

Problem 229: The Proper Address

Difficulty: Easy

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Problem Background

An Internet Protocol (IP) address is a unique identifying number assigned to every device that connects to the internet. Just as you use a street address to send letters and packages, computers that communicate over the internet or via local networks share information to a specific location using its IP address.

You're working with Lockheed Martin's Enterprise Business Services to create a new self-service form for requesting assistance with network issues. As part of this form, employees will need to enter their computer's IP address into the form. However, to make sure that things are entered correctly, we need to write a validation rule to confirm whether a given IP address is actually valid or not.

Problem Description

The Internet Protocol Version 4 (IPv4) was the original format for these addresses, and is still widely used today. IPv4 addresses are usually represented by a series of four integers separated by periods, each ranging from 0 to 255 inclusive. This means that IPv4 addresses themselves can range from 0.0.0.0 to 255.255.255.255.

You'll need to confirm that the "IP Addresses" users are entering into the form are actually valid IP addresses.

Sample Input

The first line of your program's input, received from the standard input channel, will contain a positive integer representing the number of test cases. Each test case will include a single line with an "IP address" to be validated. Inputs will consist of numbers and/or periods.

```
6
172.16.254.1
1.0.1.256
256.256.256.256
1.1.1.1.1
5.5
255.255.255.0
```

Sample Output

For each test case, your program must print a single line with the word "VALID" if the given input is a valid IP address, or "INVALID" otherwise.

```
VALID
INVALID
INVALID
INVALID
INVALID
VALID
```