Bubble Cup V9 B Underfail

Time limit: 2.0s **Memory limit:** 256M

You have recently fallen through a hole and, after several hours of unconsciousness, have realized you are in an underground city. On one of your regular daily walks through the unknown, you have encountered **two** unusually looking skeletons called **Sanz** and **P'pairus**, who decided to accompany you and give you some puzzles for seemingly unknown reasons.

One day, Sanz has created a **crossword** for you. Not any kind of crossword, but a 1D crossword! You are given a string of length N and M words, none of which is longer than K. You are also given an array $P[\,]$ which designates how much each word is worth – the i^{th} word is worth $P[i]$ points.

Whenever you find one of the M words in the string, you are given **the corresponding number of points**. Each letter in the crossword can be used **at most** X times. A certain word can be counted at different places, but you cannot count the same appearance of a word multiple times. If a word is a substring of another word, you can count them both (presuming you haven't used the letters more than X times).

In order to solve the puzzle, you need to tell Sanz what's the **maximum achievable number** of points in the crossword.

Input Specification

The first line of input will contain one integer N – the length of the crossword, and the second line will contain the crossword string. The third line will contain the integer M – the number of given words, and the next M lines will contain descriptions of words: each line will have a word string and an integer P. The last line of the input will contain X – the maximal number of times a position in the crossword can be used.

Output Specification

Output a single integer – the maximal number of points you can get.

Constraints

- $1 \leq N \leq 500$
- $1 \leq M \leq 100$
- $1 \leq X \leq 100$
- $1 \leq K \leq 500$
- $0 \leq p \leq 100$

Sample Input

```
6
abacba
2
aba 6
ba 3
3
```

Sample Output

```
12
```

Explanation

For example, with the string `abacba`, words `aba` (6 points) and `ba` (3 points), and $X = 3$, you can get at most 12 points - the word `aba` appears once (`abacba`), while `ba` appears two times (`abacba`). Note that for $X = 1$, you could get at most 9 points, since you wouldn't be able to count both `aba` and the first appearance of `ba`.