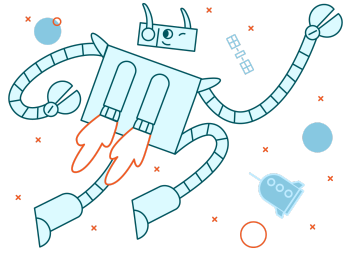# Classify My IP

Your project lead asks you to enhance the tool's IP address input feature. It should now validate input IP addresses and identify whether they are private, public, or localhost. This feature is critical for setting up security parameters based on the type of IP address entered.

Background

An **IP address** is a numerical label assigned to each device connected to a computer network that uses the Internet Protocol for communication. IP addresses can be classified into several types based on their intended use or scope. Understanding these types is crucial for network configuration and security:

- **Public IP addresses** are used for communication outside the internal network and can be routed on the internet.

- **Private IP addresses** are used within a private network and cannot be directly accessed from the outside internet. They fall within specific ranges (e.g., `192.168.x.x`, `10.x.x.x`, `172.16.x.x` to `172.31.x.x`).

- **Localhost (Loopback)** address (`127.0.0.1`) is used by a device to send messages to itself. It's useful for testing and development.

Task

1. Write a Python function `classify_ip(ip)` that takes an IP address as input, validates it, and classifies it as 'private', 'public', or 'localhost'. If the IP address is invalid, it should return 'invalid'.

2. Test your function with the following IP addresses and classify each. Explain your findings:

- 192.168.1.1
- 10.25.30.50
- 172.20.10.5
- 127.0.0.1
- 172.32.0.1
- 216.58.214.206

Bonus

- Read about the `ipaddress` Python library. Use it to solve the exercise.

To submit

Submit a Python script containing your `classify_ip` function, and tests for the IP addresses specified above.

Sentinel