



Task Vlak

Nina and Emilija are playing a game on a piece of paper. Initially, the paper is empty. In one move a player appends a letter to the end of the word that is currently written on the paper. They alternate turns, and Nina plays first.

Players must choose the letters in such a way that the following condition is met: the word that is written **after** the player's move must be a prefix of some word in that player's favourite song. If the player can't make a move, she loses.

If both players play optimally, determine who wins.



Input

The first line contains a positive integer n , the number of words in Nina's favourite song. Each of the following n lines contains a word from Nina's favourite song.

The following line contains a positive integer m , the number of words in Emilija's favourite song. Each of the following m lines contains a word from Emilija's favourite song.

Words in input contain only lowercase letters, and the sum of the lengths of all words is at most 200 000.

Output

Output Nina or Emilija, the name of the winner.

Scoring

In test cases worth 40 points the sum of the lengths of the words will be at most 2000.

Examples

input

2
aaa
bbb
3
aab
aba
bbb

output

Nina

input

2
acg
beh
2
adi
bfj

output

Emilija

input

3
ja
sam
vlak
5
sto
zgazit
ce
te
mali

output

Nina

Clarification of the first example:

If Nina first writes **b**, Emilija must write **b**, and then Nina can write **b**. The current word is **bbb**, and Emilija can't make a move, so Nina wins.

If Nina would first write **a**, Emilija could write **b**. The word would be **ab**, and Nina wouldn't be able to make a move, and she would lose.