# Information Gathering Tool

PREPARED BY

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## INTRODUCTION

The Information Gathering Tool is a Python-based project designed to extract and display the IP address and location information of any website provided by the user. The tool uses the IPinfo API to fetch detailed information such as city, region, country, and organization associated with the IP address. The goal of this project is to demonstrate the integration of Python libraries and API usage for information retrieval.

### Requirements

**Python Libraries Used:**

- sys: To handle command-line arguments.
- socket: To retrieve the IP address of a given website.
- requests: To send HTTP requests to the IPinfo API.
- json: To format and display the information received from the API.

**API Reference:**

- IPinfo API endpoint: https://ipinfo.io/<142.250.199.174>/json

## Python Script Explanation (infotool.py)

**Key Functions:**

- **get_ip_address(website):**

- Takes a website URL as input.
- Uses socket.gethostbyname() to find the IP address.
- Handles invalid URLs with error messages.

- **get_location_info(ip_address):**
  - Uses the IP address to make an API call to IPinfo.
  - Fetches location data in JSON format.
  - Displays data including city, region, country, and organization.
- **main():**
  - Handles command-line arguments.
  - Integrates both functions to provide a seamless user experience.

Code Snippet:

infotool.py > ...

```python
import sys
import socket
import requests
import json

def get_ip_address(website):
    try:
        ip_address = socket.gethostbyname(website)
        return ip_address
    except socket.gaierror:
        print("Invalid website URL.")
        sys.exit()

def get_location_info(ip_address):
    api_url = f"https://ipinfo.io/{ip_address}/json"
    response = requests.get(api_url)
    location_data = response.json()
    print(json.dumps(location_data, indent=4))

if __name__ == "__main__":
    if len(sys.argv) != 2:
        print("Usage: python infotool.py <websiteurl>")
    else:
        ip = get_ip_address(sys.argv[1])
        get_location_info(ip)
```

# NEXT STEPS

## How the Script Works

1. **Input:** Accepts a website URL via command-line arguments.
2. **IP Address Retrieval:** Uses socket to find the IP address of the website.
3. **API Request:** Makes an API call to IP info using the IP address.
4. **Output:** Displays location data in JSON format, including:

- City
- Region
- Country
- Organization
- Geographical coordinates (lat, long)

## Example Command & Output

**Command:**

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```
python infotool.py google.com
```

```
PS C:\Users\mangl\OneDrive\Desktop\Cyber> python infotool.py google.com
>>
{
    "ip": "142.250.199.174",
    "hostname": "bom07s37-in-f14.1e100.net",
    "city": "Mumbai",
    "region": "Maharashtra",
    "country": "IN",
    "loc": "19.0728,72.8826",
    "org": "AS15169 Google LLC",
    "postal": "400017",
    "timezone": "Asia/Kolkata",
    "readme": "https://ipinfo.io/missingauth"
}
```

## Challenges Faced

- Handling invalid URLs gracefully.
- Ensuring API requests are successful and managing HTTP errors.
- Formatting JSON output for readability.

## Conclusion

The Information Gathering Tool successfully integrates multiple Python libraries and an external API to fetch and display IP and location information efficiently. This project demonstrates practical knowledge of networking in Python and handling external APIs.