



Copy and Paste 3

JOI, Ltd. is a company known for their “just odd inventions.” Recently, JOI, Ltd. developed a text editor called “Just Odd Editor.”

Using this text editor, we can input a string of characters by performing the following operations several times. Let X be the string displayed on the screen of the text editor. Let Y be the string saved in the clipboard. In the beginning, both of X and Y are the empty string.

- **Operation A** : We add one character in the end of the string. Namely, we choose a character c , and update X to be $X + c$.
- **Operation B** : We select all the characters and cut them. Namely, we update Y to be X . After that, we set X to be the empty string.
- **Operation C** : We paste the string from the clipboard at the end of the string. Namely, we update X to be $X + Y$.

Here, for characters or strings x, y , the string $x + y$ means the string obtained by connecting x with y in this order. Performing an operation takes time. If we perform the operation A, B, C once, it takes A, B, C unit time, respectively.

You installed Just Odd Editor. You want to input a string S of length N as soon as possible. Performing operations, you want to make the string on the display be S as soon as possible.

Write a program which, given the length N , the string S , and the amount of unit time needed to perform an operation, calculates the least amount of time needed to input the string S .

Input

Read the following data from the standard input.

N
 S
 A
 B
 C



Output

Write one line to the standard output. The output should contain the least amount of time needed to input the string S .

Constraints

- $1 \leq N \leq 2\,500$.
- S is a string of length N . Each character of S is a lower-case alphabet ('a' - 'z').
- $1 \leq A \leq 1\,000\,000\,000 (= 10^9)$.
- $1 \leq B \leq 1\,000\,000\,000 (= 10^9)$.
- $1 \leq C \leq 1\,000\,000\,000 (= 10^9)$.
- N, A, B, C are integers.

Subtasks

1. (1 points) $N = 3$.
2. (5 points) Every character of S is 'a'.
3. (14 points) $N \leq 30$.
4. (10 points) $N \leq 200$.
5. (32 points) $N \leq 1\,000$.
6. (38 points) No additional constraints.

Sample Input and Output

Sample Input 1	Sample Output 1
11 mississippi 10 5 2	88

By performing the following operations, we can input `mississippi` by 88 unit time. Since it is the least amount of time needed to input `mississippi`, output 88.



Order	Operation	Explanation	X	Y	Time	Total Time
-	-	-	""	""	-	0
1	Operation A	Add a character in end	"s"	""	10	10
2	Operation B	Select all & Cut	""	"s"	5	15
3	Operation C	Paste at end	"s"	"s"	2	17
4	Operation C	Paste at end	"ss"	"s"	2	19
5	Operation A	Add a character in end	"ssi"	"s"	10	29
6	Operation B	Select all & Cut	""	"ssi"	5	34
7	Operation A	Add a character in end	"m"	"ssi"	10	44
8	Operation A	Add a character in end	"mi"	"ssi"	10	54
9	Operation C	Paste at end	"missi"	"ssi"	2	56
10	Operation C	Paste at end	"mississi"	"ssi"	2	58
11	Operation A	Add a character in end	"mississip"	"ssi"	10	68
12	Operation A	Add a character in end	"mississipp"	"ssi"	10	78
13	Operation A	Add a character in end	"mississippi"	"ssi"	10	88

This sample input satisfies the constraints of Subtasks 3, 4, 5, 6.

Sample Input 2	Sample Output 2
16 aaaaaaaaaaaaaaaa 1 1 1	9

By performing the following operations, we can input aaaaaaaaaaaaaaaaaa by 9 unit time. Since it is the least amount of time needed to input aaaaaaaaaaaaaaaaaa, output 9.



Order	Operation	Explanation	X	Y	Time	Total Time
-	-	-	""	""	-	0
1	Operation A	Add a character in end	"a"	""	1	1
2	Operation A	Add a character in end	"aa"	""	1	2
3	Operation A	Add a character in end	"aaa"	""	1	3
4	Operation A	Add a character in end	"aaaa"	""	1	4
5	Operation B	Select all & Cut	""	"aaaa"	1	5
6	Operation C	Paste at end	"aaaa"	"aaaa"	1	6
7	Operation C	Paste at end	"aaaaaaaa"	"aaaa"	1	7
8	Operation C	Paste at end	"aaaaaaaaaaaa"	"aaaa"	1	8
9	Operation C	Paste at end	"aaaaaaaaaaaaaaaa"	"aaaa"	1	9

This sample input satisfies the constraints of Subtasks 2, 3, 4, 5, 6.

Sample Input 3	Sample Output 3
18 aababbbababbbbaabbb 1000000000 100000 10000000	8060200000

This sample input satisfies the constraints of Subtasks 3, 4, 5, 6.