README.md – Basic Network Sniffer (Code Alpha Internship)

Basic Network Sniffer – Code Alpha Cybersecurity Internship

This project is a Python-based network sniffer developed as Task 1 for the CodeAlpha Cybersecurity Internship. It captures and analyzes live network traffic using raw sockets and verifies Scapy functionality.

Objective

The goal of this project is to build a simple yet functional network sniffer that can:

- Capture live network packets

- Analyze and parse protocol data (IPv4, TCP, UDP, ICMP)

- Display useful information such as IP addresses, ports, and protocol details

- Understand the structure of network packets and the flow of data

Features

- Captures IPv4 packets using raw sockets (for Windows)

- Parses and displays TCP, UDP, and ICMP packet data

- Includes a Scapy check to verify proper installation

- Designed to run on Windows 11 Pro with Administrator privileges

- Real-time packet monitoring through command line

Technologies Used

Tool/Library	Description
Python 3.10+	Core language used for development
Scapy	Packet verification and manipulation
Socket	Raw packet capture
Struct	Binary data parsing
CMD / PowerShell	Required for execution on Windows

How to Run

Prerequisites

- Python 3.10 or newer

- Install Scapy:

pip install scapy

- Install Npcap (for packet capture on Windows):

https://nmap.org/npcap/

Execution

1. Open CMD or PowerShell **as Administrator**

2. Navigate to the project directory:

    cd "D:\Internships Files\Cyber Security Internship 1 - Copy"

3. Run the script:

python basic_network_sniffer.py

Sample Output

Admin rights: 1
Sniffing on 192.168.100.82 (Windows) — Press Ctrl + C to stop

IPv4 Packet: 192.168.1.5 → 8.8.8.8, Protocol: 1, TTL: 64
ICMP: Type=8, Code=0, Length=32

IPv4 Packet: 192.168.1.5 → 192.168.1.1, Protocol: 6, TTL: 128
TCP: 192.168.1.5:1234 → 192.168.1.1:80, Seq=1001, Ack=2002

Files Included

- basic_network_sniffer.py` - Main sniffer code
- requirements.txt` - Python dependencies
- README.md` - Project documentation
- example_output.txt` - Sample run output
- screenshots/` - Terminal output screenshots
- report.docx` - Internship task report (if applicable)

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Project Status

Tested and working successfully on Windows 11 Pro with Administrator permissions.