Problem 7: Friends of Friends

Overview
“Your friends are more popular than you are”. Repeated almost often enough to be an Internet meme, this phrase also represents a commonly misunderstood aspect of social networks, both physical and virtual. The basic idea is that if you count (and average) the number of friends that each of your friends have (including you), you will get a number greater than your actual number of friends. Consider the graph below where an edge between two vertices indicates friendship between those people.

In this graph, B has two friends (C and E). C has three friends (B, D, and E). E has four friends (B, C, D, and F). Thus, B has two friends while her friends have an average of 3.5 friends. Thus, B is less popular than her friends. C has three friends which is also the average number of friends that her friends have. Thus C is just as popular as her friends. E is the exception and has more friends than her friends. Note that A avoids the dilemma by having no friends!

Problem
In this problem you will be given a friendship graph such as the one above. After that, you will be given a series of names. For each name you are to determine if that person has friends – and, if so, whether she is more, less, or as popular as her friends.

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2 For purposes of clear grammar, we will assume that all of our subjects in this problem are female.
Input
The input to this problem comes in two parts. In the first part, each line contains two names separated by a single space; these two people are defined to be friends. (A pair may be given in either order and may be repeated. Regardless of the number of times a pair appears in the input, only one friendship relation exists.) The first part is terminated by a line with ten asterisks separated into two blocks of five separated by a single space. The second part of the input has one name per line. This part is terminated by a line with five asterisks. A name consists of an unbroken string of upper and lower case letters. Case does not matter when considering names, i.e. “John” is the same as “JOHN” or “johN”. There will be at most 100 different names (across both parts) in any input set.

Output
The output has a single line of text for each line (not counting the asterisks) in the second part of the input. Each line echoes the name of the person (matching the case given in this line) followed by information (formatted exactly as in the examples). [Be sure to use the singular if someone has only one friend.]

Example

Input

B c
C d
D E
E F
F G
B E
C E
f D
***** ****
B
C
E
A
G
*****

Output

B is less popular than her friends.
C is as popular as her friends.
E is more popular than her friends.
A has no friends.
g is less popular than her friend.