

Q10: ROLL THOSE DICE

You are given a set of five alphabetic dice in which each die has a capital letter on each of its six sides. When you roll these dice, five letters appear on their top faces and sometimes you can spell a five-letter English word from these letters. You want to know whether these five dice can possibly roll a specific five-letter word. For example, assume the dice contain the following letters on their six sides:

Die1: ABGRTY
Die2: EGKOWX
Die3: ABVCXA
Die4: POYEAT
Die5: EITYTJ

That is, Die1 has the six letters “A”, “B”, “G”, “R”, “T”, and “Y” on its six sides. With these dice you could roll the word GREAT using a “G” from Die2, an “R” from Die1, an “E” from Die4, an “A” from Die3, and a “T” from Die5. However, you cannot roll the word TIGER using the dice above; while individually these letters appear on some die, it is not possible for all five letters to appear on the top of five dice at the same time. Note that the same letter may appear multiple times on the same die.

Input

The input consists of five lines containing six CAPITAL letters each, representing the five dice. The sixth and final line contains five CAPITAL letters and represents the word being investigated.

Output

The output consists of a single line containing either “VALID” or “INVALID” declaring whether it is possible to form the word being investigated from a roll of the five dice.

Sample Input and Output

Input	Output	Input	Output	Input	Output
ABGRTY EGKOWX ABVCXA POYEAT EITYTJ GREAT	VALID	ABGRTY EGKOWX ABVCXA POYEAT EITYTJ TIGER	INVALID	ABCDEF GHIJKL MNOPQR STUVWX YZJKLM QUAIL	VALID
SATSAT EAEAEA SSSSSS EATEAT SASASA STATE	VALID	SATSAT EAEAEA SSSSSS EATEAT SASASA TETES	INVALID	ABCDEF GHIJKL MNOPQR STUVWX YZJKLM CLUNK	VALID