IOI01 Twofive

The secret messages between Santa Claus and his little helpers are usually encoded in the 25-language. The 25-alphabet is the same as the Latin alphabet with one exception - the letter 'Z' is absent, i.e. the 25-alphabet contains 25 Latin letters from 'A' through 'Y' in the same order as the Latin alphabet. Each word in the 25-language consists of exactly 25 different letters. A word can be written in a 5´5 table filling the rows first; for example, the word ADJPTBEKQUCGLRVFINSWHMOXY will be written as follows:

A D J P T
B E K Q U
C G L R V
F I N S W
H M O X Y

A valid word in the 25-language has its letters in each row as well as in each column written in ascending order. Thus, the word ADJPTBEKQUCGLRVFINSWHMOXY is a valid word, in contrast to the word ADJPTBEGQUCKLRVFINSWHMOXY (the ascending order is violated in the second column, and in the third column, too).

Santa Claus has a lexicon. His lexicon is the list of all valid 25-language words in ascending order (lexicographically) along with their ordinal numbers starting from 1. For example, in the lexicon ABCDEFGHIJKLMNOPQRSTUVWXY is the word number 1 and ABCDEFGHIJKLMNOPQRSUTVWXY is the word number 2. In word number 2, U and T are interchanged from their order in word number 1.

Unfortunately, this lexicon is huge. Write a program that determines the ordinal number of an arbitrary given word, and also the word corresponding to a given ordinal number. There are no more than 231 words in the lexicon.

Input

The input consists of two lines. The first line contains a string with one character: a 'W' or an 'N'. If the first line contains a 'W', then the second line contains a valid 25- language word, that is, a string with 25 characters. If the first line contains an 'N', then the second line contains the ordinal number of an existing 25-language word.

Output

The output consists of one line. If the second line of the input file contains a 25-language word, then the line of the output file contains the ordinal number of that word. If the second line of the input file contains a number, then the line of the output file contains the 25- language word with that ordinal number.

Example

Input
W
ABCDEFGHIJKLMNOPQRSUTVWXY

Output

2

Input

N
2

Output

ABCDEFGHIJKLMNOPQRSUTVWXY