lot first. Otherwise, the first motorcycle in the queue occupies one of the empty zones, so he won't be able to park his car.

In the test of the second sample, first three motorcycles could park in the following way: "`M.M.M.`", then Mr. Tipu could not be able to fine a two adjacent parking zones to park his car.