# Problem 3. Chain of Responsibility

In UnidentifiedCompany LLC, we have robot workers, who all have exactly one responsibility. The cool thing is that everyone knows someone who knows someone who is responsible for something you need done. This leads to some degree of fragmentation. In order to get anything done, you need to **traverse the chain of responsibility** to figure out who to ask.

You will start receiving **conversation snippets** containing one or more **robot names**, which match the following **rules**:

* **Begins** with **one or more digits**
* After that, it has **one capital Latin letter**, followed by **one or more non-capital Latin letters**
* **Ends** with either a **capital Latin letter** or a **digit**, **repeated** **two or more times**.

Example valid robots: 152GoshoAAA, 1Ivan44, 43PeshoZZ

If at any point, you find a line, which has only **one** name in it, proceed with the following:

* If the line **ends with** “!!” and has a **valid name** in it, you have **found the manager**. Print “Found the manager!: {manager\_name}”
* If it doesn’t, print “Did not find the manager!”
* If the **first name** in the line **isn’t** the **last found name** from the **previous line**, print “Broke the chain!”

In all above cases, **print the chain of responsibility on the next line**, in the **format**: “robot1->robot2->robot3…” and **end the program**.

## Input / Constraints

The input data should be read from the console.

* On the **first line** of the input, you will receive N - the **number of lines to follow** – an **integer** in range **[2-10]**
* On the next N lines, you will receive the conversation lines, which will all be **strings** and **each line will have at least one valid name in it**.

## Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| 3  22IvanCC says: look for 4GoshoII  4GoshoII told me that 33Pesho11 manages that.  33Pesho11: i can help!! | Found the manager!: 33Pesho11  Chain: 22IvanCC->4GoshoII->33Pesho11 |
| **Input** | **Output** |
| 4  22IvanCC tells you to look for 1Stamat99  1Stamat99 told me 33Pesho11 is responsible.  33Pesho11 tells me to look for 1Gosho44  1Gosho44: i don't know, man | Did not find the manager!  Chain: 22IvanCC->1Stamat99->33Pesho11->1Gosho44 |
| **Input** | **Output** |
| 4  00PeturVVVV tells you to message 12StamatAA  12StamatAA told me 12Pesho11 is responsible.  11Pesho11 tells me to look for 1Gosho44  1Gosho44: i don't know, man | Broke the chain!  Chain: 00PeturVVVV->12StamatAA->12Pesho11 |