THE ZODIAC KILLER

In the late 1960s, an unidentified serial killer with the pseudonym of Zodiac Killer terrorized San Francisco's Bay Area. It is regarded as one the most famous unsolved murders in American History and is known for its renowned cipher messages to the San Francisco Chronicle. For almost 50 years, the ciphers remained unsolved until Amercian code breaker David Oranchak and his two friends Sam Blake and Jarl Van Eycke could give a solution to the 340-character cipher. You can learn more about deciphering in his video.

The original cipher is assumed to be a homophonic cipher which involved a combination of a transposition cipher and a substitution cipher.

The transposition phase of the cipher goes as follows:

1. First, the text is written in a matrix format with a given number of columns(key)
2. Now we rearrange the characters as follows:
    1. Starting from the first row, take the first character, then go to the character one row below and two columns ahead and write it down. Then, repeat the same from this character by going one row down and two columns ahead and writing it down. Repeat this process until you reach the last row, and wrap around the row if you reach the end of it.
    2. Now, take the next character in the first row and repeat this process until all the characters in the first row are completed. This gives us the ciphered text

Now given a cipher text encrypted according to the algorithm given above and the key(mentioned in 1st point), return the deciphered plain text.

Note: The character 'Z' will be used for filling the missing cells in the matrix.

Input Format

The input consists of two lines:

1. The first line is a integer, the key: number of columns used while encryption
2. The second line consists of the cipher text

Constraints

1. Input string will consist of only A-Z characters i.e.., english alphabets in upper case only.
2. You are not allowed to use libraries like cryptography available in python

Output Format

Plaintext – String

Sample Input 0

3

WBDAEYTRO

Sample Output 0

WATERBODY

Explanation 0

Please go through this google doc for the detailed explanation of the sample question.