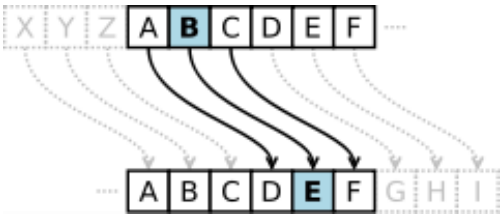
Problem G: Caesar cipher

Time limit: 2s; Memory limit: 512 MB



Today, in a course on Cryptography, Associate Professor Khoi Nguyen Tan, Head of IT Department - University of Science and Technology - UD, talked about Caesar cipher. a Caesar cipher, also known as Caesar's cipher, the shift cipher, Caesar's code or Caesar shift, is one of the simplest and most widely known encryption techniques. It is a type of substitution cipher in which each letter in the plaintext is replaced by a letter some fixed number of positions down the alphabet. For example, with a right shift of 3, A would be replaced by D, B would become E, and so on. The method is named after Julius Caesar, who used it in his private correspondence.

Tien is a student of IT department, he is very interested in this type of cipher and has come up with an idea to create a new cryptogram by performing the following steps:

- Given a letter consisting of a string S containing uppercase Latin characters.
- Repeat the Caesar cipher for k times. Each time i ($1 \le i \le k$), Tien uses a right shift of n_i and replaces all characters indexing from the x_i to y_i in string S.

What will be the result after encrypting?

Input

- The first line is string S ($1 \le |S| \le 5 \times 10^5$).
- The second line is number k ($1 \le k \le 2 \times 10^5$).
- Next k lines contain the triples n_i, x_i and y_i ($0 \le n_i \le 25$; $1 \le x_i \le y_i \le |S|$).

Output

- Print one string after encrypting.

Sample

Input	Output
TIEN 1 1 1 4	UJFO
TIEN 3 5 1 2 2 3 4 3 1 3	BQJP