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Lab Assignment No:-6

Aim:-Study the use of network reconnaissance tools like WHOIS, dig, traceroute, nslookup, nikto, dmitry to gather information about networks and domain registrars

Lab Outcome Attained :- LO3

Theory:-

What is the critical information that attackers seek when using the whois command, and what attacks can be carried out using this information?

The whois command is a powerful tool that can be used **to gather information about domain names**, **IP addresses**, **and network devices**. This information can be valuable to attackers, who can use it to perform a **variety of attacks**, including:

Attackers can exploit the registrant information obtained from a whois lookup to target individuals or organizations with social engineering attacks. They might, for example, send phishing emails or phone calls appearing to be from the registrant in order to deceive the victim into disclosing sensitive information.

DNS assaults: DNS attacks, such as DNS spoofing and DNS cache poisoning, can be carried out using the name servers listed in a whois lookup. These attacks can cause traffic to be redirected to malicious websites or servers, as well as interrupt legitimate websites and services. Attackers can track the physical location of a domain or website by using the IP

addresses listed in a whois lookup. This information can be used to launch targeted attacks, or to gather intelligence about a target organization.

Fraudulent domain registration: Attackers can use the whois command to register domains that are similar to the names of legitimate businesses or organizations. This can be used to trick users into visiting malicious websites or to impersonate the legitimate business or organization.

How does the traceroute command operate to trace the route of a specified host?

The traceroute command communicates with the destination host by delivering Internet Control Message Protocol (ICMP) packets with the Time to Live (TTL) field set to a low value. The TTL field specifies how long a packet can stay in a network before being discarded.

When a router receives an ICMP packet with a TTL of 1, it decrements the TTL value by one before forwarding the message to the next hop in the route to the target host. If the TTL value hits 0 before the packet arrives at the destination host, the router will return an ICMP "Time Exceeded" message to the source host.

The traceroute command delivers a sequence of ICMP packets with progressively longer TTL values. The traceroute command will record the IP address of the router that sent the "Time Exceeded" message for each packet. This data is used to generate a list of the hops the packet took to reach the destination host.

Traceroute can also be used to calculate the round-trip time (RTT) for each hop. The RTT is the amount of time it takes for a packet to go from the source to the destination and back. The RTT can be used to identify possible network bottlenecks.

Explain dig command with various options.

The dig command is used to search for Domain Name System (DNS) servers. It can be used to seek for a domain name's IP address, the hostname of an IP address, and other DNS records.

The dig command has a number of options that can be used to customize the query. Some of the most common options include:

- -t: The type of DNS record to query. The most common types are A (IP address), MX (mail exchange), NS (name server), and SOA (start of authority).
- -c: The class of DNS record to query. The most common class is IN (Internet).
- -q: The domain name or IP address to query.
- **-x:** The hexadecimal value of the query type. This option is used to query for non-standard DNS record types.
- **-p:** The port number of the DNS server to query. The default port number is 53.
- -v: Verbose output. This option will print additional information about the query, such as the time it took to complete and the name servers that were queried.

example of how the dig command can be used to lookup the IP address of the Google homepage:

dig google.com

This command will query the DNS server for the IP address of the Google homepage. The output of the command will show the IP address of the Google homepage, along with other information about the query, such as the time it took to complete and the name servers that were queried.

Explain any two vulnerabilities discovered for the website you scanned with nikto. What types of attacks are conceivable if these flaws are exploited?

vulnerabilities that can be detected for a website using Nikto:

Directory indexing: It is a security flaw that allows unauthorized users to read the contents of a directory on a web server. Attackers can use this to find sensitive files such as configuration files or source code.

Outdated software: Outdated software is a security weakness that allows attackers to exploit known software vulnerabilities. Because many firms do not keep their software up to date, this is a prevalent vulnerability.

If these vulnerabilities are exploited, attackers can perform a variety of attacks, including:

File disclosure: Attackers can use directory indexing to view the contents of a directory on a web server, including sensitive files such as configuration files or source code. This information can be used to launch other attacks, such as gaining access to the web server or stealing sensitive data.

Remote code execution: In order to run arbitrary code on a web server, attackers can use outdated software. This gives attackers complete control of the web server, allowing them to steal data, install malware, or launch denial-of-service assaults.

Cross-site scripting (XSS): Attackers can insert harmful code into a web page by using obsolete software. Unsuspecting users may be fooled into supplying sensitive information or clicking on malicious sites if this code is executed.

Write commands for email harvesting and subdomain harvesting.

theHarvester is a neat information-gathering tool used by both ethical and non-ethical hackers to scrape up emails, subdomains, hosts, employee names, open ports, and banners from different public sources like popular search engines, PGP key servers, and the Shodan database.

Eg:**theharvester -d microsoft.com -b pgp**, searches for e-mail accounts for the domain

microsoft.com in a PGP server

theharvester -d theguardian.com -b pgp.

This command will tell the Harvester to search for email accounts with the domain name "theguardian.com" in a pgp server, which is used for encrypting emails.

Other options in theharvestor command are :options:

-h, --help show this help

message and exit

-d DOMAIN, --domain DOMAIN

Company name or domain to search.

-l LIMIT, --limit LIMIT

Limit the number of search results, default=500.

-S START, --start START

Start with result number X, default=0.

-p, --proxies

Use proxies for requests, enter proxies in proxies.yaml.

-s, --shodan

Use Shodan to query discovered hosts.

--screenshot SCREENSHOT

Take screenshots of resolved domains specify output directory: --screenshot output_directory

-v, --virtual-host

Verify host name via DNS resolution and search for virtual hosts.

-e DNS_SERVER, --dns-server DNS_SERVER

DNS server to use for lookup.

-t, --take-over

Check for takeovers.

-r [DNS_RESOLVE], --dns-resolve [DNS_RESOLVE]

Perform DNS resolution on subdomains with a resolver list or passed in resolvers, default False.

-n, --dns-lookup

Enable DNS server lookup, default False.

-c, --dns-brute

Perform a DNS brute force on the domain.

-f FILENAME, --filename FILENAME

Save the results to an XML and JSON file.

-b SOURCE, --source SOURCE

anubis, baidu, bevigil, binaryedge, bing, bingapi, bufferoverun, brave, censys, certspotter, criminalip, crtsh, dnsdumpster, duckduckgo, fullhunt, github-code, hackertarget, hunter, hunterhow, intelx, otx, pentesttools, projectdiscovery, rapiddns, rocketreach, securityTrails, sitedossier, subdomainfinderc99, threatminer, urlscan, virustotal, yahoo, zoomeye

What are different functionalities provided by dimtry. Write Dmitry command for whois lookup, an IP whois lookup, retrieve Netcraft

info, search for subdomains, search for email addresses, do a TCP port scan, and save the output to example.txt for the domain example.com

In Linux, the dmitry command is a command-line tool for gathering information about a computer's hardware. It can be used to determine the computer's make and model, CPU type, memory capacity, hard drive size, and other details.

The dmitry command is a helpful tool for troubleshooting hardware issues. For example, if your computer's memory is acting up, you can use dmitry to determine the type of memory it is using. This information can then be utilized to locate and purchase the appropriate new memory.

Whois lookup :dmitry -i example.txt example.com

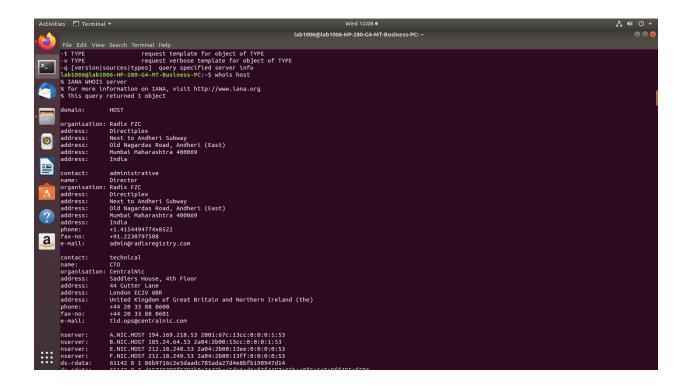
Retrieve netcraft info :dmitry -n example.txt example.com

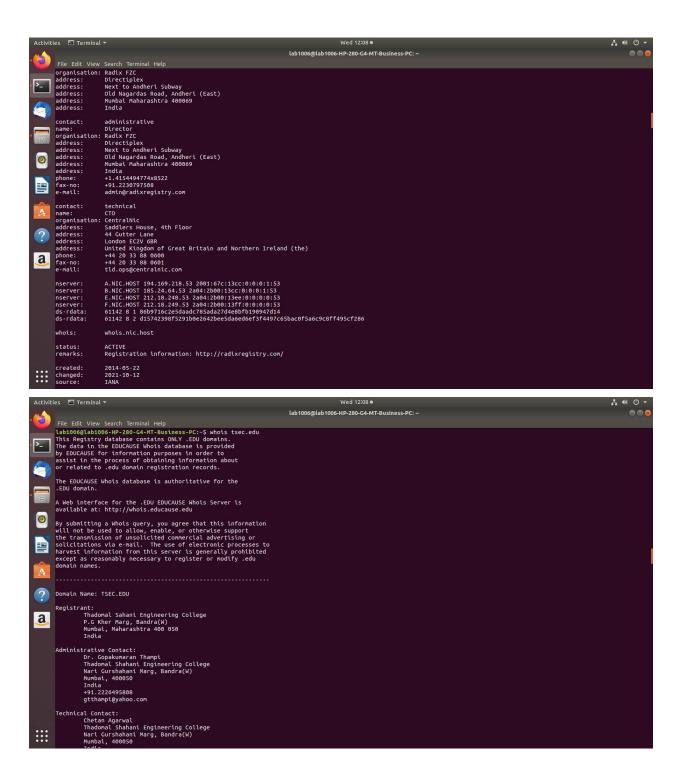
Search for subdomain :dmitry -s example.txt example.com

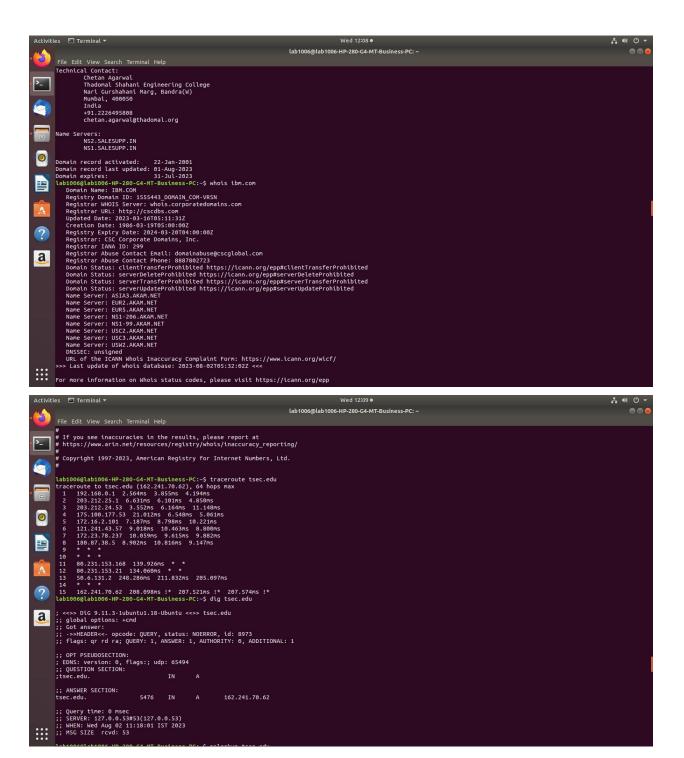
Search for email addresses :dmitry -e example.txt example.com

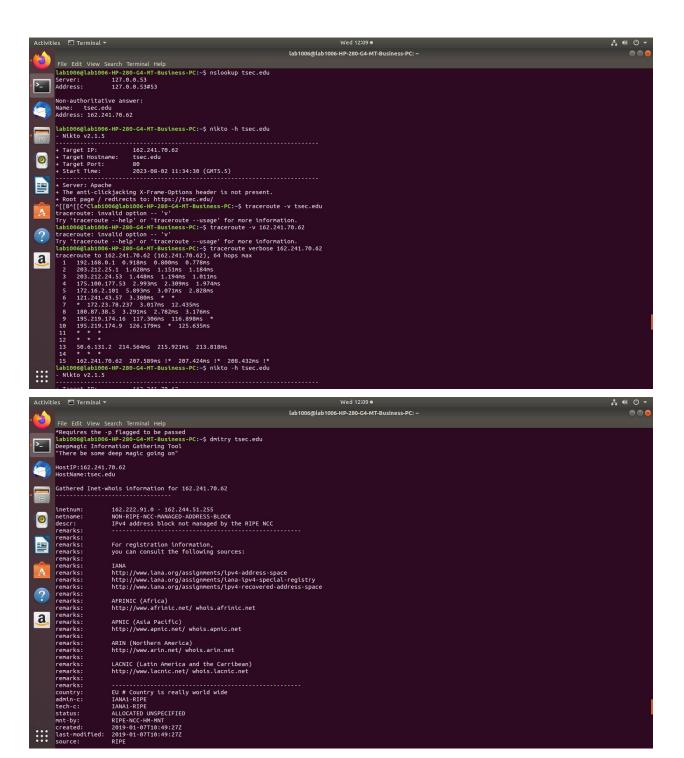
Do a TCP port scan :dmitry -p example.txt example.com

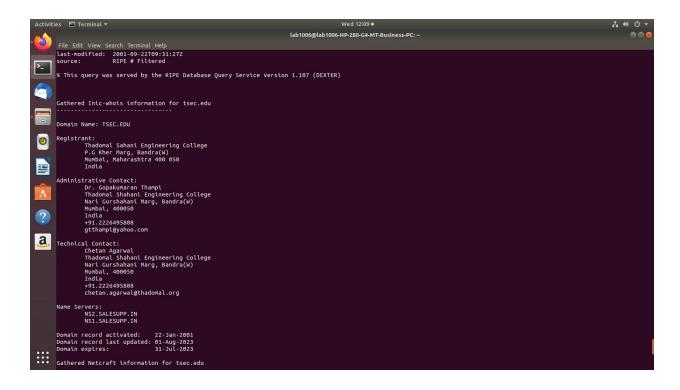
Output Screenshot:-

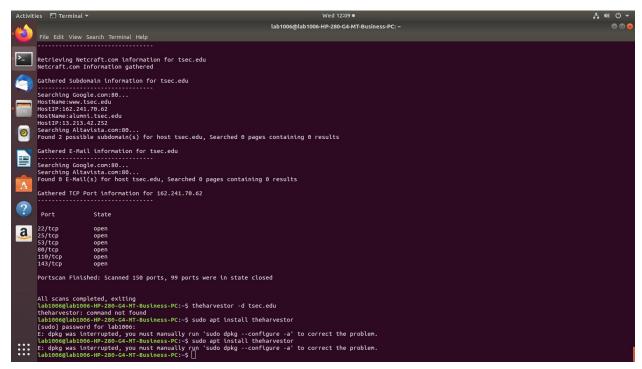












Conclusion:-

Studied and investigated numerous network reconnaissance tools such as WHOIS, dig, traceroute, nslookup, nikto, dmitry, and obtained information and insights on network and domain registrars.