12. XML Checker

Program Name: XML.java   Input File: xml.dat

XML is an extension of HTML. In XML, the user can introduce a tag set that describes the data that he is working with. There are various rules that determine a valid XML document. The program that you will write will check two of those rules.

Rule I: A beginning tag must have an ending tag. A beginning tag is represented by *<tag_name>* and the corresponding ending tag is represented by *</tag_name>*.

Rule II: An element defined by one pair of beginning and ending tags may nest completely inside another pair of beginning and ending tags but they may not overlap.

Valid XML:
<address> <street> 123 Any Street </street> <city> Any City </city> </address>

Invalid XML:

<address> <street> 123 Any Street </street> <city> Any City </address> </city>

Your program will determine if a snippet of XML code conforms to these two rules or not.

Input
The first line of input will contain a single integer n that indicates the number of data sets to follow. For each data set, the first line will contain a single integer m that indicates the number of lines that follow in that snippet of XML code.

Output
For each snippet of XML code you will write `valid` or `invalid` on a line by itself.

Example Input
```
2
4
<student>
<name>
John Doe
</student>
2
<gpa>
</gpa>
```

Example Output to Screen
```
invalid
valid
```