### Geolocation Tracker Using Public IP Address Documentation

This Python script demonstrates how to track the geolocation of a device using its public IP address. It uses the Nominatim geocoder to obtain the device's current location based on its IP address. Below is a detailed explanation of how the code works:

#### Libraries Used and Their Purpose:

1. **requests**:
   * Used to make an HTTP GET request to fetch the public IP address of the device.
2. **geopy** (Nominatim Geocoder):
   * Used to perform geolocation based on the device's IP address.
   * Specifically, it uses the Nominatim geocoder from the geopy.geocoders module.

#### Code Structure and Functionality:

The code is organized into functions and a main section, each with specific roles:

1. get\_public\_ip\_address **Function**:
   * Sends an HTTP GET request to the "[https://api.ipify.org?format=json](https://api.ipify.org/?format=json)" URL to fetch the device's public IP address.
   * Returns the public IP address as a string.
   * Handles potential exceptions and prints an error message if the request fails.
2. get\_location **Function**:
   * Takes a geocoder (locator) and the current public IP address as input.
   * Uses the geocoder to retrieve the current location based on the provided IP address.
   * Extracts the latitude, longitude, and address information from the geocoded location.
   * Returns the latitude, longitude, and address as a tuple.
   * Handles exceptions and prints an error message if geolocation fails.
3. **Main Section (**if \_\_name\_\_ == "\_\_main\_\_":**)**:
   * Calls the get\_public\_ip\_address function to fetch the public IP address of the device.
   * If the public IP address is obtained successfully, it proceeds to geolocate the device using Nominatim.
   * It uses a Nominatim locator with a user-agent name of "geo\_locator" for geolocation.

#### How the Code Works:

1. The script starts by defining two functions: get\_public\_ip\_address and get\_location.
2. In the main section:
   * The script calls the get\_public\_ip\_address function to obtain the public IP address of the device.
   * If the public IP address is obtained successfully, it proceeds to geolocate the device using Nominatim.
3. In the geolocation process:
   * A Nominatim locator is created with the user-agent name "geo\_locator."
   * The get\_location function is called to retrieve the device's current location based on the public IP address.
   * If the location is obtained successfully, the latitude, longitude, and address are extracted and printed.
   * If geolocation fails, an error message is printed.
4. The script handles exceptions and prints error messages in case of failures during the IP address retrieval or geolocation processes.

Overall, this script provides a basic implementation for tracking the geolocation of a device using its public IP address. It can be further enhanced to provide more detailed location information or integrated into larger applications for various purposes.