

AI FOR CYBER SECURITY

ASSIGNMENT-2

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Date: 01/09/23

Explore the first 10 tools in Kali Linux

1. Information Gathering

For information gathering, a tool named dnsenum is used. It is a command-line tool used for DNS (Domain Name System) enumeration and information gathering. It is typically used by security professionals, network administrators, and ethical hackers to gather information about a target domain's DNS configuration.

For this, I have used www.wcofun.org website.

```
manasa13@kali:~$ dnsenum --help
-r, --recursion Recursion on subdomains, brute force all discovered subdomains that have an NS record.
WHOIS METRANGE OPTIONS:
-o, --only <value> The maximum value of seconds to wait between whois queries, the value is defined randomly, default: 3s.
-w, --wait Perform the whois queries on c class network ranges.
**Warning**: this can generate very large metranges and it will take lot of time to perform reverse lookups.
REVERSE LOOKUP OPTIONS:
-e, --exclude <regex> Exclude PTR records that match the regex expression from reverse lookup results, useful on invalid hostnames.
OUTPUT OPTIONS:
-o --output <file> Output in XML format. Can be imported in MagicTree (www.gremwell.com)
manasa13@kali:~$ dnsenum www.wcofun.org
dnsenum VERSION:1.2.6

www.wcofun.org

Host's addresses:
www.wcofun.org. 248 IN A 104.26.3.85
www.wcofun.org. 248 IN A 104.26.2.85
www.wcofun.org. 248 IN A 172.67.71.100

Name Servers:
www.wcofun.org NS record query failed: NOERROR

manasa13@kali:~$ dnsenum -mserver 8.8.8.8 www.wcofun.org
dnsenum VERSION:1.2.6

www.wcofun.org

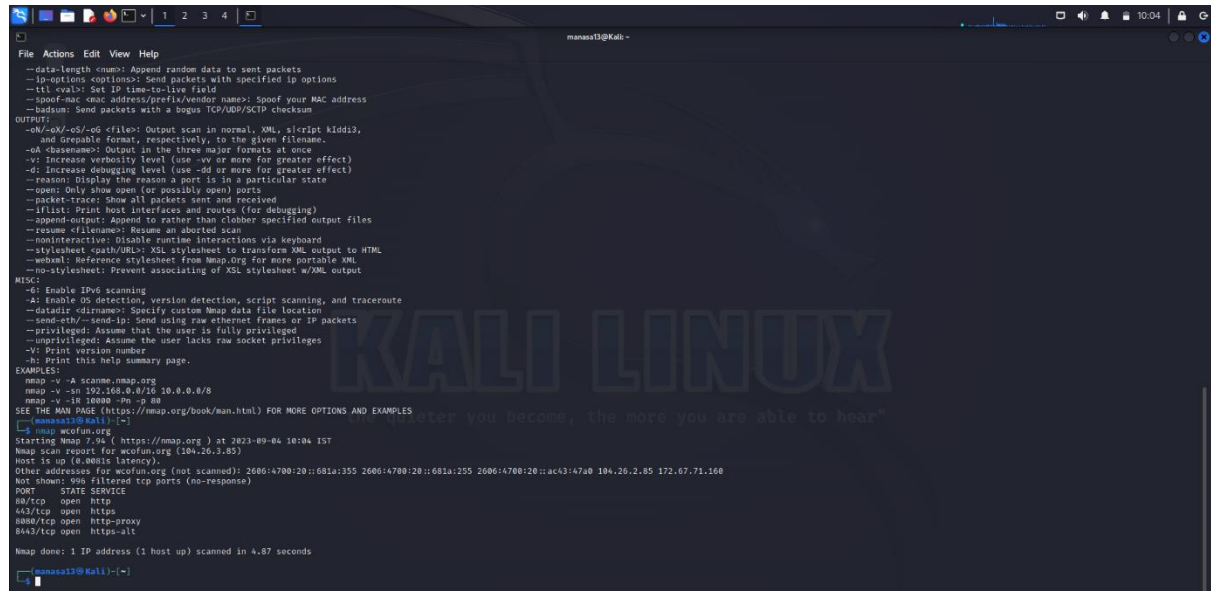
Host's addresses:
www.wcofun.org. 300 IN A 172.67.71.100
www.wcofun.org. 300 IN A 104.26.3.85
www.wcofun.org. 300 IN A 104.26.2.85

Name Servers:
www.wcofun.org NS record query failed: NOERROR

manasa13@kali:~$
```

2. Vulnerability Analysis

For vulnerability analysis, nmap tool is used. Nmap (Network Mapper) is a widely used open-source tool for network discovery and vulnerability analysis. It's primarily used for network scanning, mapping, and fingerprinting, but it can also assist in vulnerability assessment.



```
manasa13@kali:~$ nmap -h
File Actions Edit View Help
--data-length <num>: Append random data to sent packets
--ip-options <options>: Send packets with specified ip options
--ttl <val>: Set IP time-to-live field
--spoof-mac <mac address/prefix/vendor name>: Spoof your MAC address
--badsum: Send packets with a bogus TCP/UDP/SCTP checksum
OUTPUT:
--oN/-oX/-oS/-oG <file>: Output scan in normal, XML, sICript kiddi3,
and Greppable format, respectively, to the given filename.
--oA <hostname>: Output in the three major formats at once
--v: Increase verbosity level (use -vv or more for greater effect)
--O: Increase debugging level (use -OO or more for greater effect)
--reason: Display the reason a port is in a particular state
--open: Only show open (or possibly open) ports
--packet-trace: Show all packets sent and received
--iflist: Print host interfaces and routes (for debugging)
--append-output: Append to rather than clobber specified output files
--resume <filename>: Resume an aborted scan
--noninteractive: Disable runtime interactions via keyboard
--stylesheet <path/URL>: XSL stylesheet to transform XML output to HTML
--webxml: Reference stylesheet from nmap.org for more portable XML
--no-stylesheet: Prevent associating of XSL stylesheet w/XML output
MISC:
--6: Enable IPv6 scanning
--A: Enable OS detection, version detection, script scanning, and traceroute
--datadir <dirname>: Specify custom Nmap data file location
--send-eth/--send-ip: Send using raw ethernet frames or IP packets
--privileged: Assume that the user is fully privileged
--unprivileged: Assume the user lacks raw socket privileges
--V: Print version number
--h: Print this help summary page.
EXAMPLES:
nmap -v -A scanme.nmap.org
nmap -v -sS -sV -A -iR 10.0.0.0/8
nmap -v -iR 10000 -Pn -p 80
SEE THE MAN PAGE (https://nmap.org/book/man.html) FOR MORE OPTIONS AND EXAMPLES
manasa13@kali:~$ nmap wcfun.org
Starting Nmap 7.94 ( https://nmap.org ) at 2023-09-04 10:04 IST
Nmap scan report for wcfun.org (104.26.3.85)
Host is up (0.0001s latency).
Other addresses for wcfun.org (not scanned): 2606:4700:20::681a:355 2606:4700:20::681a:255 2606:4700:20::ac43:47a0 194.26.2.85 172.67.71.168
Not shown: 996 filtered tcp ports (no-response)
PORT      STATE SERVICE
80/tcp    open  http
443/tcp   open  https
8080/tcp   open  http-proxy
8443/tcp   open  https-alt
Nmap done: 1 IP address (1 host up) scanned in 4.87 seconds
manasa13@kali:~$
```

3. Web Application Analysis

For Web Application Analysis, a tool named wpscan is used. WPScan is a popular open-source security scanner specifically designed for WordPress websites. It is used for identifying vulnerabilities, misconfigurations, and security issues in WordPress installations. It can be a valuable tool for security professionals, website administrators, and penetration testers to assess the security posture of WordPress sites.

4. Database Assessment

For Database Assessment, sqlmap tool is used. sqlmap is a popular open-source tool used for automated penetration testing and database assessment. Its primary purpose is to detect and exploit SQL injection vulnerabilities in web applications and their underlying databases. SQL injection is a common attack vector where malicious SQL statements are inserted into input fields of a web application to manipulate the database or gain unauthorized access to sensitive data.

5. Password Attacks

For exploring password attacks, ncrack tool is used. Ncrack is a powerful open-source network authentication cracking tool. It is primarily used for performing password attacks, including brute force attacks and dictionary attacks, against various network services and protocols. Ncrack is designed for legitimate security testing and auditing purposes to assess the strength of passwords used for authentication on network services.

```
manasa13@Kali: ~  
File Actions Edit View Help  
cr (connection retries): caps number of service connection attempts  
to (time-out): maximum cracking <time> for service, regardless of success so far  
-T<0-5>: Set timing template (higher is faster)  
--connection-limit <number>: threshold for total concurrent connections  
--stealthy-linear: try credentials using only one connection against each specified host  
until you hit the same host again. Overrides all other timing options.  
AUTHENTICATION:  
-U <filename>: username file  
-P <filename>: password file  
--user <username_list>: comma-separated username list  
--pass <password_list>: comma-separated password list  
--passwords-first: Iterate password list for each username. Default is opposite.  
--pairwise: Choose usernames and passwords in pairs.  
OUTPUT:  
-oN/-oX <file>: Output scan in normal and XML format, respectively, to the given filename.  
-oA <basename>: Output in the two major formats at once  
-v: Increase verbosity level (use twice or more for greater effect)  
-d[level]: Set or increase debugging level (Up to 10 is meaningful)  
--nsock-trace <level>: Set nsock trace level (Valid range: 0 - 10)  
--log-errors: Log errors/warnings to the normal-format output file  
--append-output: Append to rather than clobber specified output files  
MISC:  
--resume <file>: Continue previously saved session  
--save <file>: Save restoration file with specific filename  
-f: quit cracking service after one found credential  
-6: Enable IPv6 cracking  
-sL or --list: only list hosts and services  
--datadir <dirname>: Specify custom Ncrack data file location  
--proxy <type>://proxy:port: Make connections via socks4, 4a, http.  
-V: Print version number  
-h: Print this help summary page.  
MODULES:  
SSH, RDP, FTP, Telnet, HTTP(S), Wordpress, POP3(S), IMAP, CVS, SMB, VNC, SIP, Redis, PostgreSQL, MQTT, MySQL, MSS  
QL, MongoDB, Cassandra, WinRM, OWA, DICOM  
EXAMPLES:  
ncrack -v --user root localhost:22  
ncrack -v -T5 https://192.168.0.1  
ncrack -v -iX ~/nmap.xml -g CL=5,to=1h  
SEE THE MAN PAGE (http://nmap.org/ncrack/man.html) FOR MORE OPTIONS AND EXAMPLES  
(manasa13@Kali)-[~]  
$ ncrack -p ssh 127.0.0.1  
  
Starting Ncrack 0.7 ( http://ncrack.org ) at 2023-09-06 01:19 IST  
  
Ncrack done: 1 service scanned in 3.00 seconds.  
  
Ncrack finished.  
(manasa13@Kali)-[~]  
$
```

6. Wireless Attacks

For exploring wireless attacks, wifite tool is used. Wifite is a popular wireless auditing tool available in Kali Linux. It's designed to automate various wireless attacks, including WEP and WPA/WPA2-PSK cracking, using a combination of well-known attack methods.



```
manasa13@kali:~$ wifite
wifite 2.7.4
a wireless auditor by derv12
maintained by kimocoder
https://github.com/kimocoder/wifite2

[-] option: targeting WEP-encrypted networks
[-] Conflicting processes: airmon-ng (PID 801)
[-] If you have problems: kill -9 PID or re-run wifite with --kill

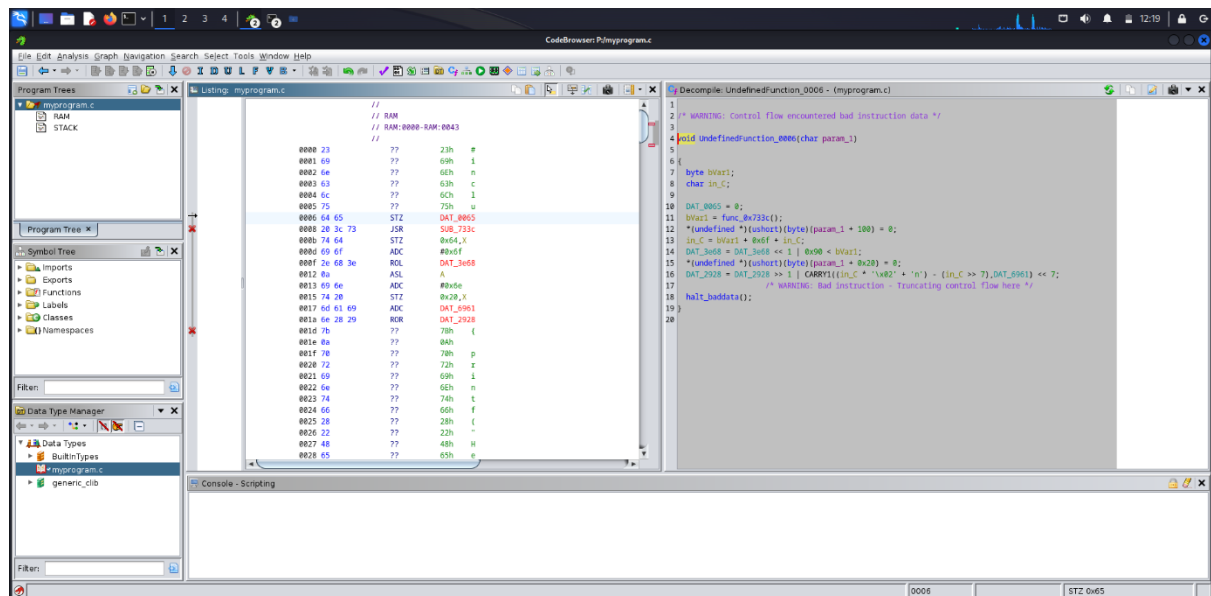
[-] Checking airmon-ng...
[-] airmon-ng did not find any wireless interfaces
[-] Make sure your wireless device is connected
[-] See https://www.aircrack-ng.org/doku.php?id=airmon-ng for more info
[-] Error: airmon-ng did not find any wireless interfaces

[-] Full stack trace below
[-] Traceback (most recent call last):
[-] File "/usr/lib/python3/dist-packages/wifite/__main__.py", line 104, in entry_point
[-] wifite.main()
[-] File "/usr/lib/python3/dist-packages/wifite/__main__.py", line 57, in start
[-] configuration.get_monitor_mode_interface()
[-] File "/usr/lib/python3/dist-packages/wifite/config.py", line 229, in get_monitor_mode_interface
[-] cls.interface = Airmon.ask()
[-] File "/usr/lib/python3/dist-packages/wifite/tools/airmon.py", line 313, in ask
[-] raise Exception('airmon-ng did not find any wireless interfaces')
[-] Exception: airmon-ng did not find any wireless interfaces

[-] Exiting
```

7. Reverse Engineering

For Reverse engineering, Clang and Ghidra are used. Clang is a popular open-source C and C++ compiler front end that is part of the LLVM project. Ghidra is a powerful open-source software reverse engineering framework developed by the National Security Agency (NSA).



```
// Listing: myprogram.c
// RAM: 0000-RAM:0043
//
0000 23 ?? 23h #
0001 69 ?? 69h 1
0002 6e ?? 6eh n
0003 63 ?? 63h c
0004 6c ?? 6Ch 1
0005 75 ?? 75h u
0006 64 65 STZ DAT_0005
0008 20 3c 73 JSR SUB_733c
0009 74 64 STZ DAT_0004
000A 69 6f ADC #0x6f
000B 2e 68 3e ROL DAT_3e68
0012 0a ASL A
0013 69 6e ADC #0x6e
0015 74 20 STZ DAT_0015
0017 6d 61 69 ADC DAT_0061
001a 6e 28 29 ROR DAT_2928
001d 7b ?? 7bh {
001e 0a ?? 0Ah
001F 70 ?? 70h p
0020 72 ?? 72h r
0021 69 ?? 69h i
0022 6e ?? 6eh n
0023 74 ?? 74h t
0024 66 ?? 66h f
0025 28 ?? 28h {
0026 22 ?? 22h "
0027 48 ?? 48h H
0028 65 ?? 65h e

Decompile: UndefinedFunction_0006 - (myprogram.c)
1 /* WARNING: Control flow encountered bad instruction data */
2
3 void undefined_function_0006(char param_1)
4
5
6 byte bVar1;
7 char in_C;
8
9
10 DAT_0005 = 0;
11 bVar1 = func_0x733c();
12 *(undefined *)(ushort)(byte)(param_1 + 100) = 0;
13 in_C = bVar1 + 0x6f + in_C;
14 DAT_3e68 = DAT_3e68 << 1 | 0x90 < bVar1;
15 *(undefined *)(ushort)(byte)(param_1 + 0x20) = 0;
16 DAT_2928 = DAT_2928 >> 1 | CARR1((in_C * "0x2" + "n") - ((in_C >> 7), DAT_0061) << 7;
17 /* WARNING: Bad instruction - Truncating control flow here */
18 halt_baddata();
19
20
```

```

File Actions Edit View Help

561 exploit/linux/local/vmwgfx_fd_priv_esc 2022-01-28 good
Yes vmwgfx Driver File Descriptor Handling Priv Esc

Interact with a module by name or index. For example info 561, use 561 or use exploit/linux/local/vmwgfx_fd_priv_esc
v

msf6 > use exploit/linux/ssh/ssh_login
[*] No results from search
[*] Failed to load module: exploit/linux/ssh/ssh_login
msf6 > use exploit/linux/local/rc_local_persistence
[*] No payload configured, defaulting to cmd/unix/reverse_netcat
msf6 exploit(linux/local/rc_local_persistence) > show options

Module options (exploit/linux/local/rc_local_persistence):

  Name      Current Setting  Required  Description
  ----      -
  SESSION   yes              The session to run this module on

Payload options (cmd/unix/reverse_netcat):

  Name      Current Setting  Required  Description
  ----      -
  LHOST     192.168.0.100    yes       The listen address (an interface may be specified)
  LPORT     4444             yes       The listen port

**DisablePayloadHandler: True (no handler will be created!)**

Exploit target:

  Id  Name
  --  --
  0    Automatic

View the full module info with the info, or info -d command.

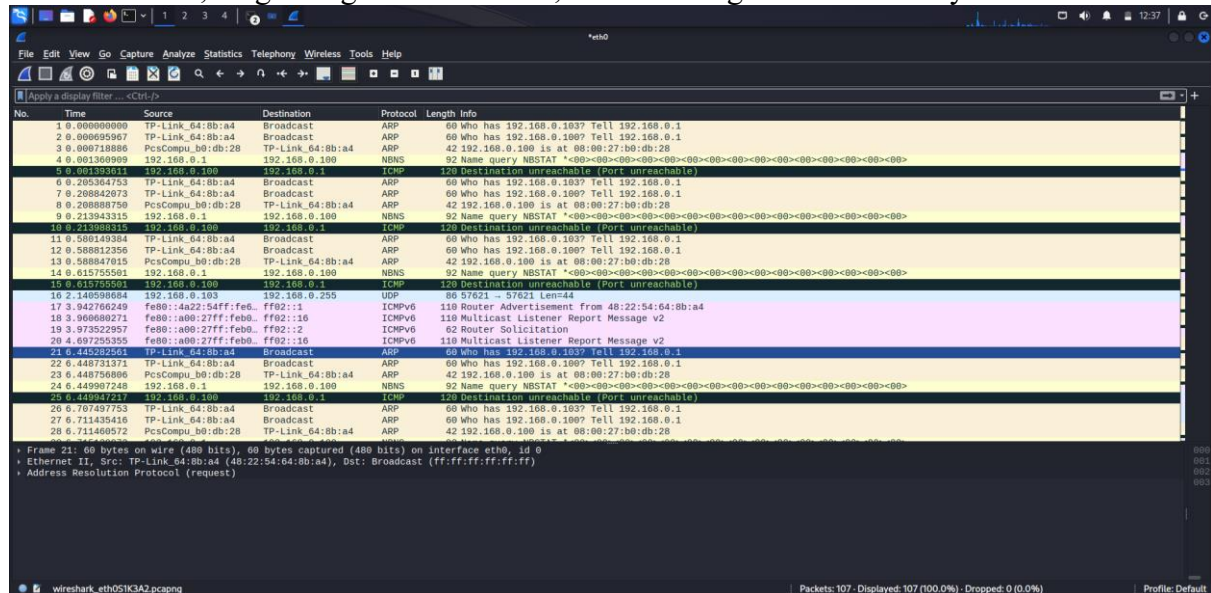
msf6 exploit(linux/local/rc_local_persistence) > set LHOSTS 192.168.0.100
[*] LHOSTen datatype option: LHOSTS, Did you mean LHOST?
LHOSTS => 192.168.0.100
msf6 exploit(linux/local/rc_local_persistence) > set LHOSTS 4444
LHOSTS => 4444
msf6 exploit(linux/local/rc_local_persistence) > exploit

[*] Msf::OptionValidatorError The following options failed to validate: SESSION
msf6 exploit(linux/local/rc_local_persistence) > set SESSION
SESSION =>
msf6 exploit(linux/local/rc_local_persistence) > exploit

```


9. Sniffing and Spoofing

For exploring sniffing and spoofing, Wireshark tool is used. Wireshark is a widely used open-source network protocol analyzer. While it is primarily designed for network traffic analysis, it can be used for network sniffing. However, it's important to note that Wireshark is a legitimate tool for network troubleshooting and security analysis when used responsibly and within legal and ethical boundaries. Network administrators, security professionals, and ethical hackers commonly use Wireshark for legitimate purposes, such as monitoring network traffic, diagnosing network issues, and assessing network security.



10. Post Exploitation

For exploring Post exploitation, Mimikatz tool is used. Mimikatz is a powerful post-exploitation tool that is widely known for its capability to extract plaintext passwords, hashes, and other authentication credentials from memory, as well as performing other post-exploitation tasks on Windows systems. It is used by security professionals, penetration testers, and sometimes malicious actors for legitimate and malicious purposes.

