

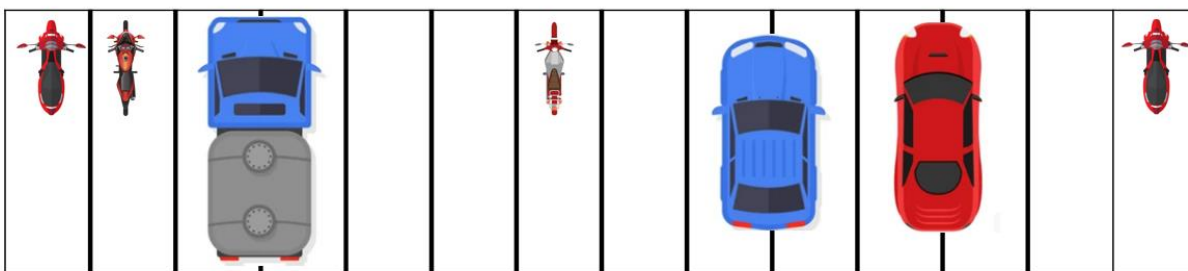
Problem G

Parking

Time Limit: **1 second**

Mem limit: **256 Megabytes**

Today, Mr. Tipu has a thesis defense at VNU-HCM 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 the 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** 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 a hurry. Fortunately, the people in the queue are very nice, and they offer Mr. Tipu to enter the parking lot before them. However, Mr. Tipu does not want to take advantage of that, so he wonders 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 are no parking zones left that fit his car in the parking lot.

Note that the people in the queue may choose their parking zones 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 to identify, for each i from 0 to k , whether Mr. Tipu can park his car or not, 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 ($1 \leq t \leq 50\,000$).

Each test consists of two lines.

The first of these two lines is a string of n characters ($1 \leq n \leq 10^5$), 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 ($1 \leq k \leq n$), which can be ‘M’ or ‘C’, denoting a motorcycle or a 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

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 will not be able to park his car.

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