Project-2 Report
On

Threat Intel Processor

GitHub Link: https://tinyurl.com/mv6ajyhh
Youtube Link: https://tinyurl.com/ycmxs3hn

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Project 3: Threat Intel Processor

This guide explains how to build a Python script that fetches malicious IPs from the **AbuseIPDB** threat feed and checks them against a sample log file.

Problem Statement: Develop a system that automates the consumption of open-source threat intelligence (TI) feeds to detect potential security threats within system and network logs, enabling faster identification of malicious indicators of compromise (IOCs).

Use Case: Build a Python-based tool that runs on a schedule, fetches the latest threat data (malicious IPs, domains, file hashes) from public feeds like **AbuseIPDB** and **AlienVault OTX**, and stores it locally. The tool will then compare these IOCs against simulated network or system logs to find matches, generating alerts for any suspicious activity, such as communication with a known command-and-control server.

Key Modules:

• Threat Intelligence Feed Aggregator (API Clients)
• IOC Storage (Local Database)
• Log Processing & Correlation Engine
• Anomaly Detection & Alerting Mechanism
• Simulated Log Generator

Step 1: Set up an API key

a. Install Python and Libraries:

cybermonk@myLap:~ $ *sudo apt update && sudo apt upgrade -y*

cybermonk@myLap:~ $ *sudo apt install -y python3 python3-pip*

cybermonk@myLap:~ $ *source venv/bin/activate*

cybermonk@myLap:~ $ *pip install requests*

```
cybermonk@myLap:~ $ source venv/bin/activate
cybermonk@myLap:~ $ pip install requests
Collecting requests
  Downloading requests-2.32.5-py3-none-any.whl.metadata (4.9 kB)
Collecting charset_normalizer<4,>=2 (from requests)
  Downloading charset_normalizer-3.4.4-cp312-cp312-manylinux2014_x86_64.manylinux_2_17_x86_64.manylinux_2_28
_x86_64.whl.metadata (37 kB)
Collecting idna<4,>=2.5 (from requests)
  Downloading idna-3.11-py3-none-any.whl.metadata (8.4 kB)
Collecting urllib3<3,>=1.21.1 (from requests)
  Downloading urllib3-2.5.0-py3-none-any.whl.metadata (6.5 kB)
Collecting certifi>=2017.4.17 (from requests)
  Downloading certifi-2025.10.5-py3-none-any.whl.metadata (2.5 kB)
Downloading requests-2.32.5-py3-none-any.whl (64 kB)
   ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 64.7/64.7 kB 1.2 MB/s eta 0:00:00
Downloading certifi-2025.10.5-py3-none-any.whl (163 kB)
   ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 163.3/163.3 kB 3.4 MB/s eta 0:00:00
Downloading charset_normalizer-3.4.4-cp312-cp312-manylinux2014_x86_64.manylinux_2_17_x86_64.manylinux_2_28_x
86_64.whl (153 kB)
   ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 153.5/153.5 kB 10.3 MB/s eta 0:00:00
Downloading idna-3.11-py3-none-any.whl (71 kB)
   ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 71.0/71.0 kB 6.7 MB/s eta 0:00:00
Downloading urllib3-2.5.0-py3-none-any.whl (129 kB)
   ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 129.8/129.8 kB 9.8 MB/s eta 0:00:00
Installing collected packages: urllib3, idna, charset_normalizer, certifi, requests
Successfully installed certifi-2025.10.5 charset_normalizer-3.4.4 idna-3.11 requests-2.32.5 urllib3-2.5.0
cybermonk@myLap:~ $
```

b. Get an AbuseIPDB API key: (Steps in **Annexure-1**)

   Go to https://www.abuseipdb.com/ and create a free account.

   Navigate to your account section and go to "API".

   Create an API key and copy it

Step 2: Create the Python script

Create a single Python file named ***threat_checker.py*****.**

cybermonk@myLap:~ $ *vim threat_checker.py*

```python
import requests
import json
import sqlite3

#--- CONFIGURATION ---
API_KEY = 'f79817039c21acb71de0e5f3df54a89361ec797c5c400542b81cd1312d3ced3558b05d61b2802463'
# <-- IMPORTANT: PASTE YOUR KEY HERE
DB_FILE = 'threat_intel.db'

def setup_database():
    """Create the SQLite database and table if they don't exist."""
    conn = sqlite3.connect(DB_FILE)
    cursor = conn.cursor()
    cursor.execute("""
    CREATE TABLE IF NOT EXISTS iocs (
        ip_address TEXT PRIMARY KEY,
        abuse_confidence INTEGER,
        country_code TEXT
    )
    """)
    conn.commit()
    conn.close()
```

Key: f79817039c21acb71de0e5f3df54a89361ec797c5c400542b81cd1312d3ced3558b05d61b2802463

The Strategy: Use a Separate Input File 📝

We'll create a new file, for example, ips_to_test.txt. Your Python script will be changed to read every line from this file and use it to build the access.log for testing.

```python
# 3. Generate the test log from an external file
input_file = 'ips_to_test.txt'
print(f"\nGenerating 'access.log' from '{input_file}'...")
try:
    with open(input_file, 'r') as infile, open('access.log', 'w') as outfile:
        for line in infile:
            outfile.write(line)
    print("Successfully created 'access.log'.")
except FileNotFoundError:
    print(f"Error: Input file '{input_file}' not found. Please create it.")
    # Create a blank access.log so the next step doesn't fail
    open('access.log', 'w').close()

# 4. Check the logs against our database
check_logs('access.log')
```

How It Works Now ✅

Your workflow is now much simpler:

a. To add, remove, or change the IPs you want to test, you only need to edit the ***ips_to_test.txt*** ips_to_test.txt file.
b. You never need to touch the threat_checker.py script again for this purpose.
c. Just run the script as usual (***python3*** *threat_checker.py*), and it will automatically use the latest list of IPs from your input file for the scan.

```
cybermonk@myLap:~ $ ls
'!'   Infotact-Solution-Internship   access.log   ips_to_test.txt   threat_checker.py   threat_intel.db   venv
cybermonk@myLap:~ $  cat ips_to_test.txt
193.32.162.157
80.94.95.115
43.173.120.131
1.1.1.1
8.8.8.8
185.191.171.12
cybermonk@myLap:~ $
```

Step 3: Run and Verify

a. Run the script:

cybermonk@myLap:~ $ *python3 threat_checker.py*

b. **Analyze the Output:** The script will first print that it's fetching data and updating the database. Then, it will scan the access.log file it created. Since the threat feed is live, the exact malicious IPs will change, but you should see at least one "**ALERT**" message if any of the IPs in your access.log happen to be on the current AbuseIPDB blacklist.

```
cybermonk@myLap:~ $ python3 threat_checker.py
Fetching latest threat intelligence...
Database updated. Added 0 new IPs.

Generating 'access.log' from 'ips_to_test.txt'...
Successfully created 'access.log'.

Scanning log file: access.log...
 (!) ALERT: Malicious IP found in logs: 193.32.162.157 (Confidence: 100%)
 (!) ALERT: Malicious IP found in logs: 185.191.171.12 (Confidence: 100%)
cybermonk@myLap:~ $
```

Step 4: Create the Cron Job:

Now we'll add the scheduled task to your user's "crontab" file.

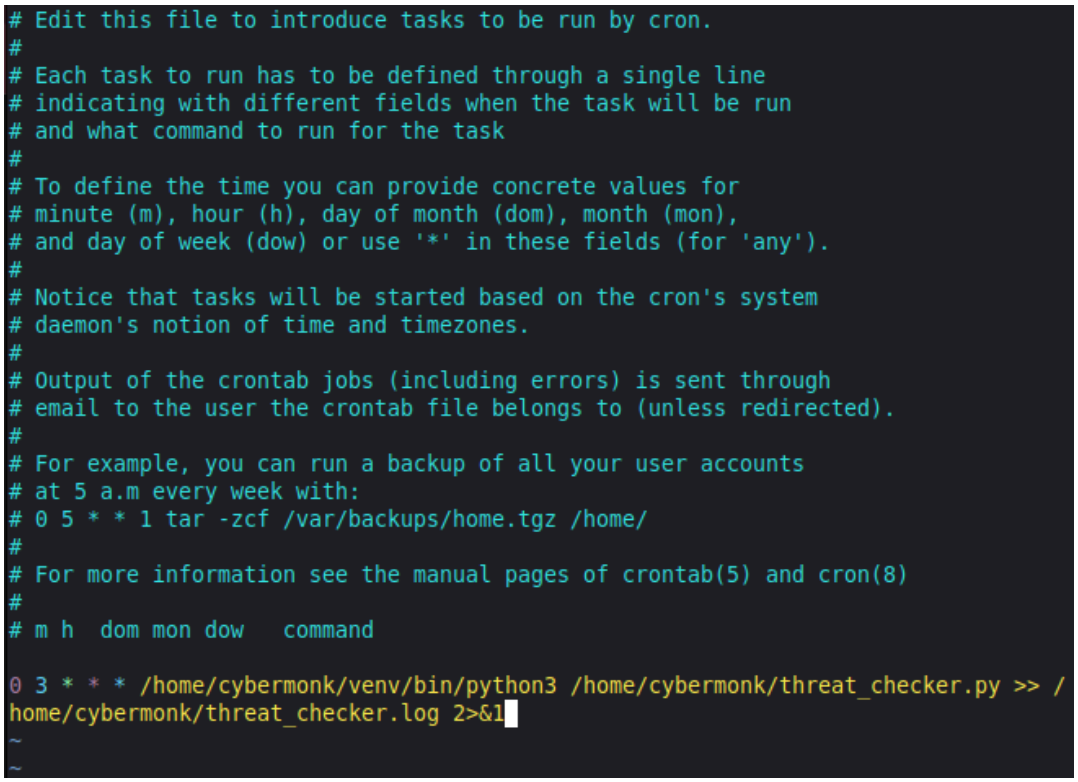
a. **Open the crontab editor**:

cybermonk@myLap:~ $ *crontab -e*

If it's your first time, it might ask you to choose a text editor. ***nano*** is usually the easiest option.

b. **Add the cron job line**: Go to the bottom of the file and add the following line. This example will run the script every day at 3:00 AM

0 3 * * * /home/cybermonk/venv/bin/python3 /home/cybermonk/threat_checker.py >> /home/cybermonk/threat_checker.log 2>&1



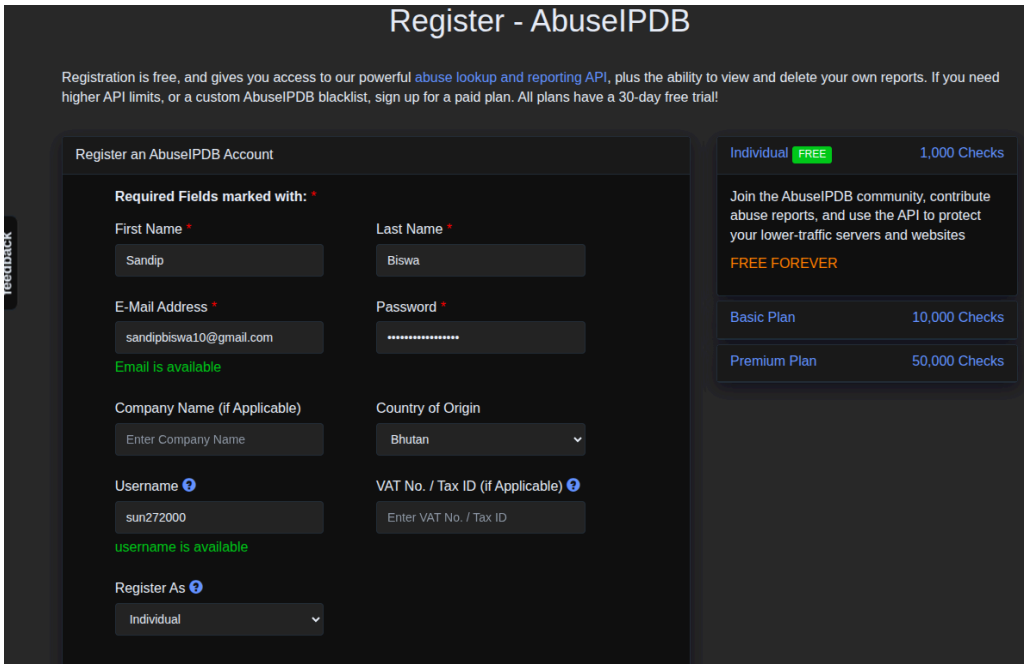
c. **Save and Exit:**
In **nano,** press ***Ctrl*** + ***X,*** then ***Y*** to confirm, and ***Enter*** to save.
You should see a message like crontab: *installing new crontab.*

Annexure-1:

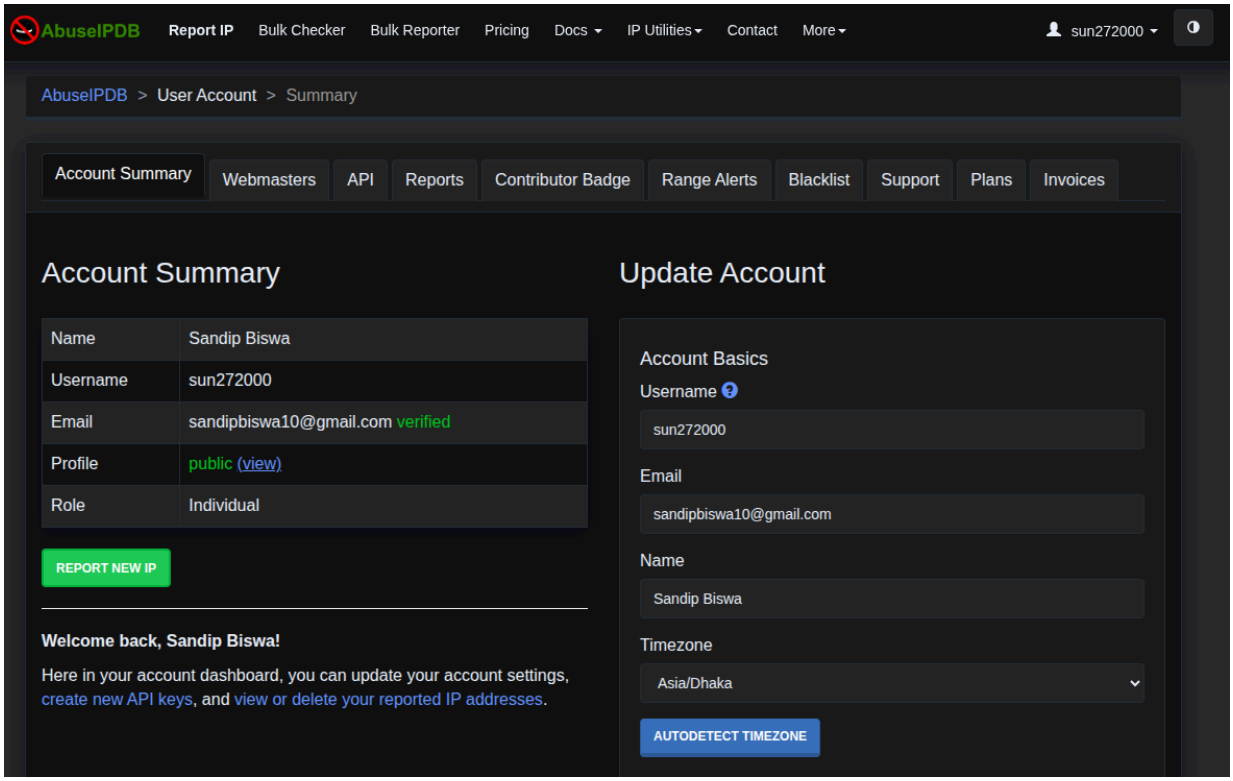
Step-by-step process of creating a free account on the website **AbuseIPDB** and generating an **API key.**

a. Go to https://www.abuseipdb.com/ and create a free account.

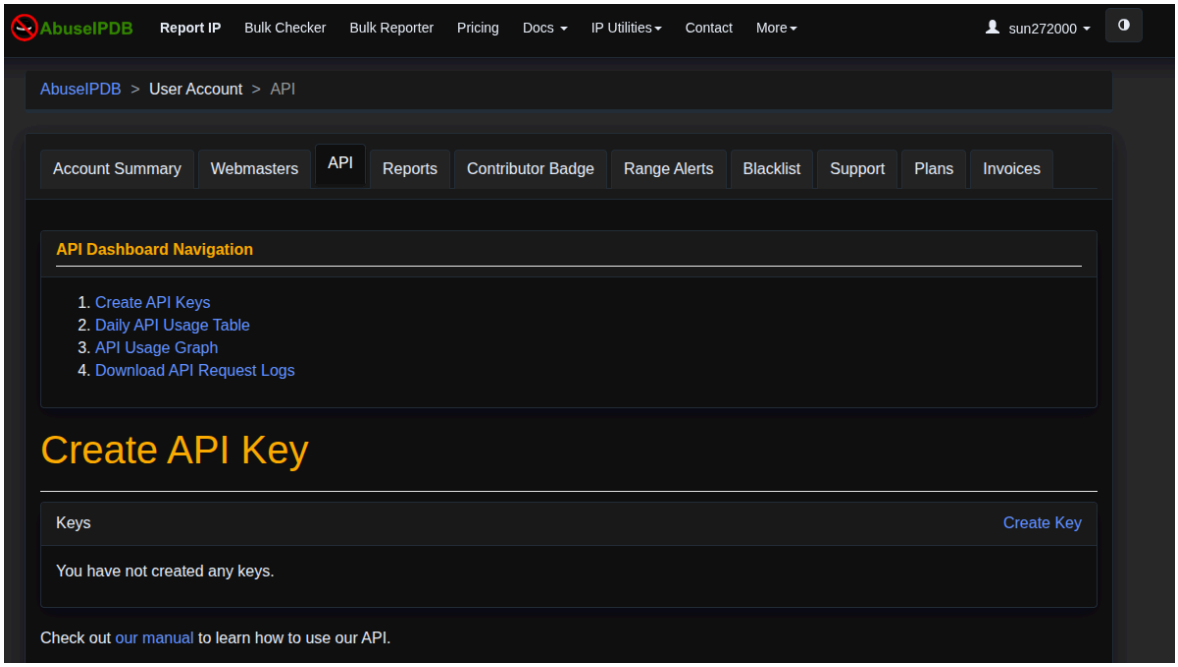
b. **Registering an Account:** The third image shows the registration form being filled out with user details (Name: *Sandip Biswa*, Username: *sun272000*) for the free "Individual" plan.



c. **Navigating to the API Section:** The fifth image shows that the user has clicked on the "API" tab within their account dashboard, which initially shows that no API keys have been created.



d. **Creating an API Key:** The sixth image shows that an API key named "Test-threat_intel_process" has been successfully generated.



e. **Viewing API Usage:** The final image displays the "API Usage Graph" for the newly created key, showing a spike in "backlist" activity on October 17, 2025.