

P4 :: Climb This!

A WORD LADDER is formed from an *anchor* word that is transformed, one letter at a time, to form a *ladder* of words that ultimately reaches a *target* word. Note that the order of the unaffected letters cannot change. A sample word ladder appears to the right. Your program must determine if a sequence of words forms a WORD LADDER.

HEAD	<i>anchor</i> word. replace D with L.
HEAL	replace H with V.
VEAL	replace A with I.
VEIL	replace E with A.
VAIL	replace V with T.
TAIL	<i>target</i> word.

Input Format

Your program will read from standard input. The first line will contain a single positive integer n by itself that represents the number of lines n that will appear in the input. Each of the next n lines will contain a single word of uppercase letters by itself. These n lines form the proposed set of words that may or may not form a WORD LADDER.

You may assume: (1) all words have between three and ten uppercase letters; (2) all words in the input have the same number of letters as every other word; (3) $2 < n < 20$.

Output Format

Your program must write to standard output. If a WORD LADDER exists, then your program must output only the words “WORD LADDER” on a single line by itself. If no such WORD LADDER exists, then your program must output two lines. The first must contain the words “NO LADDER” on a single line by itself. The second must contain the words “BROKEN BY X” on a line by itself where X is the *first* word that “breaks” the WORD LADDER.

Sample Input and Corresponding Sample Output

Sample Input	Sample Output
3 BOY TOY TOE	WORD LADDER
6 HEAD HEAL VEAL VEIL VAIL TAIL	WORD LADDER
4 CAME CARE CANT WENT	NO LADDER BROKEN BY CANT