Classify My IP

Your project lead asks you to enhance the tool's IP address validation feature. It should now validate 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.

Instructions

1. Write a Python script 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' (You should build upon your existing code in validate_ip.py)

2. Test your python script 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`
    - `266.32.0.1`
    - `216.58.214.206`

Bonus tasks (Optional)

- Read about the ipaddress Python library & use it to solve the exercise.

Example Output

```
10.0.0.1: private
200.111.201.5: public
260.10.20.30: invalid
.
.
```

To submit

Submit a Python script called `classify_ip.py` that tests for the IP addresses specified above.