

Revenge of the Egg Guy

(A.k.a. Domo Arigato, Dr. Roboto)

Filename: roboto

Dr. Roboto, sometimes referred to as the Egg Guy due to his rotund physique, is an evil genius with a particular aptitude for the construction of robots, space stations, and the like. In fact, his robots have just recently finished construction of a monumental space station, known as the Doom Egg. In a night of celebration and villainy, Dr. Roboto designed the Doom Ray, the ultimate weapon, capable of wiping all porcupines, hedgehogs, and any other spiky mammals off the face of the Earth. Surprisingly enough, a certain hedgehog has actually given Dr. Roboto a great deal of trouble in the past, so he's got a bit of a grudge. There's a problem with this Doom Ray, though. Dr. Roboto was celebrating a little too hard when he designed it. Although he's certain that the Doom Ray will work, he suspects that there might be a short circuit in the wiring that would cause the central battery of the Doom Egg to overload, blowing the station to smithereens and him along with it. The wiring diagram is a huge mess, so Dr. Roboto needs you to write a program to determine whether or not a short circuit exists.

The Problem:

Dr. Roboto's design consists of a number of circuit junctions and connections between pairs of different junctions. Two of the junctions represent terminals of the Doom Egg's central battery. If there is any zero-resistance path between the two terminals of the Doom Egg's central battery, this is a short circuit which will destroy the Doom Egg at the same time it destroys the world's spiky critters. If the zero-resistance path goes through multiple junctions, this is still a short circuit as the junctions themselves are all made out of cryogenically cooled superconductors that have no resistance. For example, suppose that the positive and negative terminals are both connected to junction 3 with zero resistance, but have no direct connection to each other. This would be a short circuit since current can flow unimpeded from the negative terminal to junction 3 to the positive terminal. It is possible that a particular circuit design has no path linking the two terminals at all. This is just fine since the circuit may operate by principles of inductance and capacitance which aren't modeled in the input.

The Input:

Input consists of a positive integer indicating the number of Doom Ray designs, followed immediately by that many designs. A Doom Ray design begins with an integer, n ($2 \leq n \leq 50$), indicating the number of circuit junctions in the design, including the battery terminals. The first circuit junction represents the positive terminal of the Doom Egg's central battery and the second junction represents the negative terminal, respectively. The next n lines each contain n space-delimited integers in the range from -1 to 500, with the i^{th} integer on the j^{th} line indicating the resistance of the connection between the i^{th} and j^{th} junction. A resistance value of -1 represents the absence of a connection. It is guaranteed that the i^{th} integer on the j^{th} line will be equal to the j^{th} integer on the i^{th} line, and that the i^{th} integer on the i^{th} line will be 0.

The Output:

For each Doom Ray design, print a message on a line by itself indicating whether or not the design contains a short circuit. Begin with a header “Circuit Design #*n*: ” where *n* represents the number of the circuit design (beginning with 1) for each message. Then, if the design contains a short circuit, print the statement:

Back to the drawing board

Otherwise, print the statement:

No more hedgehog troubles

Sample Input:

```
2
3
 0 -1  0
-1  0  0
 0  0  0
5
 0 -1  0 27 -1
-1  0 -1 -1  0
 0 -1  0 -1 15
27 -1 -1  0  0
-1  0 15  0  0
```

Sample Output:

```
Circuit Design #1: Back to the drawing board
Circuit Design #2: No more hedgehog troubles
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