Min Cost String

Input file:	standard input
Output file:	standard output
Time limit:	1 second
Memory limit:	256 megabytes

Given a string S and **26** numbers that represents the cost of each letter. Print the minimum cost that can be achieved and the string S after replacing every '?' symbol in the string.

Note: The cost of the string will be the sum of the absolute difference of every two consecutive letters costs in the string. For example if cost of $'a' = 2$ and cost of $'x' = 5$ and cost of $'c' = 1$, if the string was equal "axc" then the cost of that string will $= |cost('a')\text{-}cost('x')| + |cost('x')\text{-}cost('c')| = |2-5| + |5-1| = 7$.

if there are more than one string with minimum cost print the smallest lexicographical one.

Input

The first line contains a string S $(2 \leq |S| \leq 10^6)$ where |S| is the length of S.

The second line will contain 26 numbers $(0 \leq X_i \leq 10^5)$ represents the cost of each letter from $'a'$ to $'z'$ respectively.

Output

Print the minimum cost that can be achieved by replacing every '?' in the first line followed by the string after the replacement.

Example

standard input	standard output
abc??def?gh 4 9 5 9 6 1 0 3 7 2 5 9 6 1 3 2 3 2 9 1 1 0 1 8 8 4	25 abcbbdeffgh

Note

Test 1 :

we can get string **"abcdddeffgh"** with cost 25 too but its **not smallest string**.

string **"abcbbdeffgh"** smallest one and smallest cost.