

# Witnessing the Miracle

Input file:            **standard input**  
Output file:           **standard output**  
Time limit:            1 second  
Memory limit:         1024 megabytes

*The background story in the Chinese statements is removed due to the translation difficulties. >\_<*

In Riyadh, Little Cyan Fish became an evangelist for a local programming competition. This was the first time Little Cyan Fish experienced the process of children from a different cultural circle exploring knowledge. When one enters a competition as a judge, their perspective on observing the event also changes. Little Cyan Fish began to recall their own first competition experience, thinking back to how they weren't even proficient at writing a simple segment tree and would feel immense joy from solving the easiest problems. Little Cyan Fish was always grateful for their past ignorance, which prevented anxiety about the future and allowed for that period of pure competitive experience.

After the competition, at the Irqah venue, the organizers provided the contestants with a science game experience. In this science game, the children received several magnets and arranged them on a number line. The coordinate of each magnet was a positive integer between  $[1, n]$ , and no two magnets occupied the same coordinate.

In one operation, a child could choose a magnet, activate it, and then remove it. Due to the repulsive forces between magnets, after activating a certain magnet, magnets to its left would move 1 unit to the left, and magnets to its right would move 1 unit to the right.

Little Cyan Fish had, after all, lost their childlike innocence and couldn't appreciate the fun the children had playing with the magnets. However, Little Cyan Fish noticed that these children, while randomly playing with these magnets, were very insistent on ensuring that all magnets eventually ended up back within the range  $[1, n]$ . Specifically, given a non-negative integer  $k$ , a legal experiment is defined as: performing exactly  $k$  operations, and satisfying the condition that in the final state, all magnet coordinates are still positive integers between  $[1, n]$ . **Little Cyan Fish wants you to note: each operation must select exactly one magnet, and during the process, magnet coordinates can temporarily be outside the range of positive integers  $[1, n]$ .**

Little Cyan Fish can use a binary string of length  $n$  (consisting of 0s and 1s) to represent the initial and final states of the experiment. Specifically, the  $i$ -th character of the string is 1 if and only if there is a magnet at coordinate  $i$ .

Little Cyan Fish watched with great interest as the children played with the magnets and suddenly thought of this problem: Given two strings  $S$  and  $T$  composed of 0, 1, and ?, how many ways are there to replace the ?s in  $S$  and  $T$  with 0 or 1 such that there exists a legal experiment with  $S$  as the initial state and  $T$  as the final state.

The experience in Riyadh left a lasting impression on Little Cyan Fish. Little Cyan Fish always felt like they had witnessed a miracle. After returning home, Little Cyan Fish found this problem very interesting and planned to include it in their competition next year to test the participants. Soon, the year was up. Please help Little Cyan Fish solve this problem. Of course, Little Cyan Fish understands that this number can be very large, so you only need to output the answer modulo 998 244 353.

## Input

Each test case contains multiple sets of test data. The first line of input contains an integer  $T$  ( $1 \leq T \leq 5000$ ), indicating the number of test data sets. For each test data set:

- The first line contains two positive integers  $n, k$  ( $1 \leq n \leq 5000, 0 \leq k \leq n$ ).
- The next line contains a string  $S$  of length  $n$  composed of characters 01?.
- The following line contains a string  $T$  of length  $n$  composed of characters 01?.

It is guaranteed that the total sum of  $n$  across all test data does not exceed 5 000.

## Output

For each test data set, output a number representing the answer.

## Example

standard input	standard output
3	1
7 3	3384
1111111	3
1100011	
10 3	
??????????	
??????????	
5 2	
??1?1	
?0?1?	