

# Caesar Cipher: Encryption



Julius Caesar protected his confidential information by encrypting it in a cipher. Caesar's cipher rotated every letter in a string by a fixed number,  $K$ , making it unreadable by his enemies. Given a string,  $S$ , and a number,  $K$ , encrypt  $S$  and print the resulting string.

**Note:** The cipher *only* encrypts letters; symbols, such as `-`, remain unencrypted.

## Input Format

The first line contains an integer,  $N$ , which is the length of the unencrypted string.

The second line contains the unencrypted string,  $S$ .

The third line contains the integer encryption key,  $K$ , which is the number of letters to rotate.

## Constraints

$$1 \leq N \leq 100$$

$$0 \leq K \leq 100$$

$S$  is a valid ASCII string and doesn't contain any spaces.

## Output Format

For each test case, print the encoded string.

## Sample Input

```
11
middle-Outz
2
```

## Sample Output

```
okffng-Qwvb
```

## Explanation

Each unencrypted letter is replaced with the letter occurring  $K$  spaces after it when listed alphabetically. Think of the alphabet as being both case-sensitive and circular; if  $K$  rotates past the end of the alphabet, it loops back to the beginning (i.e.: the letter after  $z$  is  $a$ , and the letter after  $Z$  is  $A$ ).

## Selected Examples:

$m$  (ASCII 109) becomes  $o$  (ASCII 111).

$i$  (ASCII 105) becomes  $k$  (ASCII 107).

$-$  remains the same, as symbols are not encoded.

$O$  (ASCII 79) becomes  $Q$  (ASCII 81).

$z$  (ASCII 122) becomes  $b$  (ASCII 98); because  $z$  is the last letter of the alphabet,  $a$  (ASCII 97) is the next letter after it in lower-case rotation.