

# Ikea

*Time limit: 1 sec*

You just bought one nice bed from a famous furniture store. The bed is sold in do-it-yourself style meaning that you have to build the bed yourself. The bed comes with an instruction book. There are **n** steps to build the bed, each step is numbered 1 to n. Obviously the book tell you to start with step 1 and progress to step 2 and so on until step **n**. However, you, believe in total freedom, decide that the book should not dictate how you build your bed. So, you plan to do each step in the order that you prefer which might not be the same as the book. Let **s1** be the step that you decide to do first and **s2** is the second and so on to **sn**.

Sadly, some steps require that some other steps must be done first. You cannot complete the step if the prerequisite step have not been done yet. These requirement are given in the book as well. However, you did not read the book so you don't know this requirement.

You know that there is a chance that your plan might not work. So you have 5 plans with the hope that at least one of them will work. We would like to know if each of your plan can be done without any problem. In other words, your plan will succeed if and only if in doing step  $s_k$ , the prerequisite of step  $s_k$  is done in step  $s_1$  to  $s_{(k-1)}$ .

## Input

- The first line of input contains two integer **n** and **e** where  $1 \leq n \leq 1,000$  and  $0 \leq e \leq 10,000$ .
- The next **e** lines describe the requirement , one requirement per line.
  - Each line contains two integer **a** and **b** indicating that step **a** is a prerequisite of step **b** where  $1 \leq a, b \leq n$ )
- The next 5 lines contains your plan. One plan per line.
  - Each line contains n integer that are  $s_1$  to  $s_n$  of the current plan. The integer are 1 to n, each number will appear exactly once.

## Output

There must be exactly **5** line. Each line must indicate if the corresponding plan success or fail. Print the word SUCCESS if the plan can be done and the bed is built. Print FAIL otherwise.

## Example

| Input                                                                           | Output                                                      |
|---------------------------------------------------------------------------------|-------------------------------------------------------------|
| 4 3<br>1 2<br>2 3<br>3 4<br>1 2 3 4<br>1 3 4 2<br>1 4 2 3<br>4 3 2 1<br>3 1 2 4 | SUCCESS<br>FAIL<br>FAIL<br>FAIL<br>FAIL<br><br><br><br><br> |
| 5 0<br>1 2 3 4 5<br>5 1 3 2 4<br>3 2 4 1 5<br>5 2 3 1 4<br>4 3 2 1 5            | SUCCESS<br>SUCCESS<br>SUCCESS<br>SUCCESS<br>SUCCESS<br><br> |
| 3 2<br>1 2<br>1 3<br>1 2 3<br>1 3 2<br>2 1 3<br>2 3 1<br>3 2 1                  | SUCCESS<br>SUCCESS<br>FAIL<br>FAIL<br>FAIL<br><br><br><br>  |