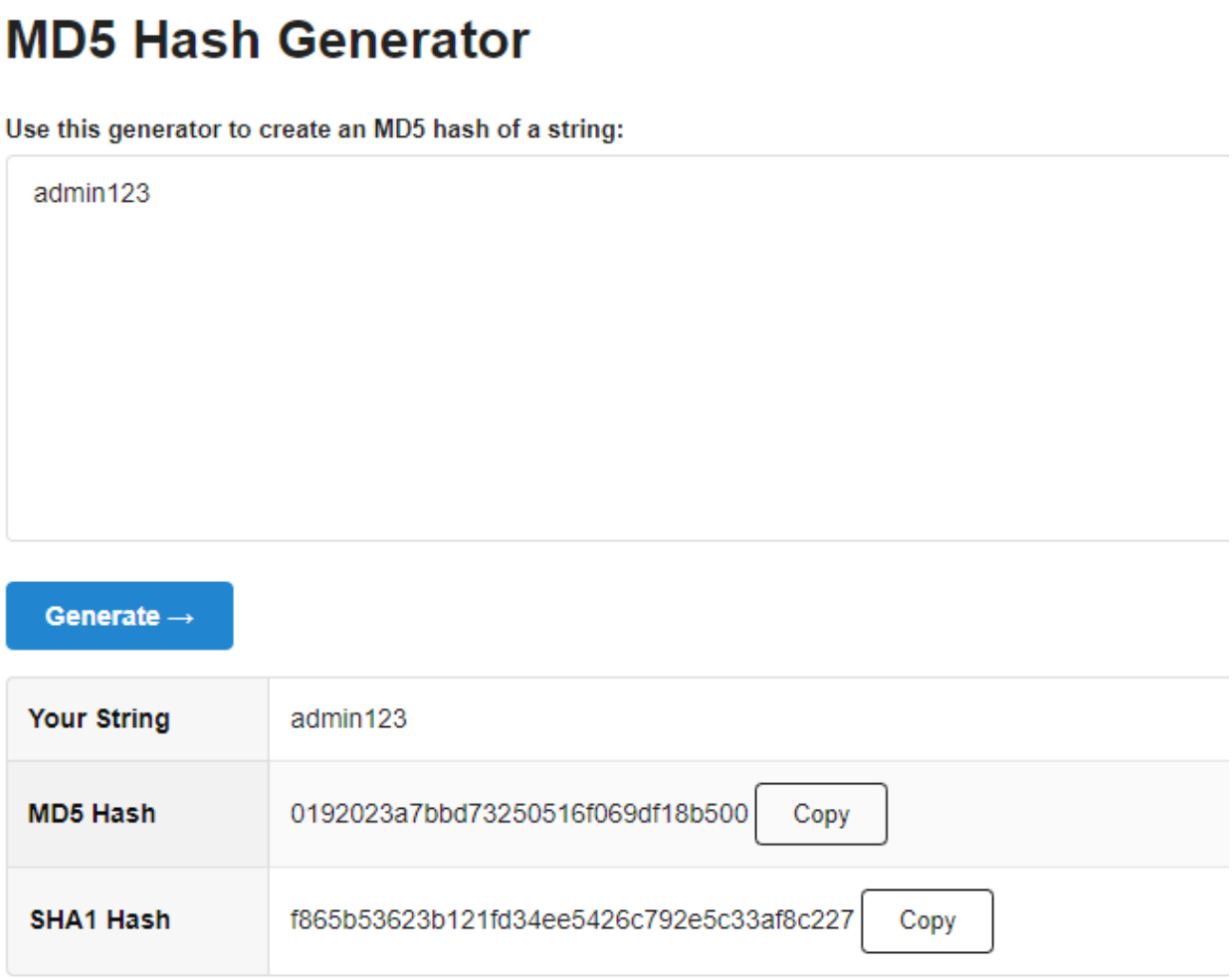
# III Module: Malware Threats: Worms, Viruses, Torjans

**Using the software tools/commands to perform the following, generate an analysis report:**

## A. Password Cracking

a. Use MD5 generator in the site https://www.md5hashgenerator.com/ to find out the MD5 hash for the following words i. Admin12345 ii. Ethical@#$%Hacking




b. Use crackstation.net to feed in the above MD5 hashes and find out its equivalent words. Display the results obtained.

Free Password Hash Cracker

Enter up to 20 non-salted hashes, one per line:

```
0192023a7bbd73250516f069df18b500
```

I'm not a robot reCAPTCHA Privacy - Terms

Crack Hashes

**Supports:** LM, NTLM, md2, md4, md5, md5(md5_hex), md5-half, sha1, sha224, sha256, sha384, sha512, ripeMD160, whirlpool, MySQL 4.1+ (sha1(sha1_bin)), QubesV3.1BackupDefaults

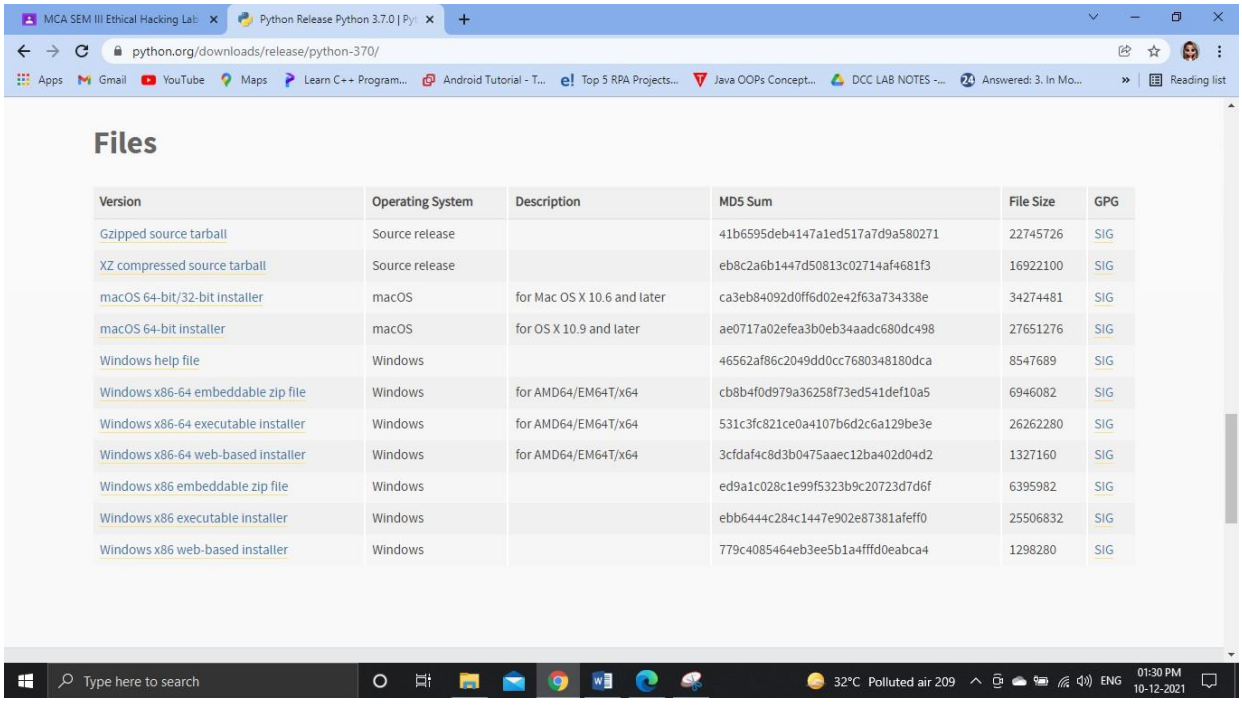
| Hash | Type | Result |
|---|---|---|
| 0192023a7bbd73250516f069df18b500 | md5 | admin123 |

**Color Codes:** Green: Exact match, Yellow: Partial match, Red: Not found.

## B. Dictionary attack

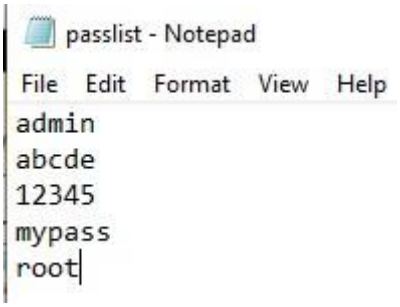
Steps: 1

- Go to https://www.python.org/downloads/release/python-370/




- Run the setup python-3.7.0-amd64
- Go to custom installation

  Create passlist.txt



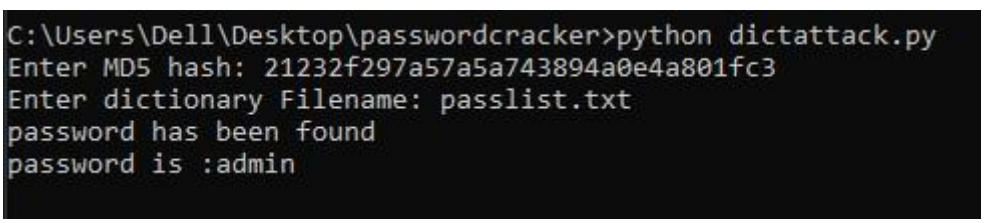

- Create md5 encryption for few words. use the link Use the link https://www.visiospark.com/password-encryption-tool/ to enter a password and fetch its MD5 encryption.


**Packages, Classes and methods**

| | |
|---|---|
| **hashlib** | Module to generate message digest or secure hash from the source message |
| **Encode('utf-8')** | Returns an encoded version of the given string. By default, Python uses utf-8 encoding. |
| **strip()** | Used to strip off any blank space in the string. |
| **hexdigest()** | To convert hashed object into hexadecimal format. |

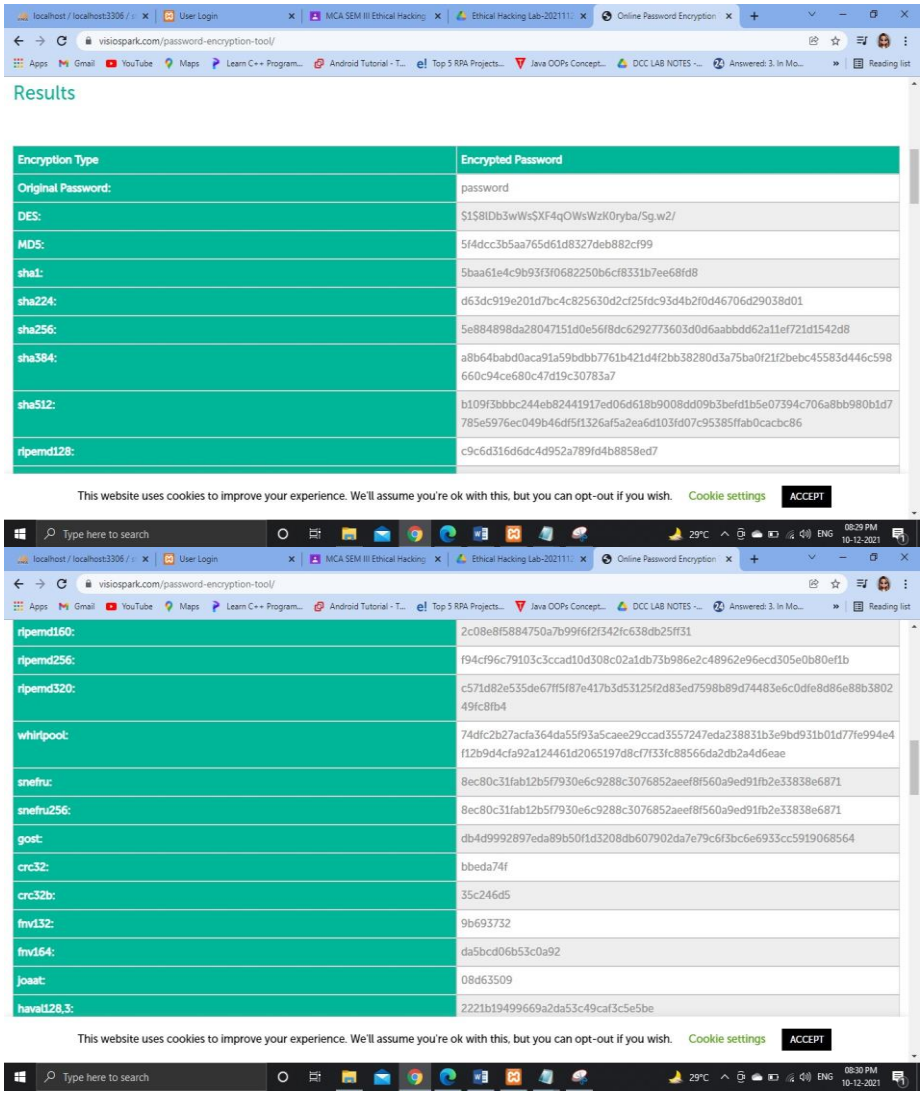
- Write the python code in notepad and save as dictattack.py import hashlib flag=0 p_hash=input("Enter MD5 hash") dictionary=input("Enter dictionary Filename:") try: password_file=open(dictionary,"r") except: print("No file found") quit() for word in password_file:
  enc_word=word.encode('utf-8') digest =hashlib.md5(enc_word.strip()).hexdigest() if(digest==p_hash): print("password has been found") print("password is :" +word) flag=1 break if(flag==0): print("No password found")

- In the command prompt d:\passwordcracking>python dictattack.py



## C. Encrypt and Decrypt Passwords

Use the link https://www.visiospark.com/password-encryption-tool/ to enter a password and generate report that contains encrypted data generated by various algorithms



Results

| Encryption Type | Encrypted Password |
|---|---|
| Original Password: | password |
| DES: | $1$8IDb3wWs$XF4qOWsWzK0ryba/Sg.w2/ |
| MD5: | 5f4dcc3b5aa765d61d8327deb882cf99 |
| sha1: | 5baa61e4c9b93f3f0682250b6cf8331b7ee68fd8 |
| sha224: | d63dc919e201d7bc4c825630d2cf25fdc93d4b2f0d46706d29038d01 |
| sha256: | 5e884898da28047151d0e56f8dc6292773603d0d6aabbdd62a11ef721d1542d8 |
| sha384: | a8b64babd0aca91a59bdbb7761b421d4f2bb38280d3a75ba0f21f2bebc45583d446c598660c94ce680c47d19c30783a7 |
| sha512: | b109f3bbbc244eb82441917ed06d618b9008dd09b3befd1b5e07394c706a8bb980b1d7785e5976ec049b46df5f1326af5a2ea6d103fd07c95385ffab0cacbc86 |
| ripemd128: | c9c6d316d6dc4d952a789fd4b8858ed7 |

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| | |
|---|---|
| ripemd160: | 2c08e8f5884750a7b99f6f2f342fc638db25ff31 |
| ripemd256: | f94cf96c79103c3ccad10d308c02a1db73b986e2c48962e96ecd305e0b80ef1b |
| ripemd320: | c571d82e535de67ff5f87e417b3d53125f2d83ed7598b89d74483e6c0dfe8d86e88b380249fc8fb4 |
| whirlpool: | 74dfc2b27acfa364da55f93a5caee29ccad3557247eda238831b3e9bd931b01d77fe994e4f12b9d4cfa92a124461d2065197d8cf7f33fc88566da2db2a4d6eae |
| snefru: | 8ec80c31fab12b5f7930e6c9288c3076852aeef8f560a9ed91fb2e33838e6871 |
| snefru256: | 8ec80c31fab12b5f7930e6c9288c3076852aeef8f560a9ed91fb2e33838e6871 |
| gost: | db4d9992897eda89b50f1d3208db607902da7e79c6f3bc6e6933cc5919068564 |
| crc32: | bbeda74f |
| crc32b: | 35c246d5 |
| fnv132: | 9b693732 |
| fnv164: | da5bcd06b53c0a92 |
| joaat: | 08d63509 |
| haval128,3: | 2221b19499669a2da53c49caf3c5e5be |

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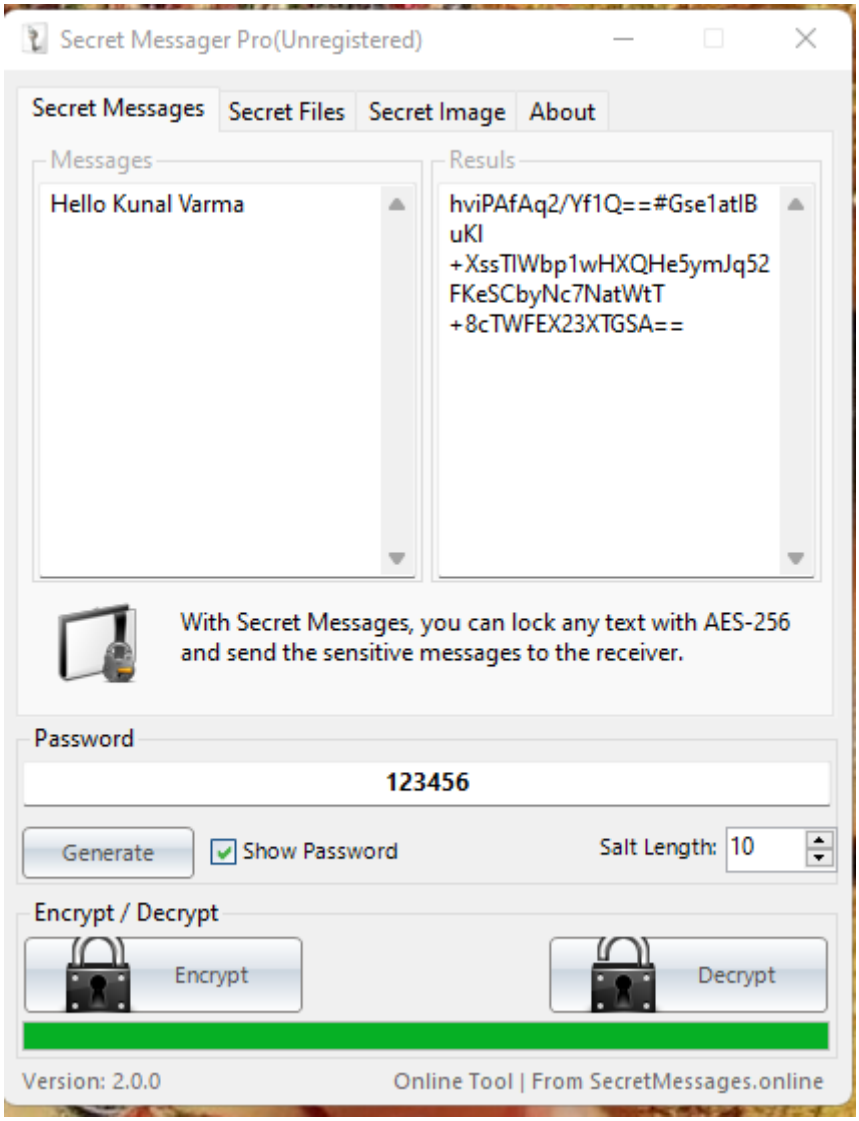
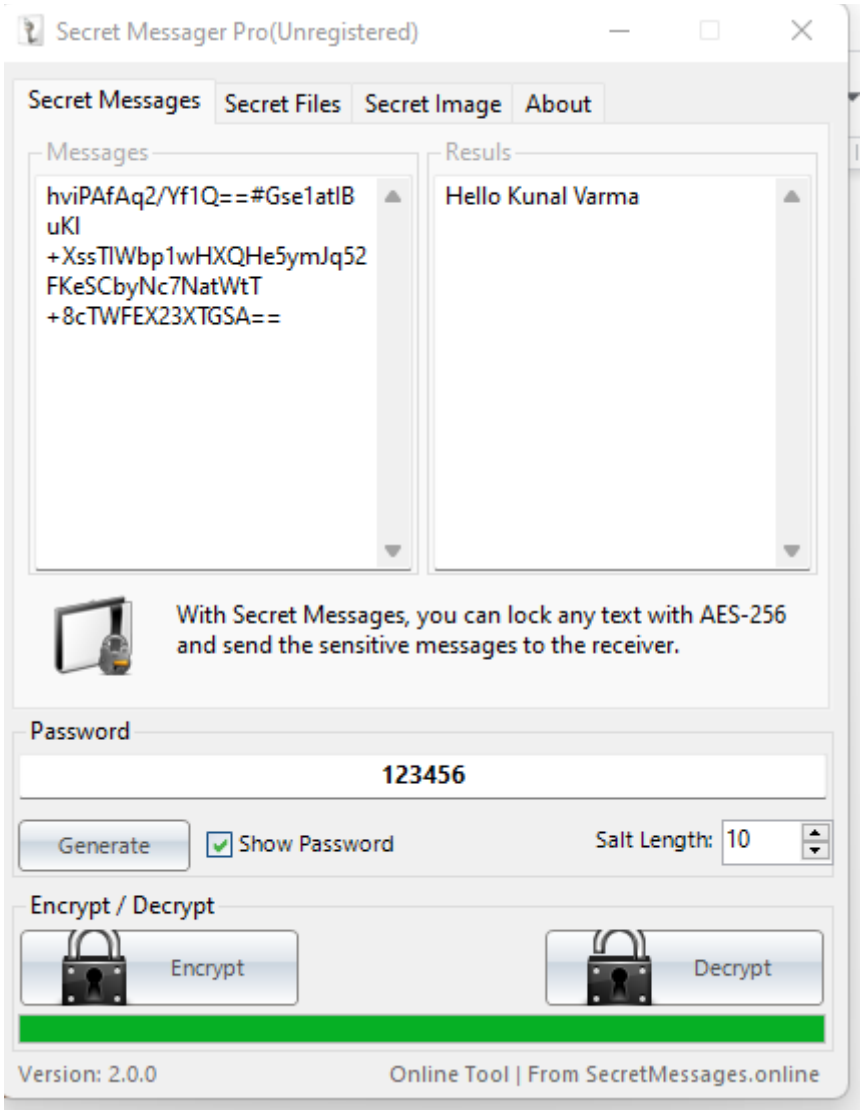
Go to http://secretmessages.online/Home/Software and download SecretMessagerPro_2.0.0. Encrypt and decrypt text and password using the secretmessagerpro software.

**Encryption:**


Secret Messager Pro(Unregistered)
Secret Messages
Secret Files
Secret Image
About
Messages
Hello Kunal Varma
Resuls
hviPAfAq2/Yf1Q==#Gse1atlBuKI
+XssTlWbp1wHXQHe5ymJq52FKeSCbyNc7NatWtT
+8cTWFEX23XTGSA==
With Secret Messages, you can lock any text with AES-256 and send the sensitive messages to the receiver.
Password
123456
Generate
Show Password
Salt Length: 10
Encrypt / Decrypt
Encrypt
Decrypt
Version: 2.0.0
Online Tool | From SecretMessages.online

**Decryption:**




## D. DoS Attack

### 1 Denial of Service Attacks_ The Ping of Death-3_D_1

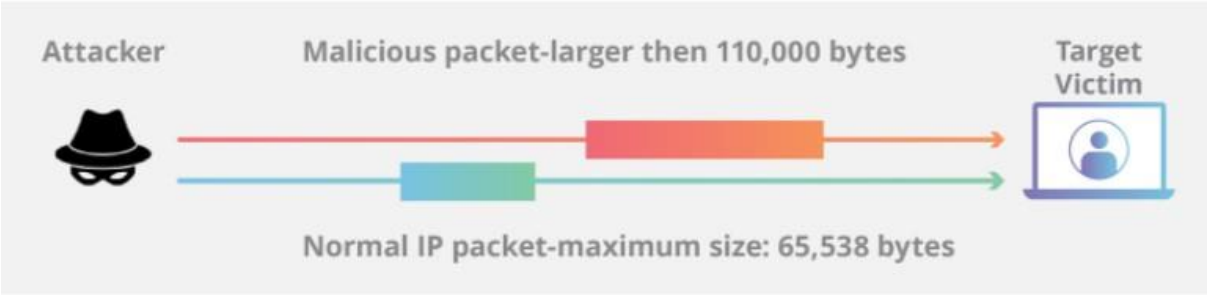
**What is a ping of death attack?**

A Ping of death (PoD) attack is a denial-of-service (DoS) attack, in which the attacker aims to disrupt a targeted machine by sending a packet larger than the maximum allowable size, causing the target machine to freeze or crash. The original ping of death attack is less common today. A related attack known as an ICMP flood attack is more prevalent.

**How does a ping of death attack work?**

An Internet Control Message Protocol (ICMP) echo-reply message or "ping", is a network utility used to test a network connection, and it works much like sonar – a "pulse" is sent out and the "echo" from that pulse tells the operator information about the environment. If the connection is working, the source machine receives a reply from the targeted machine.

While some ping packets are very small, IP4 ping packets are much larger, and can be as large as the maximum allowable packet size of 65,535 bytes. Some TCP/IP systems were never designed to handle packets larger than the maximum, making them vulnerable to packets above that size.




When a maliciously large packet is transmitted from the attacker to the target, the packet becomes fragmented into segments, each of which is below the maximum size limit. When the target machine attempts to put the pieces back together, the total exceeds the size limit and a buffer overflow can occur, causing the target machine to freeze, crash or reboot.

While ICMP echo can be used for this attack, anything that sends an IP datagram can be used for this exploit. That includes **TCP,** UDP and **IPX** transmissions.

A simple tutorial on how to perform DoS attack using **ping of death** using CMD:

**Disclaimer**: This is just for educational purposes. It's nothing great but you can use it to learn.
Here are the steps:

- Open Notepad
- Copy the following text on the notepad *:loop*
  *ping <IP Address> -l 65500 -w 1 -n 1*
  *goto :loop*
  In the above command, replace <IP Address> with an IP address.
- Save the Notepad with any name. Let's say *dos.txt*
- Right click on the dos.txt and click on *rename.*
- Change the extension from .txt to *.bat*
- So, now the file name should be *dos.bat*
- Double click on it and you will see a command prompt running with a lot of pings.

## 2 Denial of Service Attacks (Part 3)_ TCP SYN Flooding-3_D_2

### What is a SYN flood attack

TCP SYN flood (a.k.a. SYN flood) is a type of Distributed Denial of Service (DDoS) attack that exploits part of the normal TCP three-way handshake to consume resources on the targeted server and render it unresponsive.
Essentially, with SYN flood DDoS, the offender sends TCP connection requests faster than the targeted machine can process them, causing network saturation.

### Attack description

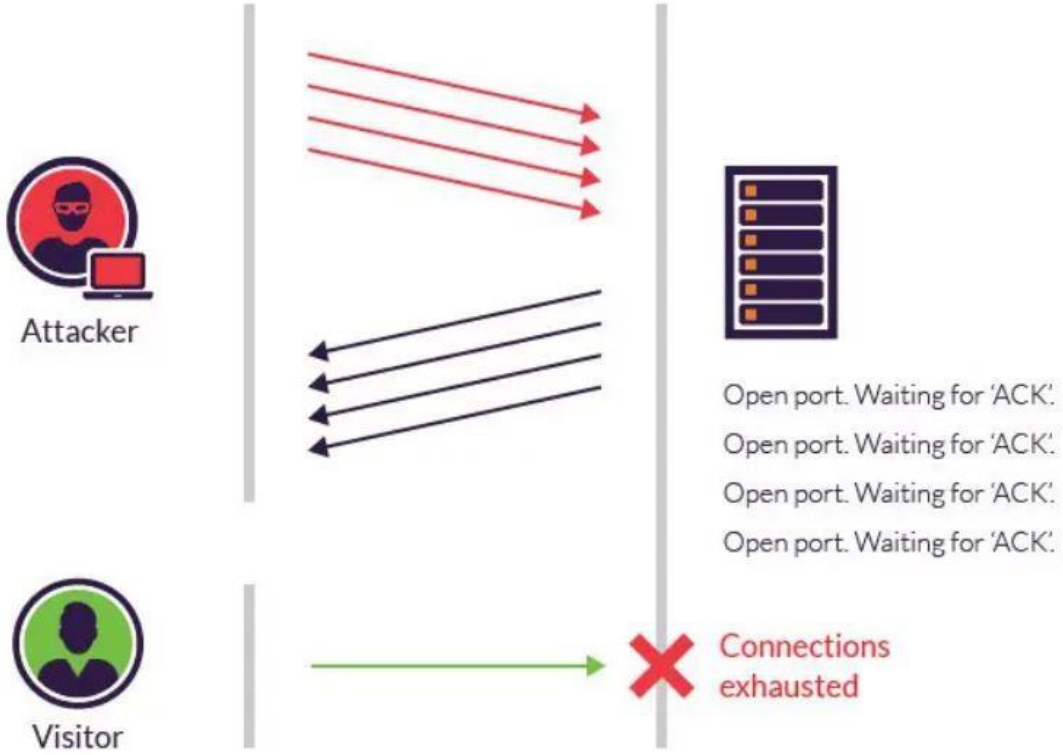
When a client and server establish a normal TCP "three-way handshake," the exchange looks like

this:

1. Client requests connection by sending SYN (synchronize) message to the server.
2. Server acknowledges by sending SYN-ACK (synchronize-acknowledge) message back to the client.
3. Client responds with an ACK (acknowledge) message, and the connection is established.

In a SYN flood attack, the attacker sends repeated SYN packets to every port on the targeted server, often using a fake IP address. The server, unaware of the attack, receives multiple, apparently legitimate requests to establish communication. It responds to each attempt with a SYN-ACK packet from each open port.

The malicious client either does not send the expected ACK, or—if the IP address is spoofed—never receives the SYN-ACK in the first place. Either way, the server under attack will wait for acknowledgement of its SYN-ACK packet for some time.



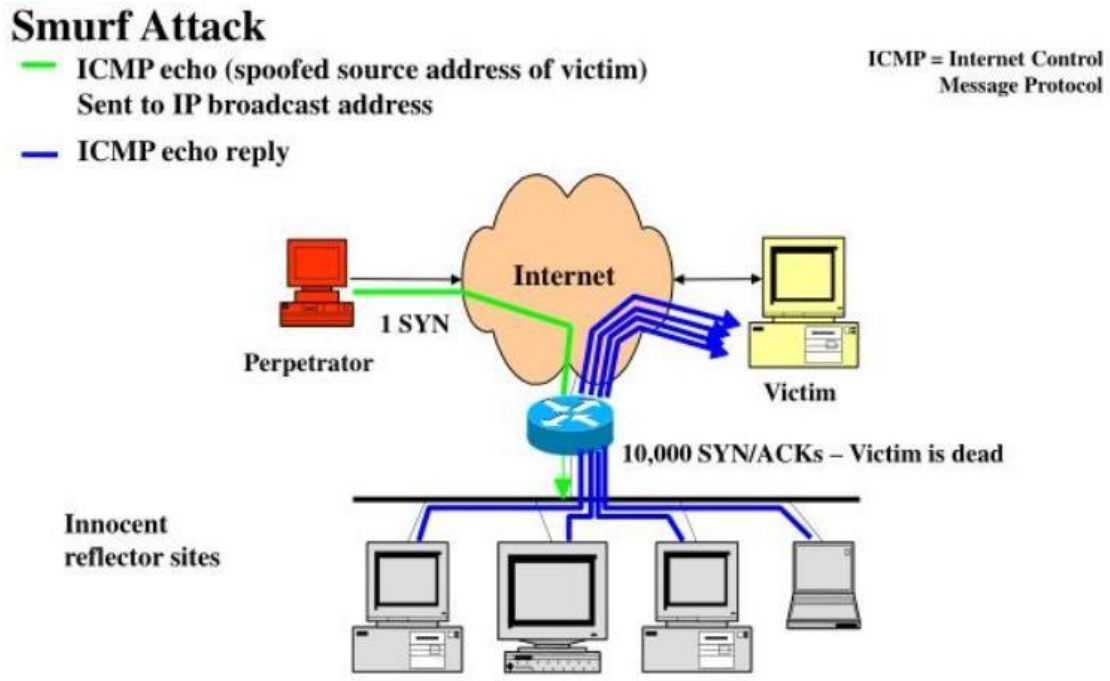

**3 Denial of Service Attacks (Part 5)_ The Smurf Attack_(240p)- 3_D_3**

**Smurf Attack**

Smurf attack exploits the target by sending repeated ping request to broadcast address of the target network. The ping request packet often uses forged IP address (return address), which is the target site that is to receive the denial of service attack. The result will be lots of ping replies flooding back to the innocent, spoofed host. If number of hosts replying to the ping request is large enough,

the network will no longer be able to receive real traffic.

The Smurf Attack is a distributed denial-of-service attack in which large numbers of Internet Control Message Protocol (ICMP) packets with the intended victim's spoofed source IP are broadcast to a coputer network using an IP Broadcast address. Most devices on a network will, by default, respond to this by sending a reply to the source IP address. If the number of machines on the network that receive and respond to these packets is very large, the victim's computer will be flooded with traffic. This can slow down the victim's computer to the point where it becomes impossible to work on




## E. ARP poisoning in Windows

ARP command to view and modify the ARP table entries on the local computer. This may display all the known connections on your local area network segment (if they have been active and in the cache). The Arp command is useful for viewing the ARP cache and resolving address resolution problems.

Syntax (Inet means Internet address)

arp[-a [InetAddr] [-N IfaceAddr]] [-g [InetAddr] [-N IfaceAddr]] [- d InetAddr [IfaceAddr]] [-s InetAddrEtherAddr [IfaceAddr]]

```
Command Prompt
C:\>arp -a

Interface: 192.168.159.1 --- 0x5
  Internet Address      Physical Address      Type
  192.168.159.254       00-50-56-f9-b2-b9     dynamic
  192.168.159.255       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
  224.0.0.252           01-00-5e-00-00-fc     static
  239.255.255.250       01-00-5e-7f-ff-fa     static
  255.255.255.255       ff-ff-ff-ff-ff-ff     static

Interface: 192.168.171.1 --- 0x7
  Internet Address      Physical Address      Type
  192.168.171.254       00-50-56-f5-d1-f5     dynamic
  192.168.171.255       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
  224.0.0.252           01-00-5e-00-00-fc     static
  239.255.255.250       01-00-5e-7f-ff-fa     static
  255.255.255.255       ff-ff-ff-ff-ff-ff     static

Interface: 192.168.43.245 --- 0xb
  Internet Address      Physical Address      Type
  192.168.43.1          94-14-7a-77-a5-34     dynamic
  192.168.43.255        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
  224.0.0.252           01-00-5e-00-00-fc     static
  239.255.255.250       01-00-5e-7f-ff-fa     static
  255.255.255.255       ff-ff-ff-ff-ff-ff     static
```

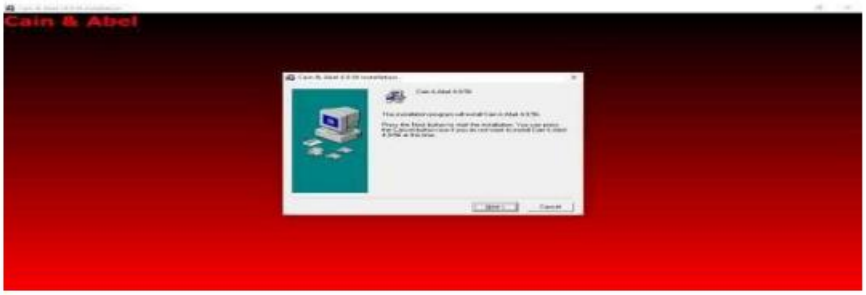
**On Linuxrform ARP Poisoning inWindows**

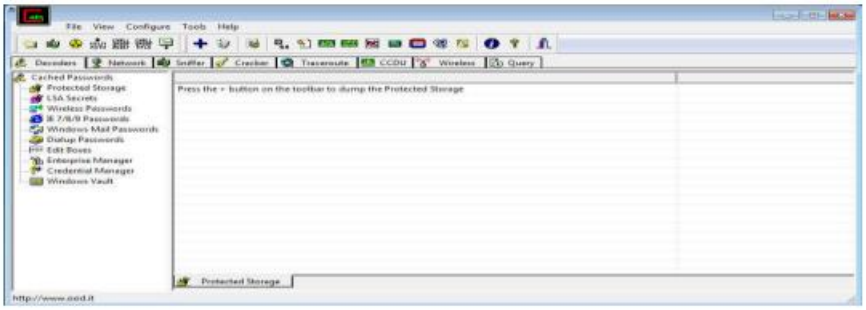
```
rootclient@google:~$ arp
Address                  HWtype  HWaddress           Flags Mask            Iface
192.168.171.254          ether   00:50:56:f5:d1:f5   C                     ens33
_gateway                 ether   00:50:56:e8:82:1f   C                     ens33
rootclient@google:~$
```

---

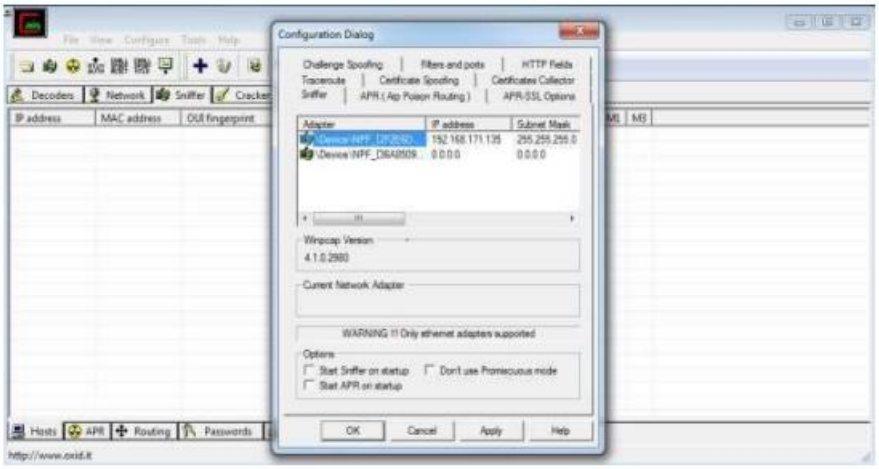
Step 1: Download and install Cain &Abel software in VMware.

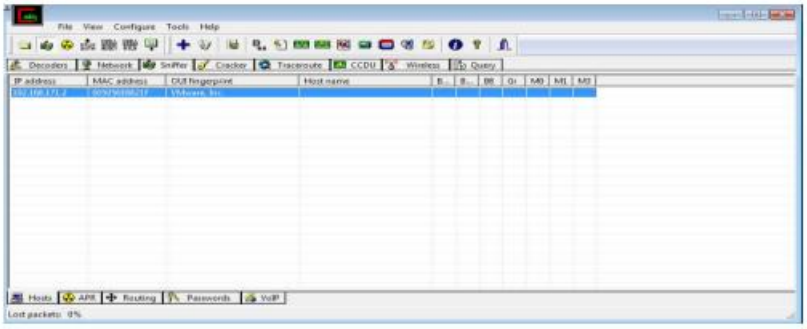
Step 2: GO to sniffer and then click on configuration, select the appropriate wireless adapter.



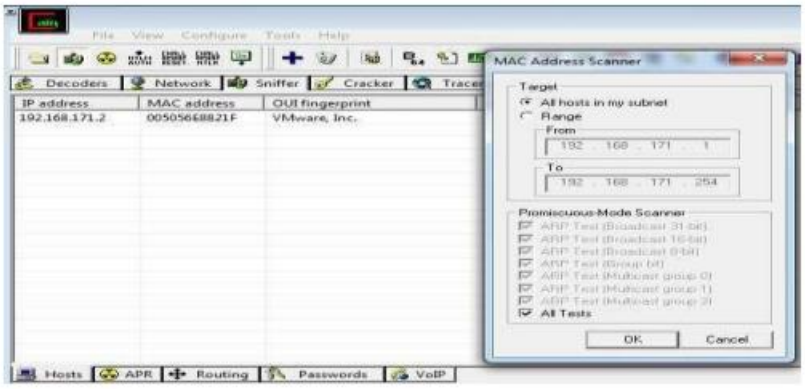
Step 3: Activate sniffer



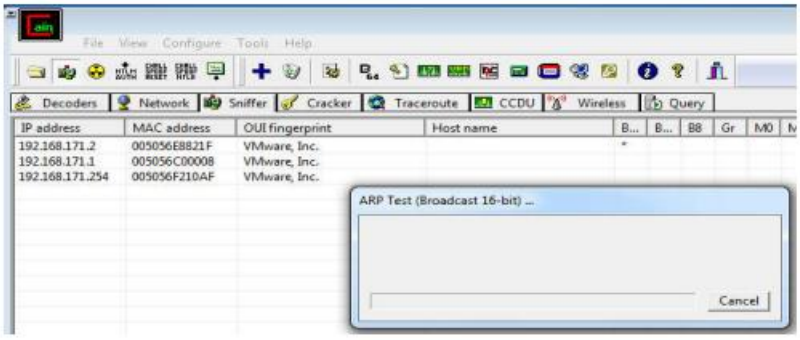



Step 4: click on + icon. Check all tests checkbox and then click ok

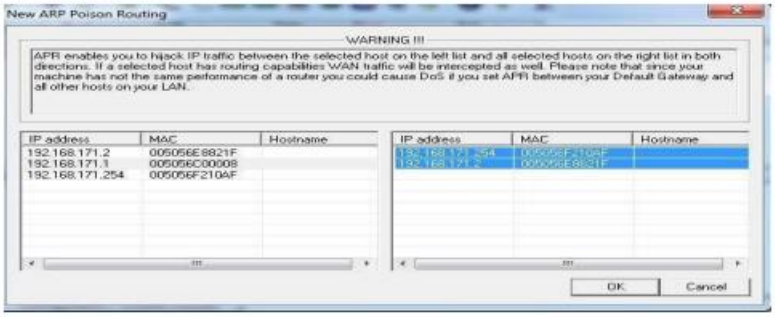

Step 5: click on APR then click on blank screen and then click on the + icon. Select any IP address (IPv4 address)

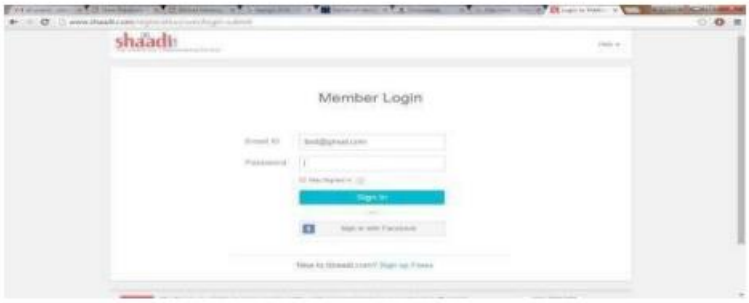


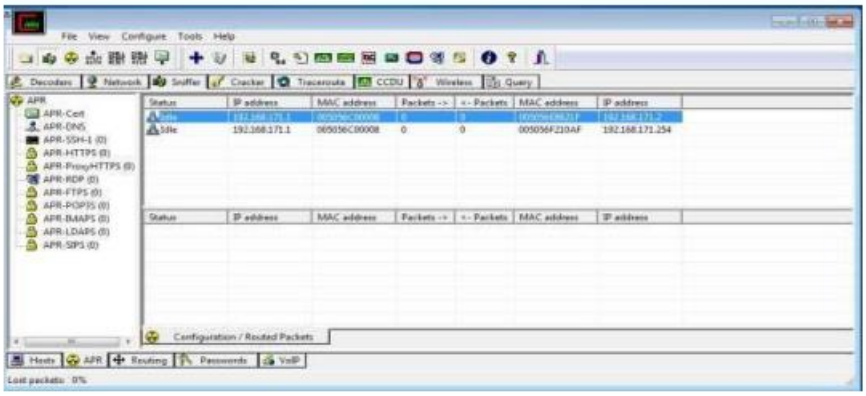

Step 6: select all the IP address and MAC address and then click on OKply ARP.




Step7: Go to any website on source ip address.



Step 8: Go to password option in the cain&abel and see the visited site password.

F. **Ifconfig, ping, netstat, traceroute.**
G. **Steganography Tools**