Problem K
Kleptography

John likes simple ciphers. He had been using the "Caesar" cipher to encrypt his diary until recently, when he learned a hard lesson about its strength by catching his sister Mary browsing through the diary without any problems.

Rapidly searching for an alternative, John found a solution: the famous "Autokey" cipher. He uses a version that takes the 26 lower-case letters '`a`'–'`z`' and internally translates them in alphabetical order to the numbers 0 to 25.

The encryption key k begins with a secret prefix of n letters. Each of the remaining letters of the key is copied from the letters of the plaintext a, so that $k_{n+i} = a_i$ for $i \geq 1$. Encryption of the plaintext a to the ciphertext b follows the formula $b_i = a_i + k_i \bmod 26$.

Mary is not easily discouraged. She was able to get a peek at the last n letters John typed into his diary on the family computer before he noticed her, quickly encrypted the text document with a click, and left. This could be her chance.

Input

The input consists of:

- One line with two integers n and m ($1 \leq n \leq 30$, $n + 1 \leq m \leq 100$), where n is the length of the keyword as well as the number of letters Mary saw, and m is the length of the text.
- One line with n lower-case letters, the last n letters of the plaintext.
- One line with m lower-case letters, the whole ciphertext.

Output

Output the plaintext of John's diary.

Sample Input 1	Sample Output 1

`5 16`
`again`
`pirpumsemoystoal`
	`marywasnosyagain`

Sample Input 2	Sample Output 2

`1 12`
`d`
`fzvfkdocukfu`
	`shortkeyword`

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