Encryption

Input file:	`standard input`
Output file:	`standard output`
Time limit:	10 seconds
Memory limit:	256 megabytes

The ACME Code Company has released their new encryption algorithm: Urgh$^{\text{TM}}$. To encrypt a message using the Urgh$^{\text{TM}}$ algorithm is simple.

Each letter ends up N letters to the right of its original position, and the last N letters wrap around to the beginning. In addition the letters are replaced by letters N places further in the alphabet.

For example: If you shift the word `APPLE` by $N = 2$ then it becomes `LEAPP`. If you then replace the letters by letters 2 places further in the alphabet, `LEAPP` becomes `NGCRR`.

If you shift the word `ENCRYPTION` by $N = 4$ you get `TIONENCRYP`. If you then replace the letters by letters 4 places further in the alphabet, you get `XMSRIRGVCT`.

Write a program that, given a word and the integer number N, will output the encrypted word.

Input

The first line of input consists of a single uppercase word.

The second line of input consists of a single integer N.

Output

Output the encrypted word.

Examples

standard input	standard output
APPLE 2	NGCRR
ENCRYPTION 4	XMSRIRGVCT