Bob and Alice 3

Description

It's time for your school class to elect its class officers for the year. These officers will have the honor of representing the class and will hold various responsibilities. The position of class treasurer is particularly appealing to some of the more organized and mathematically-inclined students, especially two rivals, Alice and Bob. They've both been running strong campaigns, to the point that no other feasible candidates remain.

A democratic vote to elect the class treasurer is about to take place! Each of the N students in the class will cast one vote, for either Alice or Bob. The students have IDs numbered from 1 to N, and student i is currently planning on voting for either Alice (if V_i = "A") or Bob (if V_i = "B").

Your teacher, Mr. X, has some "novel" ideas about how elections should work. Perhaps in an effort to teach your class a statistics lesson, he will organize the election as follows. He'll consider the set of all $\frac{N \times (N+1)}{2}$ possible non-empty contiguous sets of student IDs, and will select one at random. Each set will have an equal chance of being selected. He'll refer to this as the "representative set" of students. He will also announce a threshold of victory, K. He'll then tally up the number of votes for Alice and Bob amongst those students — let these vote counts be a and b respectively. If $a > b + K$, then Alice will win. If $b > a + K$, then Bob will win. Otherwise, if $|a - b| \leq K$, then it will be a draw (neither candidate will win, and the class will be left without a treasurer).

Alice has grown concerned about how the election will turn out, so she's enlisted your help in potentially swaying some of your classmates' opinions. She's tasked you with ensuring that, no matter which representative set gets chosen, Bob cannot possibly win (in other words, either Alice will win or neither candidate will win). To do so, you may pay 0 or more students to change their vote from their current candidate to the other one. Student i requires c_i dollars to be influenced in this fashion. You must finish paying students off before you know what the representative set will be.

What's the minimum possible cost required to guarantee that Bob cannot possibly win and become the class treasurer? As this cost may be large, output it modulo 1000000007. Note that you must minimize the actual cost, rather than minimizing the resulting value of the cost after it's taken modulo 1000000007.

Also, you need to count the way to minimize the resulting value, also under modulo 1000000007.

Two ways X, Y are considered different, if there exists one person, such that X changes that person's vote, while Y doesn't change.

input

The first line of the input contains two integers N and K, which is mentioned in the description.

The second line contains one string $V(V_1, V_2, \ldots, V_N)$.

The third line contains N space-separated integers $c_1, c_2, \ldots, c_N$.

- $1 \leq N \leq 5000$
- $0 \leq K \leq N$
- $|V| = N$
- V only contains letter 'A' and 'B'
- $1 \leq c_i \leq N$

Output

Output two lines.

The first line of the output contains one integer denotes the minimal resulting value mentioned in the description.

The second line of the output contains one integer denotes the number of ways to minimize the resulting value.

All numbers in the output are under modulo 1000000007

Sample Input

```
5 1
BBABB
1 2 3 4 5
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Sample Output

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5
1
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