Cybersecurity

Penetration Test Report

Rekall Corporation

Penetration Test Report

Student Note: Complete all sections highlighted in yellow.

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Document History

Version	Date	Author(s)	Comments
001	2025-02-28	Jordan Smith-St.Kitts	Penetration Test Report

Introduction

In accordance with Rekall policies, our organization conducts external and internal penetration tests of its networks and systems throughout the year. The purpose of this engagement was to assess the networks' and systems' security and identify potential security flaws by utilizing industry-accepted testing methodology and best practices.

For the testing, we focused on the following:

- Attempting to determine what system-level vulnerabilities could be discovered and exploited with no prior knowledge of the environment or notification to administrators.
- Attempting to exploit vulnerabilities found and access confidential information that may be stored on systems.
- Documenting and reporting on all findings.

All tests took into consideration the actual business processes implemented by the systems and their potential threats; therefore, the results of this assessment reflect a realistic picture of the actual exposure levels to online hackers. This document contains the results of that assessment.

Assessment Objective

The primary goal of this assessment was to provide an analysis of security flaws present in Rekall's web applications, networks, and systems. This assessment was conducted to identify exploitable vulnerabilities and provide actionable recommendations on how to remediate the vulnerabilities to provide a greater level of security for the environment.

We used our proven vulnerability testing methodology to assess all relevant web applications, networks, and systems in scope.

Rekall has outlined the following objectives:

Table 1: Defined Objectives

Objective
Find and exfiltrate any sensitive information within the domain.
Escalate privileges.
Compromise several machines.

Penetration Testing Methodology

Reconnaissance

We begin assessments by checking for any passive (open source) data that may assist the assessors with their tasks. If internal, the assessment team will perform active recon using tools such as Nmap and Bloodhound.

Identification of Vulnerabilities and Services

We use custom, private, and public tools such as Metasploit, hashcat, and Nmap to gain perspective of the network security from a hacker's point of view. These methods provide Rekall with an understanding of the risks that threaten its information, and also the strengths and weaknesses of the current controls protecting those systems. The results were achieved by mapping the network architecture, identifying hosts and services, enumerating network and system-level vulnerabilities, attempting to discover unexpected hosts within the environment, and eliminating false positives that might have arisen from scanning.

Vulnerability Exploitation

Our normal process is to both manually test each identified vulnerability and use automated tools to exploit these issues. Exploitation of a vulnerability is defined as any action we perform that gives us unauthorized access to the system or the sensitive data.

Reporting

Once exploitation is completed and the assessors have completed their objectives, or have done everything possible within the allotted time, the assessment team writes the report, which is the final deliverable to the customer.

Scope

Prior to any assessment activities, Rekall and the assessment team will identify targeted systems with a defined range or list of network IP addresses. The assessment team will work directly with the Rekall POC to determine which network ranges are in-scope for the scheduled assessment.

It is Rekall's responsibility to ensure that IP addresses identified as in-scope are actually controlled by Rekall and are hosted in Rekall-owned facilities (i.e., are not hosted by an external organization). In-scope and excluded IP addresses and ranges are listed below.

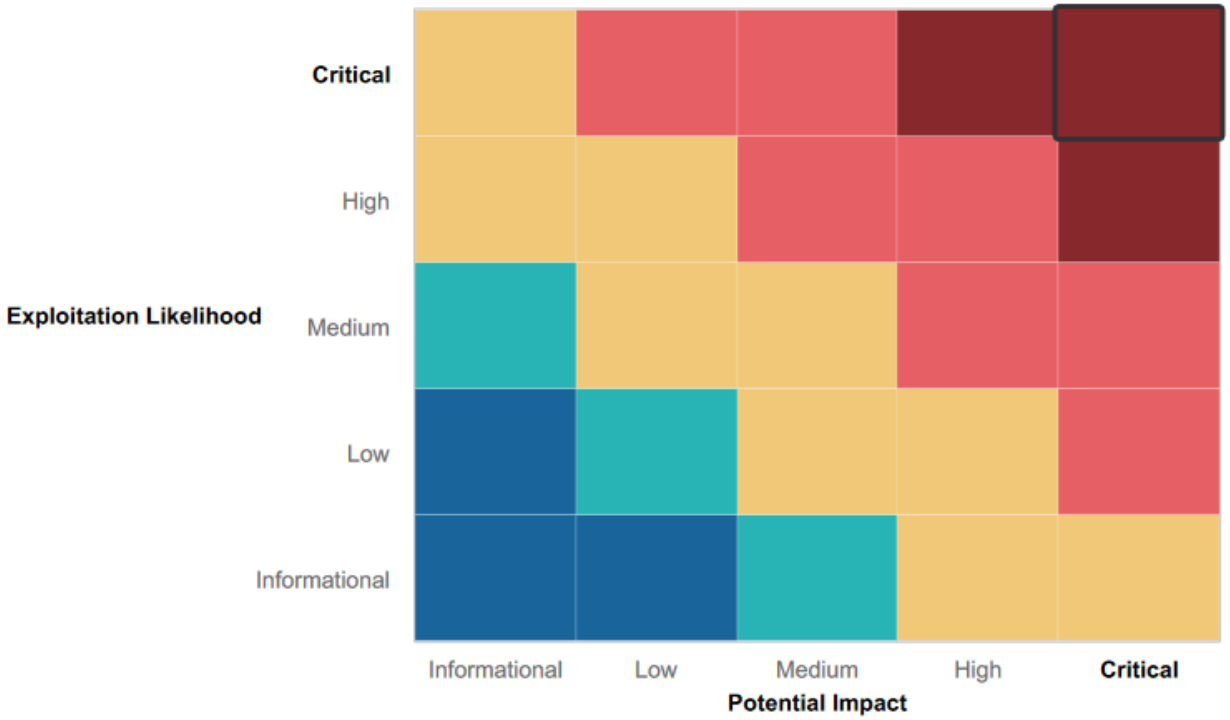
Executive Summary of Findings

Grading Methodology

Each finding was classified according to its severity, reflecting the risk each such vulnerability may pose to the business processes implemented by the application, based on the following criteria:

Critical: Immediate threat to key business processes.
High: Indirect threat to key business processes/threat to secondary business processes.
Medium: Indirect or partial threat to business processes.
Low: No direct threat exists; vulnerability may be leveraged with other vulnerabilities.
Informational: No threat; however, it is data that may be used in a future attack.

As the following grid shows, each threat is assessed in terms of both its potential impact on the business and the likelihood of exploitation:



Summary of Strengths

While the assessment team was successful in finding several vulnerabilities, the team also recognized several strengths within Rekall's environment. These positives highlight the effective countermeasures and defenses that successfully prevented, detected, or denied an attack technique or tactic from occurring.

Web Application Security Strengths:

- XSS mitigation strategies
- Awareness of sensitive data exposure risks
- Protections against local file inclusion
- Secure data handling practices
- Strong password security policies
- Effective injection handling
- Session management controls
- Resilience against PHP injection
- Directory traversal prevention

Linux Security Strengths:

- Prevention of remote code execution
- Awareness of privilege escalation risks
- Network scanning detection and response
- Protection against password guessing attacks
- Post-exploitation defenses
- Handling of ShellShock exploits
- SSL certificate security measures
- Proactive OSINT and network scanning strategies

Windows Security Strengths:

- Defense against SLMail service exploitation
- User enumeration awareness
- Post-exploitation task monitoring
- Protections against admin-level compromise
- Controls to prevent unauthorized privilege escalation
- Proactive OSINT and FTP enumeration defenses
- Awareness of file enumeration risks

Summary of Weaknesses

We successfully found several critical vulnerabilities that should be immediately addressed in order to prevent an adversary from compromising the network. These findings are not specific to a software version but are more general and systemic vulnerabilities.

Web Application Vulnerabilities:

- SQL injection risks
- Command injection flaws
- XSS vulnerabilities
- Weak session management controls
- Local file inclusion risks
- Brute-force attack susceptibility
- Directory traversal weaknesses
- Exposure of sensitive data
- PHP injection risks

Linux Security Weaknesses:

- Remote code execution vulnerabilities
- Post-exploitation risks
- Gaps in network scanning defenses
- Privilege escalation concerns
- Unpatched software vulnerabilities (identified through Nessus scans)
- Aggressive scanning risks (especially for Drupal environments)
- OSINT and network scanning vulnerabilities
- SSL certificate security gaps

Windows Security Weaknesses:

- SLMail service exploitation risks
- Admin account compromise threats
- User enumeration vulnerabilities
- Privilege escalation concerns
- OSINT and FTP enumeration weaknesses
- File enumeration risks
- Post-exploitation risks on Windows 10 systems
- Internal HTTP enumeration vulnerabilities

Executive Summary

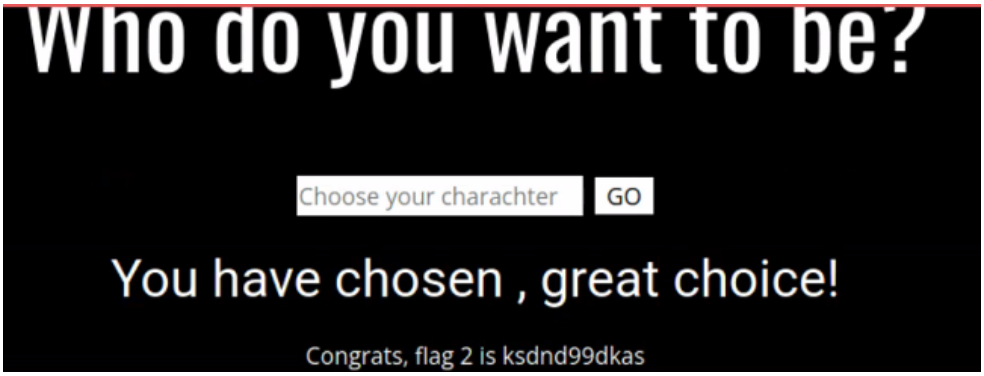
Web Application Breakdown

Flag 1:

● To uncover Flag 1 I performed a XSS Payload exploit on the welcome page using the script: <script>alert</script>

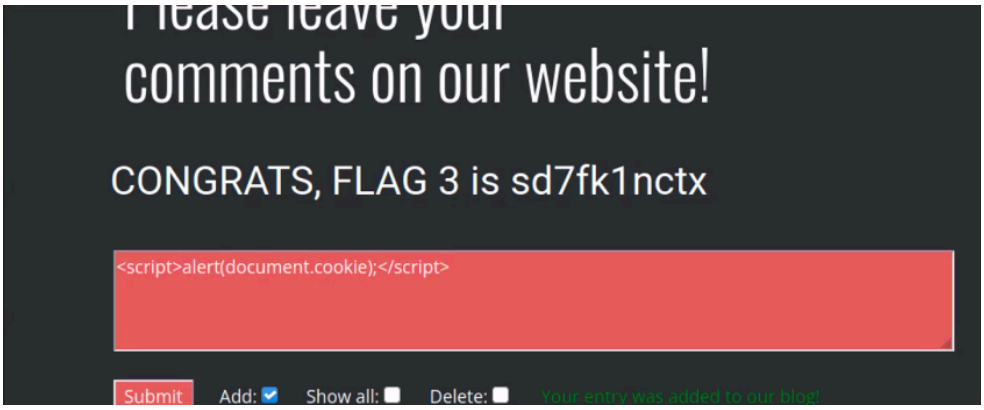
Flag 2:

● For Flag 2, I figured out that this was a XSS Payload exploit and was used in the "Choose Your Character" field <SCRIPscriptT>alert("hi")</SCRIPscripTt>



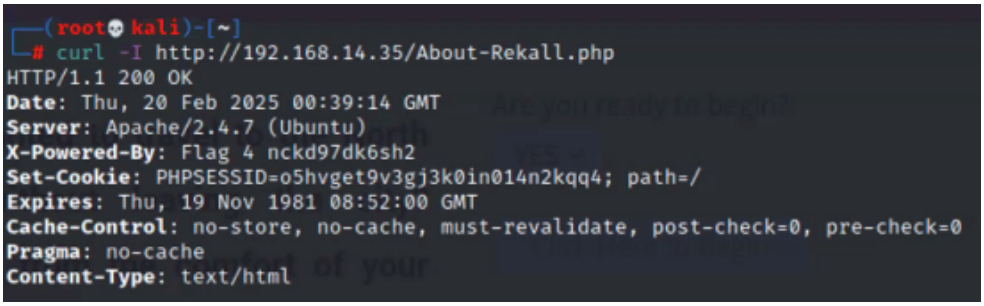
Flag 3:

● For Flag 3, I had to navigate to the Rekall website 192.168.14.15/comments.php page to where in the comments box I used the following XSS script <script>alert(document.cookie);</script> to activate Flag 3 on screen.



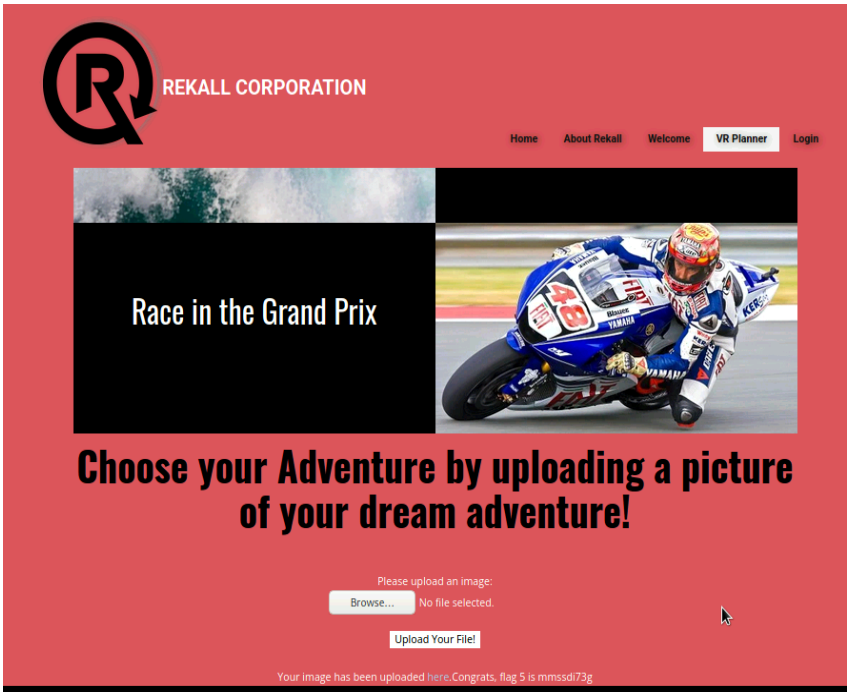
Flag 4:

● To capture Flag 4, within the linux terminal in Kali, I opened a new command prompt terminal and used the command: curl -v http://192.168.14.35/About-Rekall.php to grab website information and locate Flag 4.



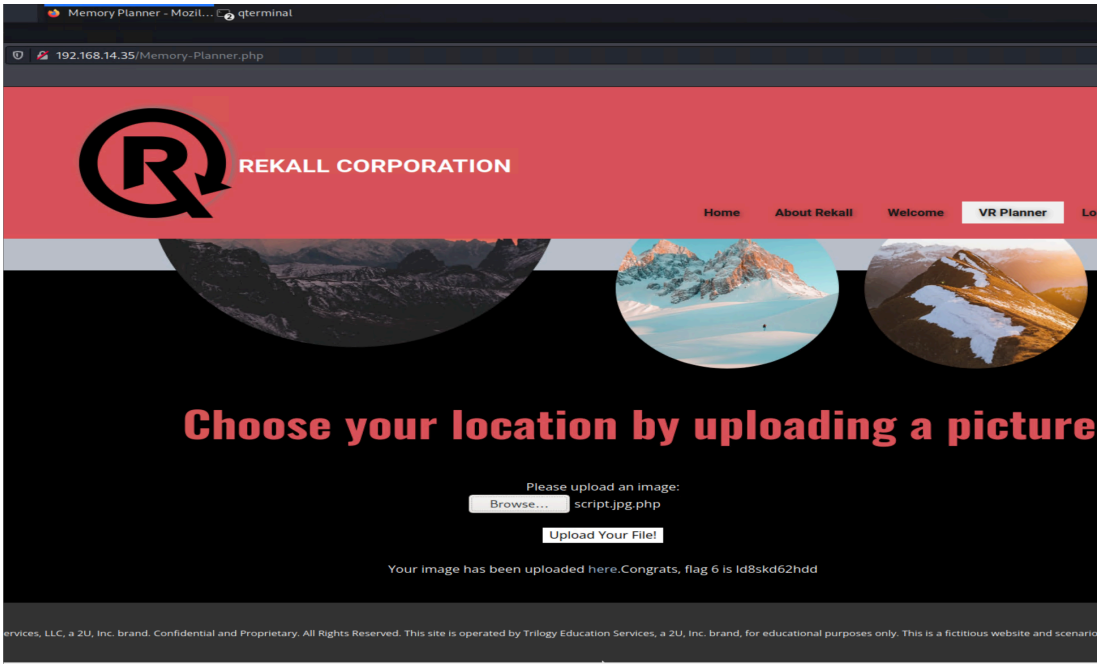
Flag 5:

● For Flag 5, in the linux terminal, I created a script.php file and uploaded it to the first upload field on the memory-planner page.



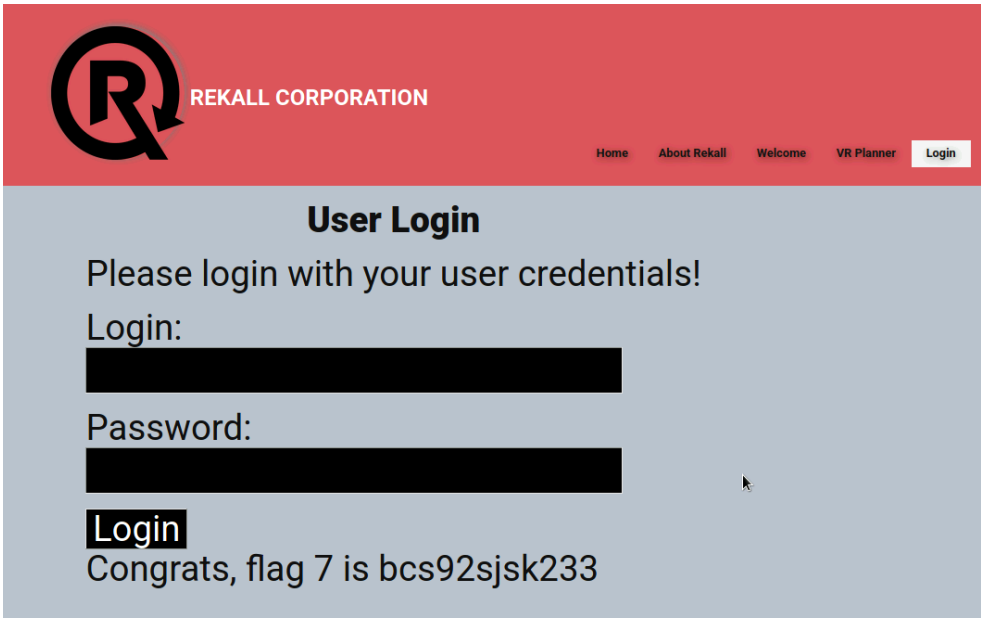
Flag 6:

● To locate Flag 6 I uploaded a file ending in “jpg.php”. upload the file to the Memory-Planner.php page to reveal this flag.



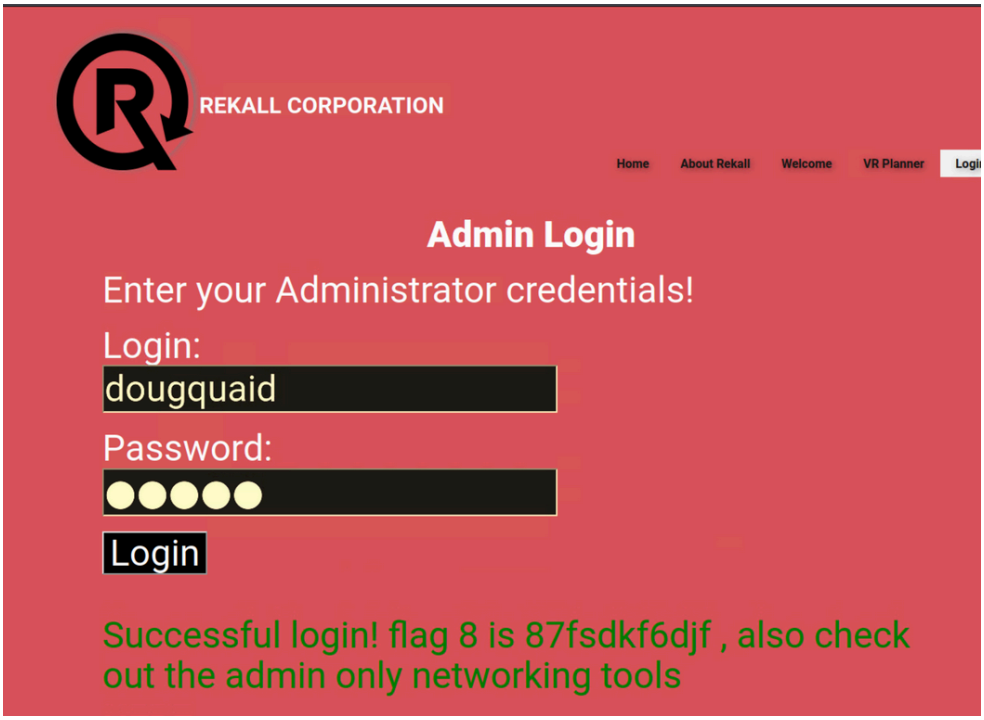
Flag 7:

● To locate Flag 7, I navigated to the 192.168.13.35/Login.php on the Rekall website and performed a SQL injection in the username and password section to find Flag 7.



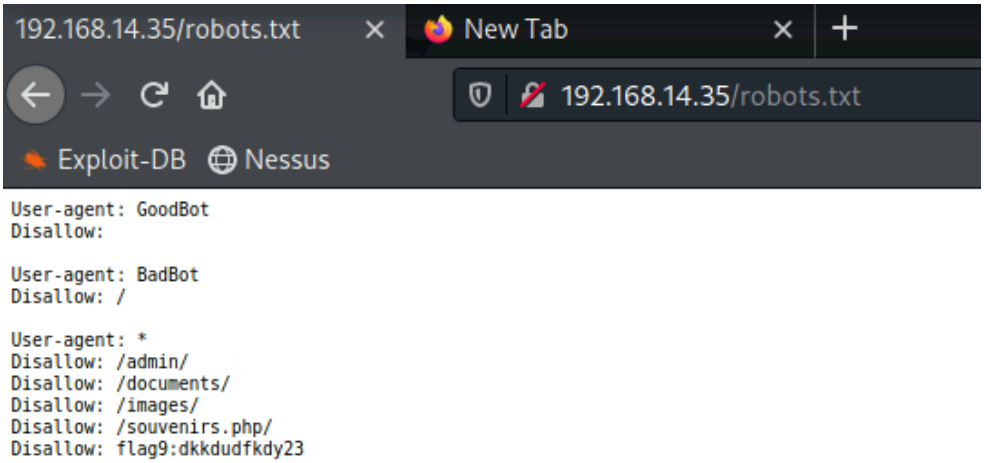
Flag 8:

● I discovered Flag 8 within the HTML source code from the Login page. While inspecting the code I discovered the login credentials ‘dougquaid:kuato’ which then i used to log on the admin page and was able to get Flag 8.



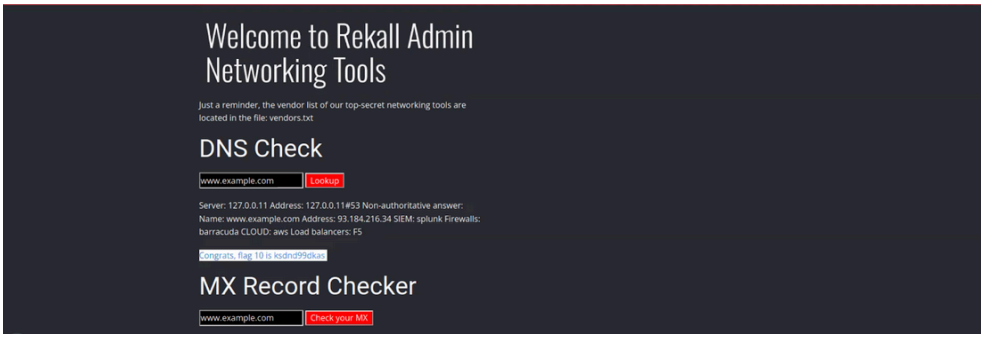
Flag 9:

● To locate Flag 9, I accessed 192.168.14.15/robots.txt which contained information on Flag 9.



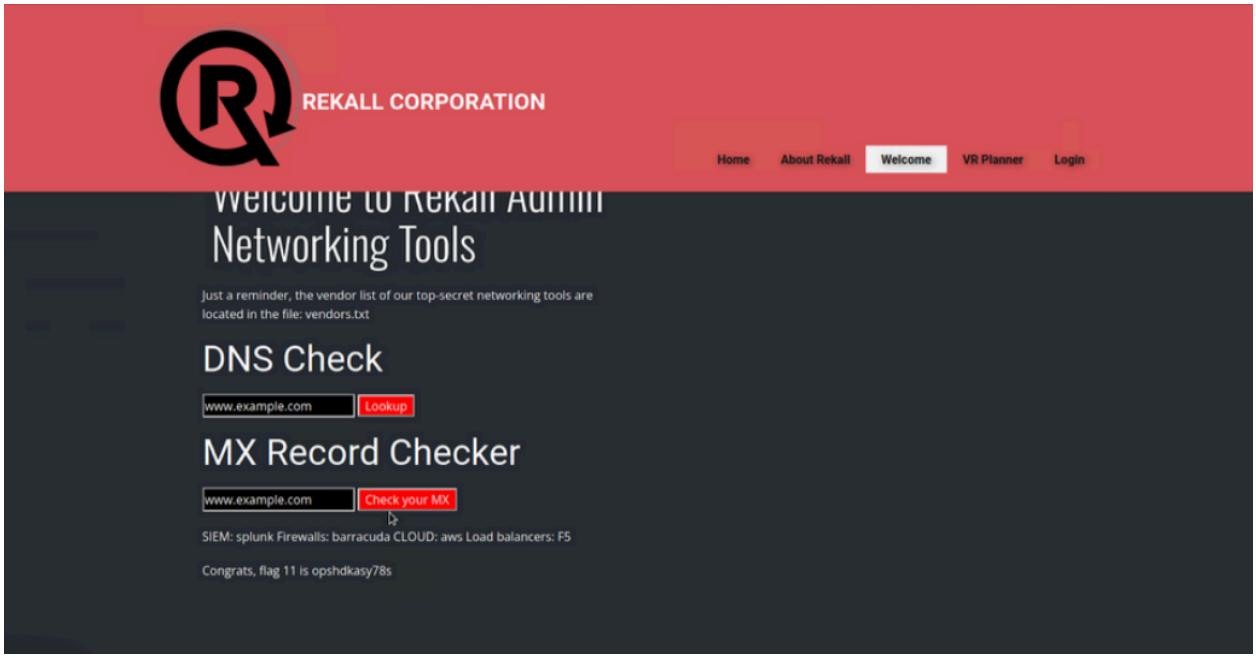
Flag 10:

● To capture Flag 10, I navigated to 192.168.14.15/network.php page and exploited a command injection vulnerability which allowed me to locate Flag 10.



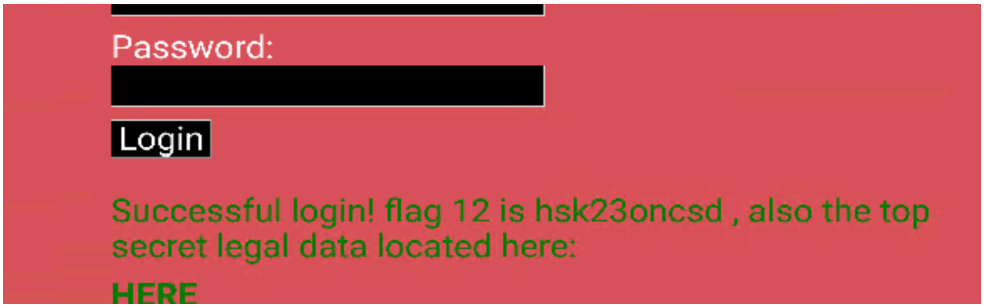
Flag 11:

● For Flag 11, I executed a command injection payload on the Networking page in the MX Record Checker section which allowed me to find Flag 11.



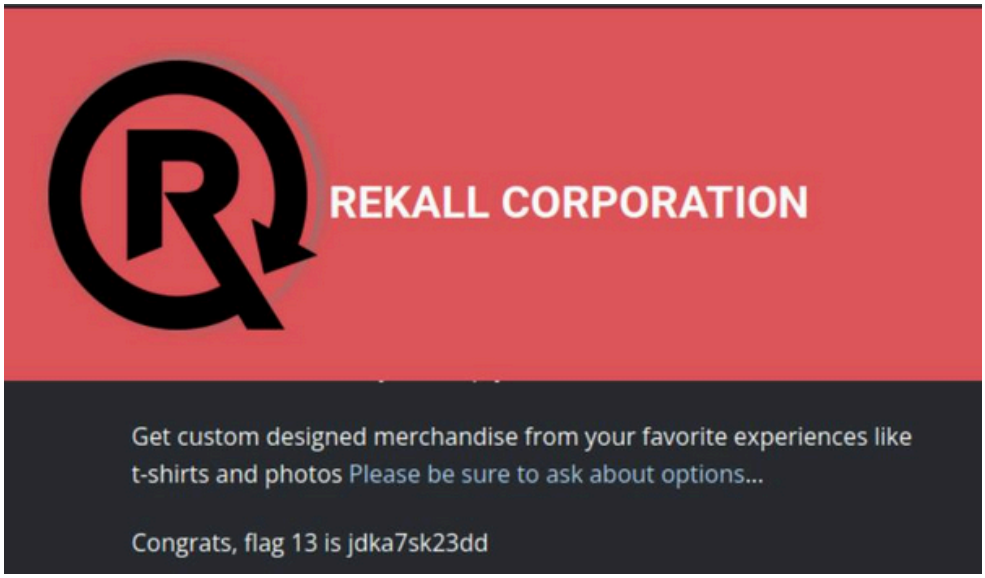
Flag 12:

● I accessed the 192.168.14.15/login.php page and attempted to log in using melina in both the user and password fields and gained entry. I discovered these credentials by using a simple password payload in burp intruder and found melina:melina. This led me to find Flag 12.



Flag 13:

● I navigated to 192.168.14.15/souvenirs.php page which I accessed after finding Flag 9. On this page, I exploited a PHP injection vulnerability using the payload ;system( ), which allowed me to reveal Flag 13.

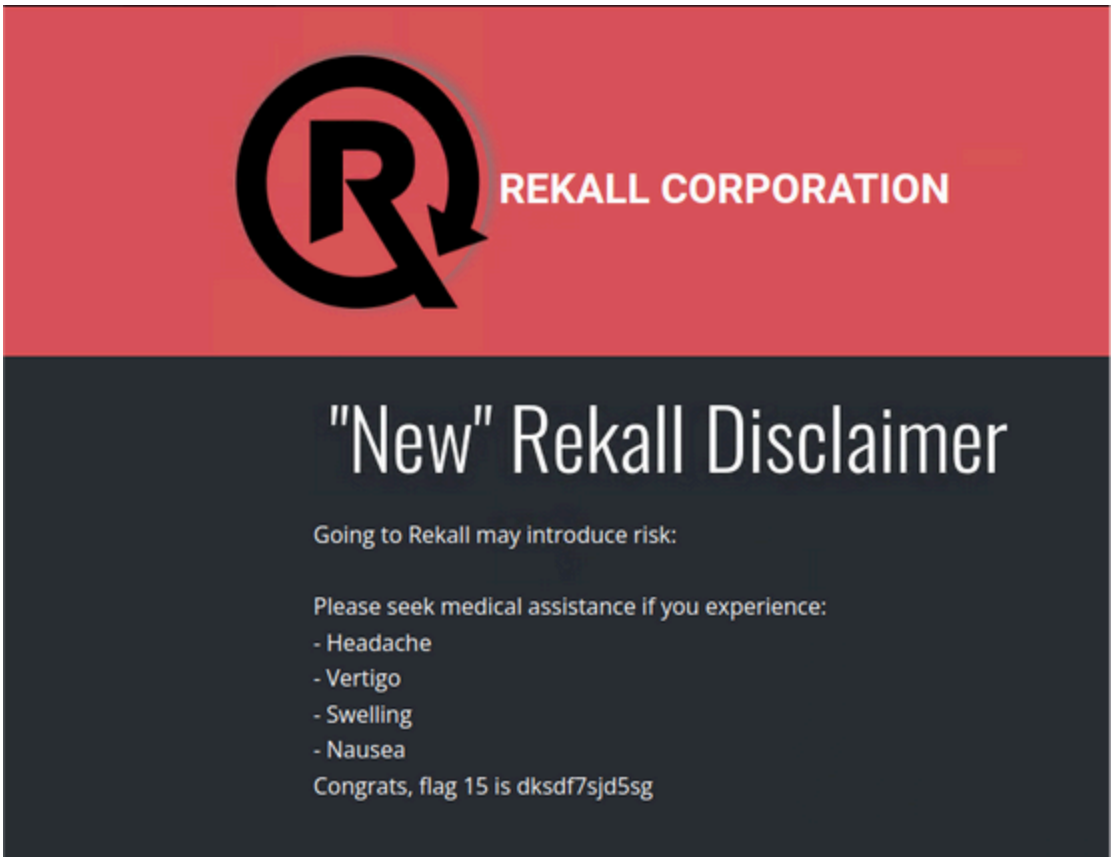


Flag 14:

● I exploited a session management vulnerability on the admin_legal_data.php page by using Burp Intruder to brute-force session IDs. This allowed me to successfully retrieve Flag 14.

Flag 15:

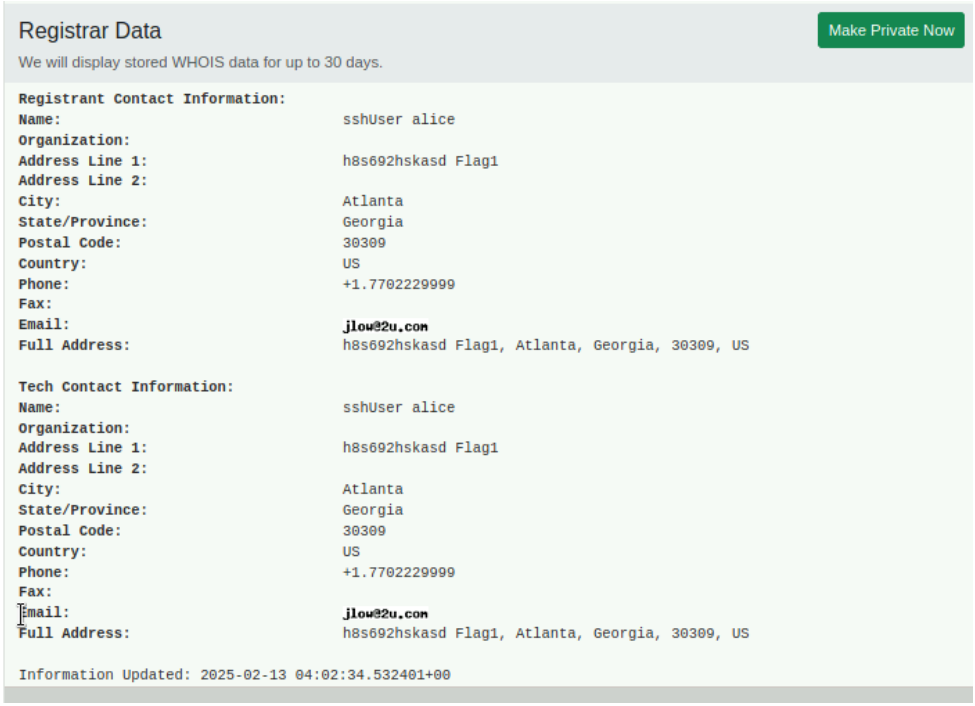
● I discovered Flag 15 by exploiting a directory traversal vulnerability on the disclaimer.php page. By navigating to the old_disclaimers directory, I found the flag in a file named disclaimer_1.txt.



Linux OS System

Flag 1:

● To find Flag 1 on the Linux system, I visited https://centralops.net/co/DomainDossier.aspx and selected the "Domain WHOIS Record" option. This allowed me to view the WHOIS data for totalrekall.xyz, where I found Flag 1.



Registrar Data

Make Private Now

We will display stored WHOIS data for up to 30 days.

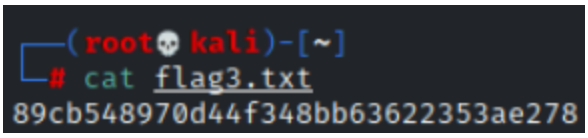
```
Registrant Contact Information:
Name:                           sshUser alice
Organization:
Address Line 1:                 h8s692hskasd Flag1
Address Line 2:
City:                           Atlanta
State/Province:                 Georgia
Postal Code:                    30309
Country:                        US
Phone:                          +1.7702229999
Fax:
Email:                          jlow@2u.com
Full Address:                   h8s692hskasd Flag1, Atlanta, Georgia, 30309, US

Tech Contact Information:
Name:                           sshUser alice
Organization:
Address Line 1:                 h8s692hskasd Flag1
Address Line 2:
City:                           Atlanta
State/Province:                 Georgia
Postal Code:                    30309
Country:                        US
Phone:                          +1.7702229999
Fax:
Email:                          jlow@2u.com
Full Address:                   h8s692hskasd Flag1, Atlanta, Georgia, 30309, US

Information Updated: 2025-02-13 04:02:34.532401+00
```

Flag 2:

● To find Flag 2, I navigated to https://centralops.net/co/DomainDossier.aspx and selected "DNS Records" on the Domain Dossier webpage. I then viewed the WHOIS data for totalrekall.xyz. The class was provided with the IP address for totalrekall.xyz which led me to Flag 2, but there was an issue with the IP address it returned.

Flag 3:

● Flag 3 involved me performing an FTP connection to the IP address 172.22.117.20 to retrieve the data. After transferring the files to my local Kali machine, I was able to locate and extract Flag 3 and after performing the cat command on the flag3.txt I was able to gather the flag information.



```
┌──(root💀kali)-[~]
└─# cat flag3.txt
89cb548970d44f348bb63622353ae278
```

Flag 4:

● To find Flag 4 I conducted an Nmap scan on the network using nmap 192.168.13.0/24, which revealed a total of five hosts. The flag corresponded to the number of detected hosts, excluding the one I was scanning from.

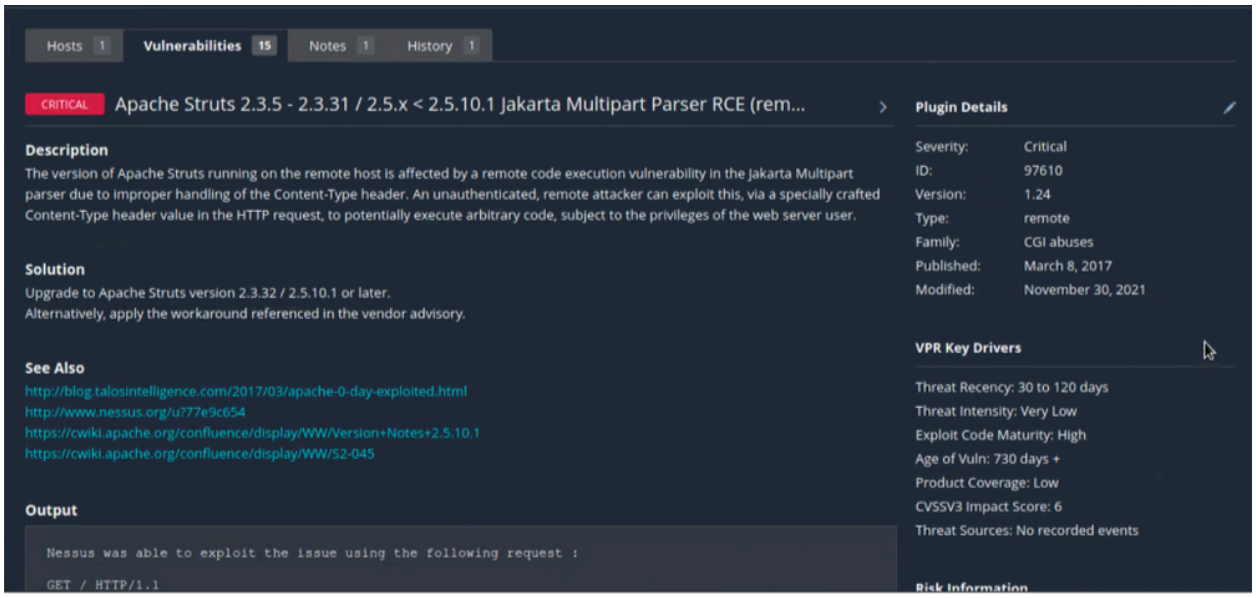
```
Nmap scan report for 192.168.13.11
Host is up (0.0000050s latency).
Not shown: 999 closed tcp ports (reset)
PORT   STATE SERVICE
80/tcp open  http
MAC Address: 02:42:C0:A8:0D:0B (Unknown)

Nmap scan report for 192.168.13.12
Host is up (0.0000050s latency).
Not shown: 999 closed tcp ports (reset)
PORT     STATE SERVICE
8080/tcp open  http-proxy
MAC Address: 02:42:C0:A8:0D:0C (Unknown)

Nmap scan report for 192.168.13.13
Host is up (0.0000050s latency).
Not shown: 999 closed tcp ports (reset)
PORT   STATE SERVICE
80/tcp open  http
MAC Address: 02:42:C0:A8:0D:0D (Unknown)

Nmap scan report for 192.168.13.14
Host is up (0.0000050s latency).
Not shown: 999 closed tcp ports (reset)
PORT   STATE SERVICE
22/tcp open  ssh
MAC Address: 02:42:C0:A8:0D:0E (Unknown)

Nmap scan report for 192.168.13.1
Host is up (0.0000050s latency).
Not shown: 996 closed tcp ports (reset)
PORT      STATE    SERVICE
5901/tcp  open     vnc-1
6001/tcp  open     X11:1
10000/tcp filtered snet-sensor-mgmt
10001/tcp filtered scp-config

Nmap done: 256 IP addresses (6 hosts up) scanned in 21.45 seconds
```

Flag 5:

● To uncover Flag 5 I ran an aggressive Nmap scan, which revealed that the host IP 192.168.13.1 was running Drupal.

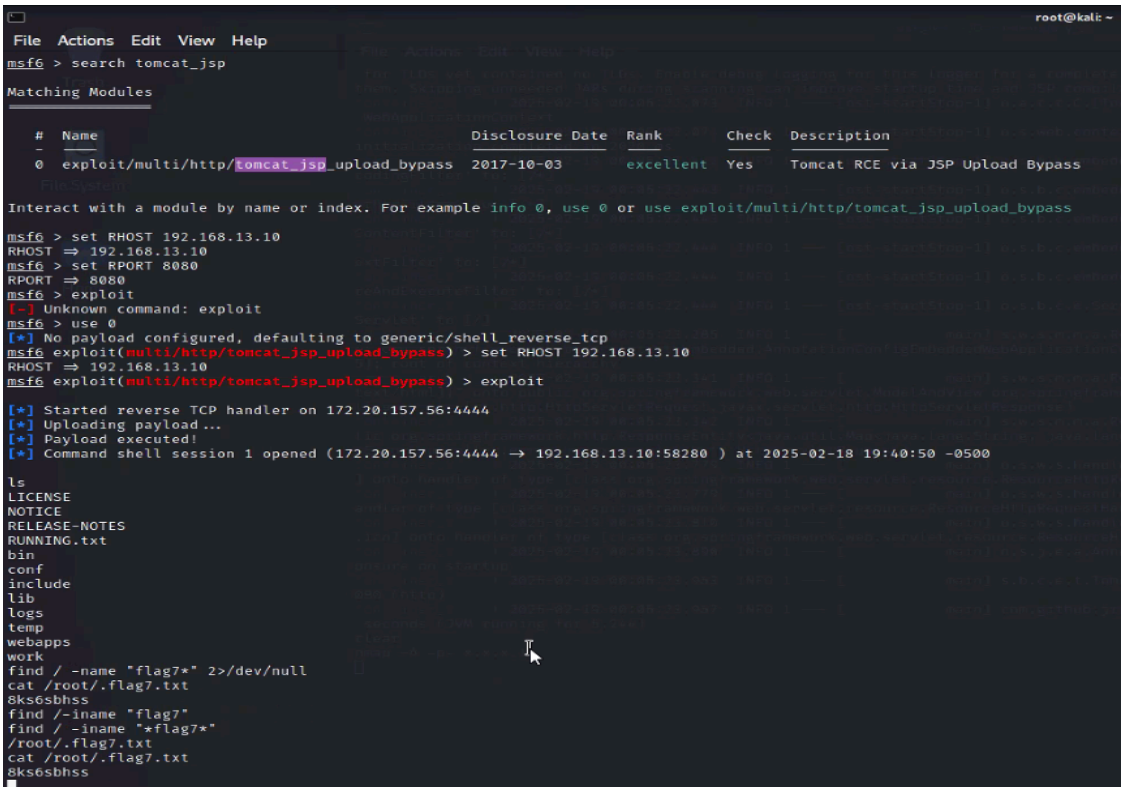
Flag 6:

● To find Flag 6, I ran a Nessus scan on the IP 192.168.13.12 and identified a critical vulnerability. The flag was displayed as ID 97610 in the top right corner of the scan results page.



Flag 7:

● Using MSFConsole, I searched for exploits targeting Tomcat and JSP. After configuring the RHOST to 192.168.13.10 and RPORT to 8080, I ran the exploit multiple times until I finally uncovered flag7.txt. A quick cat command later, and I secured.

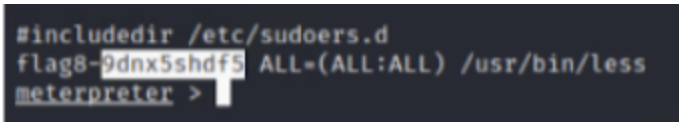


Flag 8:

- To discover Flag 8 I used MSFConsole and searched for Shellshock exploits. I was able to use the exploit:

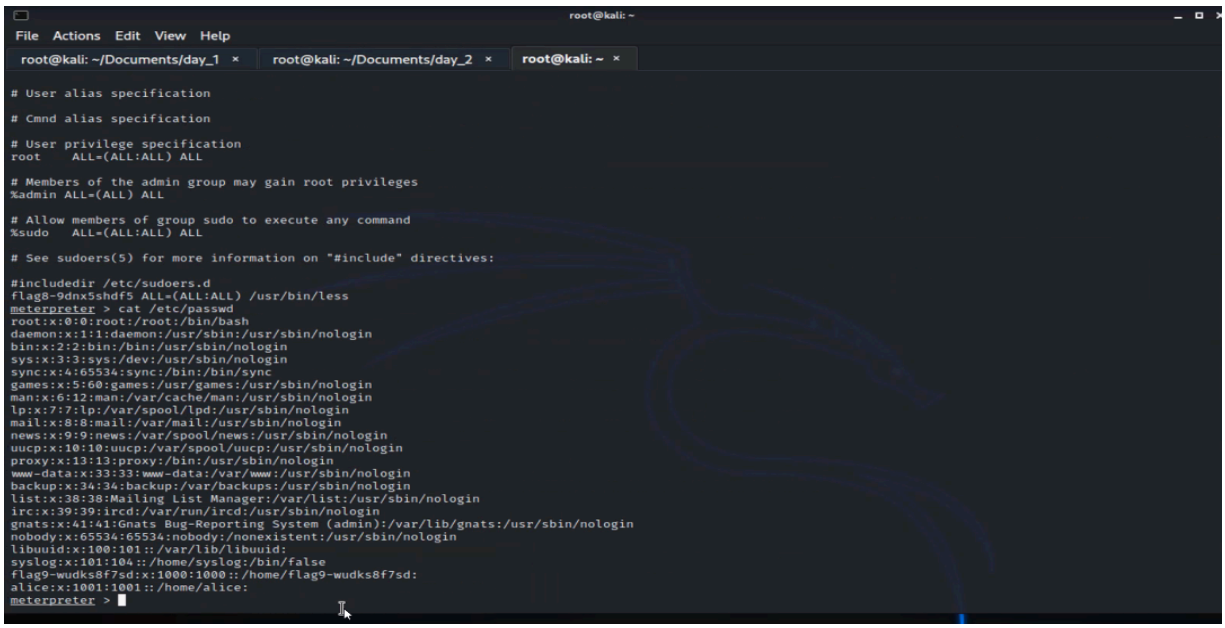
  exploit/multi/http/apache_mod_cgi_bash_env_exec

I set the necessary options, and ran the exploit. Once I got a shell, I ran cat /etc/sudoers and then I captured Flag 8.



Flag 9:

● Using the same machine where I previously discovered Flag 8, I conducted more investigation and was able to locate and capture Flag 9.

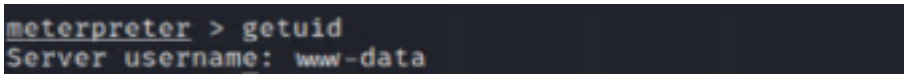


Flag 10:

- To find Flag 10 I went into MSFConsole, then I searched for Struts exploits and selected exploit/multi/http/struts2_content_type_ognl. After setting RHOSTS to 192.168.13.12, I executed the exploit and gained access through Meterpreter. From there, I downloaded /root/flagisinThisfile.7z and extracted its contents. I ran cat on the extracted file to reveal Flag 10.

Flag 11:

● To get Flag 11 I launched MSFConsole and searched for Drupal exploits, selecting unix/webapp/drupal_restws_unserialize to gain a Meterpreter shell. After executing the exploit, I ran getuid to retrieve the server's username. Flag 11 was www-data.

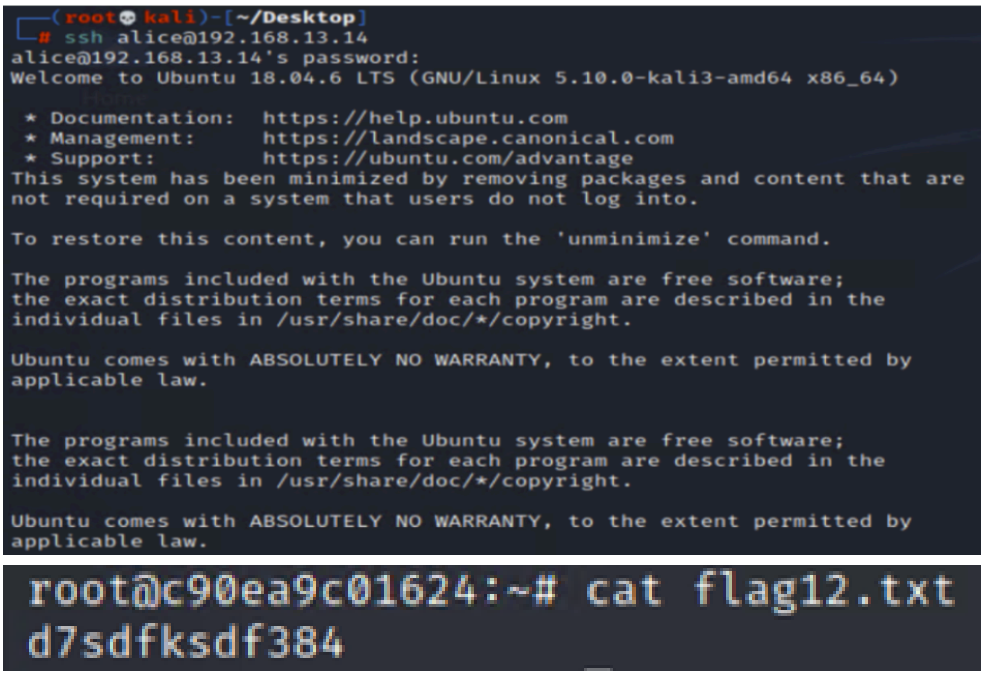


Flag 12:

● To retrieve Flag 12, I SSH'd into the server using ssh alice@192.168.13.14 and successfully guessed the password as "alice". Once inside, I performed privilege escalation by running

sudo -u#-1 cat /root/flag12.txt

After executing the command, I was able to access and retrieve the Flag 12.



Windows OS System

Flag 1:

● I searched on GitHub repositories to find content related to totalrekall. While reviewing the repository, I found the xampp.users page, which contained the following credentials:

trivera:$apr1$A0vSKwao$GV3sgGAj53j.c3GkS4oUC0

I saved the username and hash into a file named hash.txt using nano and then used John to crack the hash. The process revealed the password "Tanya4life", which unlocked Flag 1.

totalrekall / site Public

Code Issues Pull requests 1 Actions Projects Security

Files main site / xampp.users

totalrekall Added site backup files 4dde5a9 · 3 years ago

1 lines (1 loc) · 46 Bytes

Code Blame Raw

```
1  trivera:$apr1$A0vSKwao$GV3sgGAj53j.c3GkS4oUC0
```

```
root@kali: ~
File  Actions  Edit  View  Help
┌──(root㉿kali)-[~]
└─# nano trivera.txt

┌──(root㉿kali)-[~]
└─# ls
Desktop  Documents  Downloads  file2  file3  LinEnum.sh  Music  Pictures  Public  Scripts  Templates  trivera.txt  Videos

┌──(root㉿kali)-[~]
└─# john trivera.txt
Warning: detected hash type "md5crypt", but the string is also recognized as "md5crypt-long"
Use the "--format=md5crypt-long" option to force loading these as that type instead
Using default input encoding: UTF-8
Loaded 1 password hash (md5crypt, crypt(3) $1$ (and variants) [MD5 512/512 AVX512BW 16×3])
Will run 2 OpenMP threads
Proceeding with single, rules:Single
Press 'q' or Ctrl-C to abort, almost any other key for status
Almost done: Processing the remaining buffered candidate passwords, if any.
Proceeding with wordlist:/usr/share/john/password.lst
Tanya4life       (?)
1g 0:00:00:00 DONE 2/3 (2024-02-14 18:59) 12.50g/s 4800p/s 4800c/s 4800C/s 123456..jake
Use the "--show" option to display all of the cracked passwords reliably
Session completed.

┌──(root㉿kali)-[~]
└─#
```

Flag 2:

● To find Flag 2, I conducted an Nmap scan to identify open ports. Knowing that the Windows network operates on the subnet 172.22.117.0/24 the scan revealed that 172.22.117.20 had an accessible service.

I navigated to 172.22.117.20 and used the credentials from Flag 1 (trivera:Tanya4life) to log in.

Once inside, I discovered flag2.txt, successfully retrieving Flag 2.

172.22.117.20/flag2.txt

172.22.117.20/flag2.txt

Exploit-DB Nessus

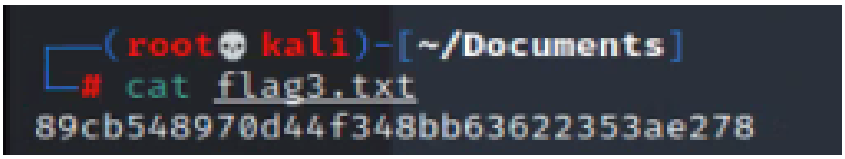
```
4d7b349705784a518bc876bc2ed6d4f6
```

Flag 3:

● To locate Flag 3, I conducted an aggressive Nmap scan, which revealed an open FTP service on 172.22.117.20. I logged in as anonymous, I accessed the server using the command:

ftp -p 172.22.117.20

Once connected, I navigated through the directories and successfully retrieved the file containing Flag 3.

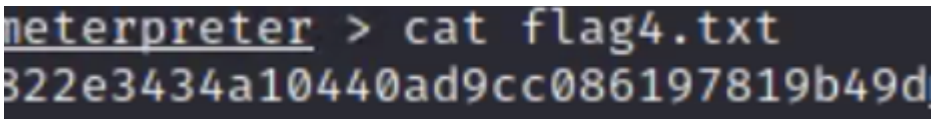


Flag 4:

● To locate Flag 4, I identified the SLMail service and used Metasploit via MSFConsole to exploit it. After selecting the appropriate exploit, I configured the following parameters:

LHOST = 172.22.117.100
RHOST = 172.22.117.20
RPORT = 110

Once the exploit was successfully executed, I navigated the system and used cat flag4.txt, revealing Flag 4.

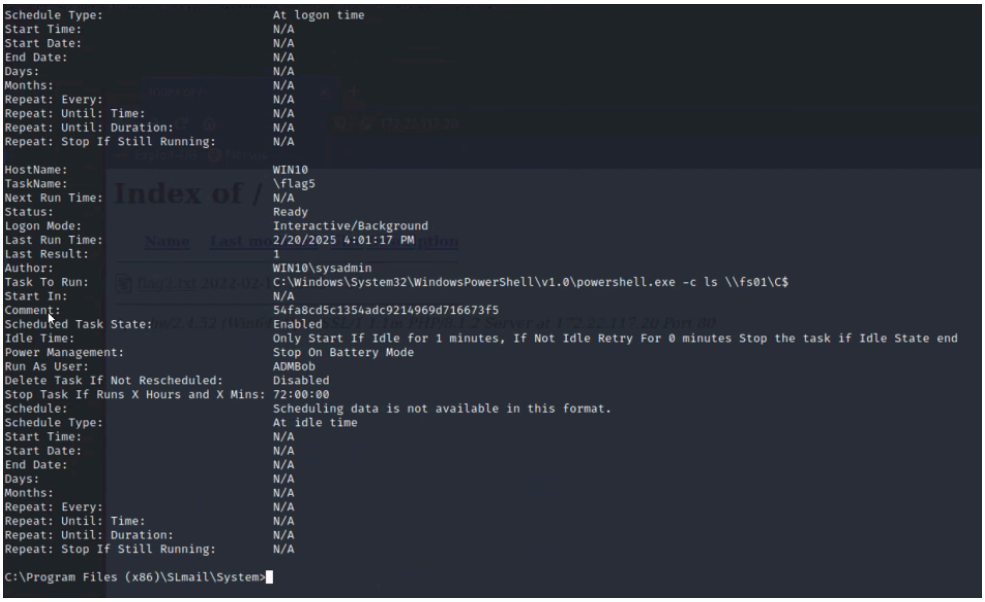


Flag 5:

● After gaining access to the Windows 10 machine, I evaluated scheduled tasks to identify potential issues. Within Meterpreter, I dropped into a command shell and executed the following command to query scheduled tasks:

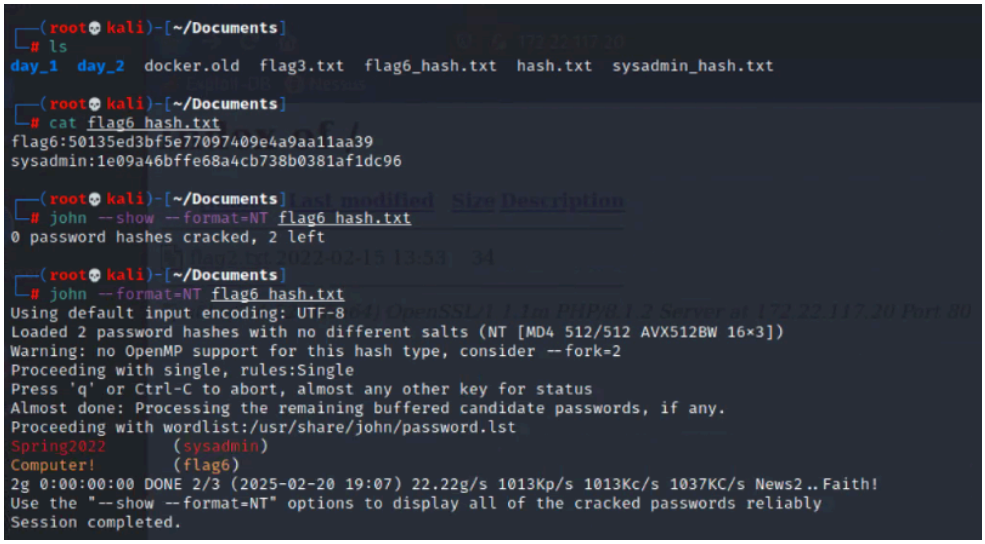
schtasks /query /tn "flag5" /v

This command displays detailed information about Flag 5 tasks, and successfully reveals Flag 5.



Flag 6:

● For Flag 6, continuing to exploit the same Windows 10 machine, I loaded Kiwi within Meterpreter to extract password hashes from system users. After retrieving the hashes, I saved them into a file and used John to crack the NTLM hash. This process successfully revealed the plaintext password, which was Flag 6.



Flag 7:

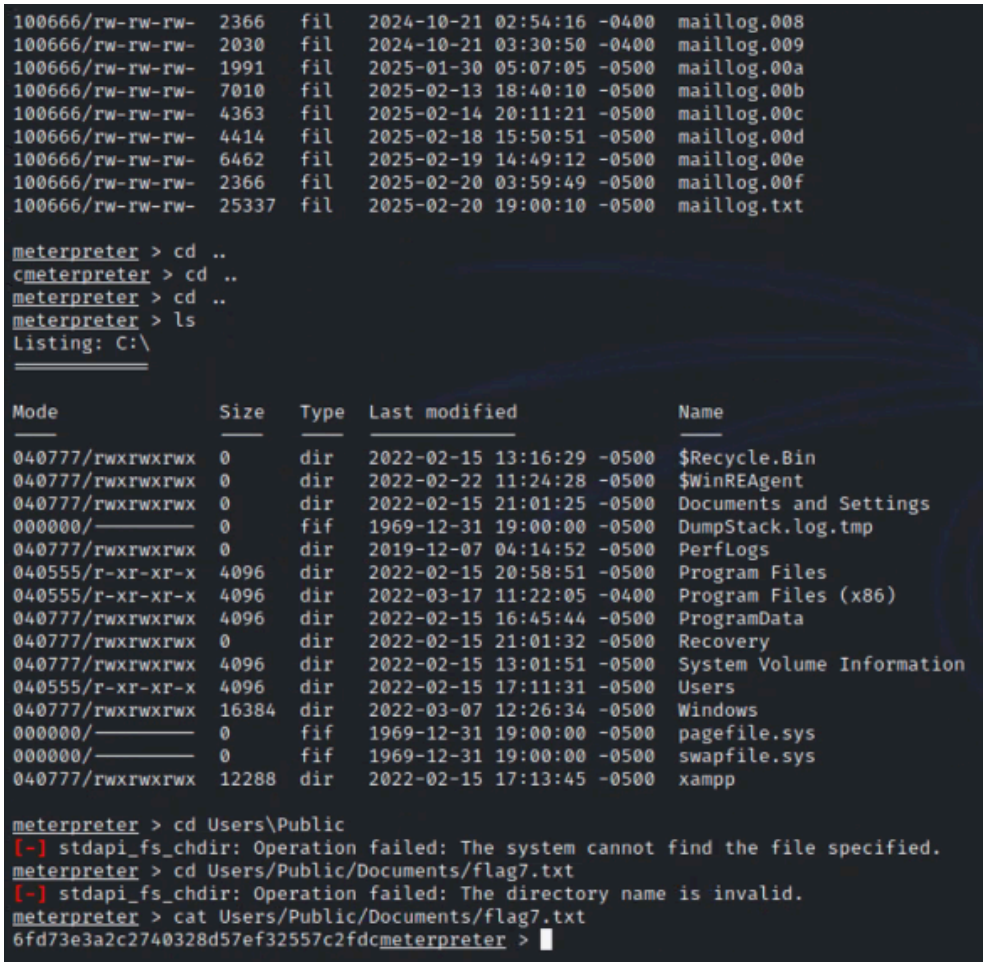
● To locate Flag 7 I continued on the same Windows 10 machine, I conducted a file search within Meterpreter to locate potential flag files. I used the following command:

search -f *flag.txt*

The search returned multiple results, but one stood out:

C:\Users\Public\Documents\flag7.txt

Upon navigating to this directory and inspecting the file, I successfully retrieved Flag 7.



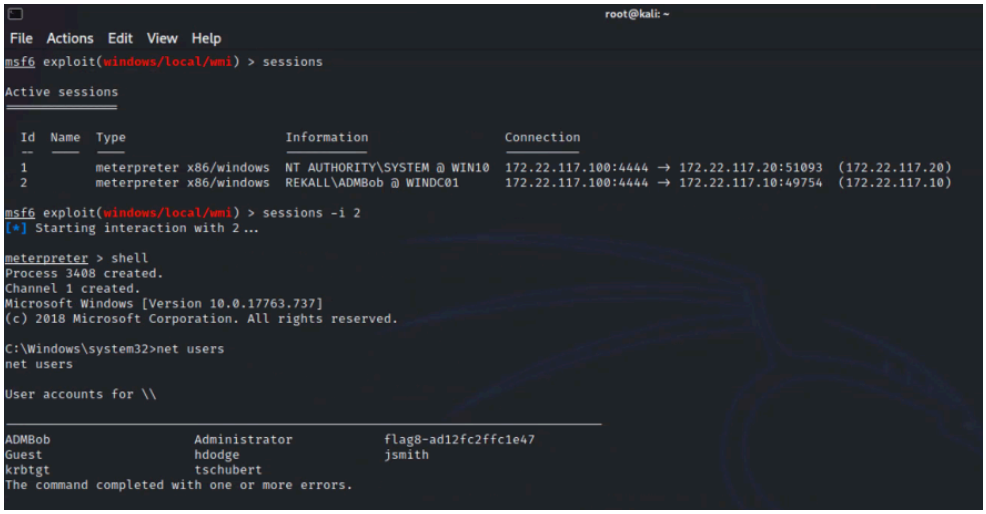
Flag 8:

● To find Flag 8 I was using Kiwi within Meterpreter. I dumped cached credentials from the Windows 10 machine.

The output revealed cached credentials for administrators, including ADMBob. I extracted the usernames and NTLM hashes to which I saved them into a .txt file and used John to crack them.

The cracked password was: Changeme!

Using these credentials, I moved to WinDC and enumerated user accounts discovering Flag 8.



Flag 9:

● Finding Flag 9 required me to continue to enumerate the WinDC machine. I conducted a file search in Meterpreter to locate flag files. I used the following command:

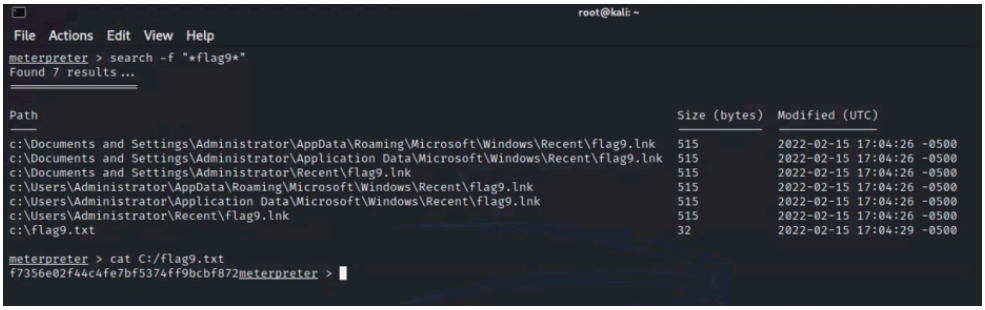
search -f *flag9.txt*

The search returned multiple results. I navigated through the filesystem and identified Flag 9 in a system directory.

To reveal its contents, I ran the command:

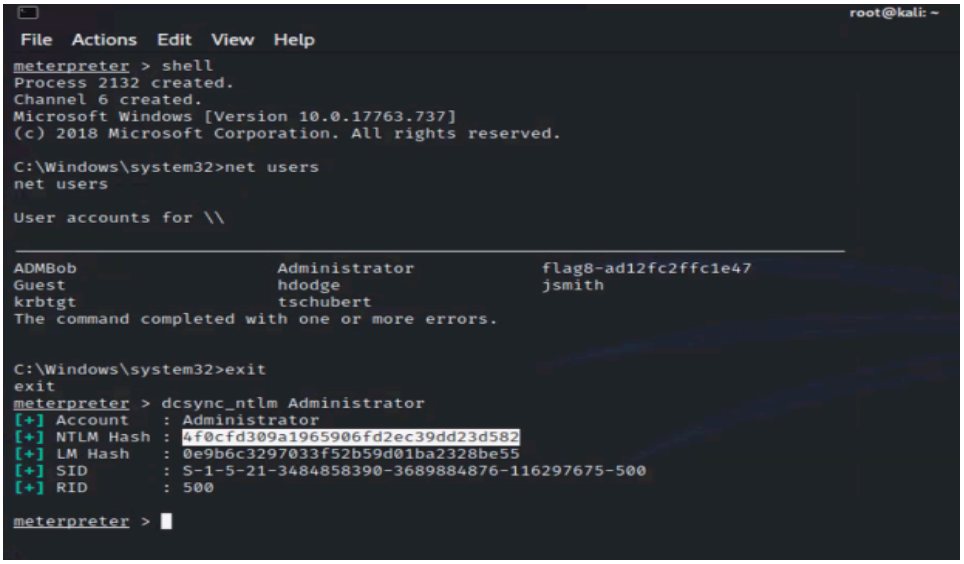
cat flag9.txt

And this successfully displayed the information for Flag 9.



Flag 10:

● For the final Flag, while in Meterpreter, I launched a shell and used Kiwi to perform a DCSync attack on the Administrator account. This method allowed me to gather the NTLM password hash directly from the Domain Controller. This successfully extracted the NTLM hash, which was Flag 10.



Summary Vulnerability Overview

Vulnerability	Severity
Web Applications Vulnerabilities	
Flag 1: Reflected XSS on Welcome.php	Critical
Flag 2: XSS on Memory-Planner.php	Critical
Flag 3: XSS Stored Vulnerability on the Comments.php page	Critical
Flag 4: Sensitive Data Exposure	Critical
Flag 5: Local File Inclusion on the Memory-Planner.php	Critical
Flag 6: Local File Inclusion	Critical
Flag 7: SQL Injection on the Login.php	Critical
Flag 8: Sensitive Data Exposure	High
Flag: 9 Sensitive Data Exposure	Medium
Flag 10: Command Injection	Medium
Flag 11: Command Injection	High
Flag 12: Brute Force Attack	Medium
Flag 13: PhP Injection	High
Flag 14: Session Management	Medium
Flag 15: Directory Transversal on Disclaimer page	Medium
Linux Operating System	
Flag 1: WHOIS Domain Recon	Low
Flag 2: IP Address Recon	Low

Flag 3: SSL Certificate Research	Low
Flag 4: Network Scanning	Medium
Flag 5: Aggressive Scan for Drupal	Medium
Flag 6: Nessus Scan and Vulnerability ID	Medium
Flag 7: Apache Tomcat Remote Code Execution Vulnerability	Critical
Flag 8: ShellShock Exploit	High
Flag 9: Escalating Access	Medium
Flag 10: Status Exploit	Medium
Flag 11: Drupal (CVE-2019-6340)	High
Flag 12: SSH Exploitation	High
Windows Operating System	
Flag 1: Github Repository OSINT	Critical
Flag 2: HTTP Enumeration on Internal Network	Critical
Flag 3: FTP Enumeration	High
Flag 4: Metasploit the SLMail Service	Medium
Flag 5: Post Exploitation Task on Win10	High
Flag 6: User enumeration on Windows 10	Critical
Flag 7: File Enumeration	Medium
Flag 8: User enumeration pt. 2	High
Flag 9: Escalating Access	High
Flag 10: Compromising Admin	High

The following summary tables represent an overview of the assessment findings for this penetration test:

Scan Type	Total
Hosts	172.22.117.10 172.22.117.20 192.168.13.10 192.168.13.11 192.168.13.12 192.168.13.13 192.168.13.14 192.168.13.0/24 192.168.13.1 192.168.13.35 192.168.14.35 192.158.13.14 172.22.117.0/24

Ports	8009 80 8080 8081 21 22 79 106 110 135 139 443 445 5901 6001 10000 10001 SLMail POP3

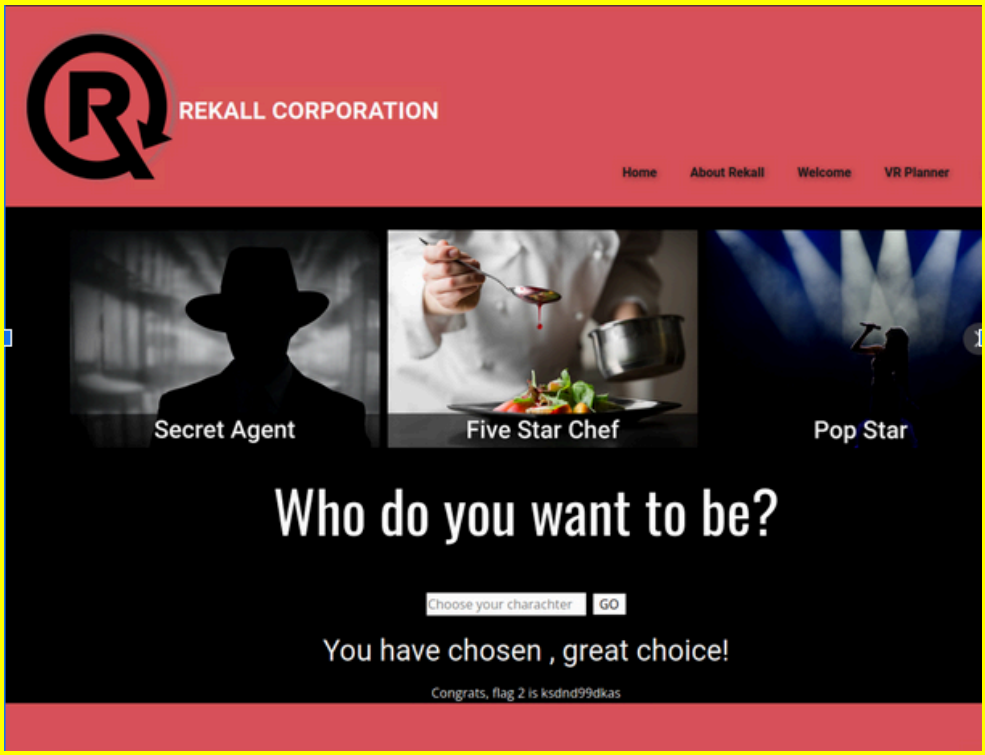
Exploitation Risk	Total
Critical	8
High	11
Medium	12
Low	3

Vulnerability Findings

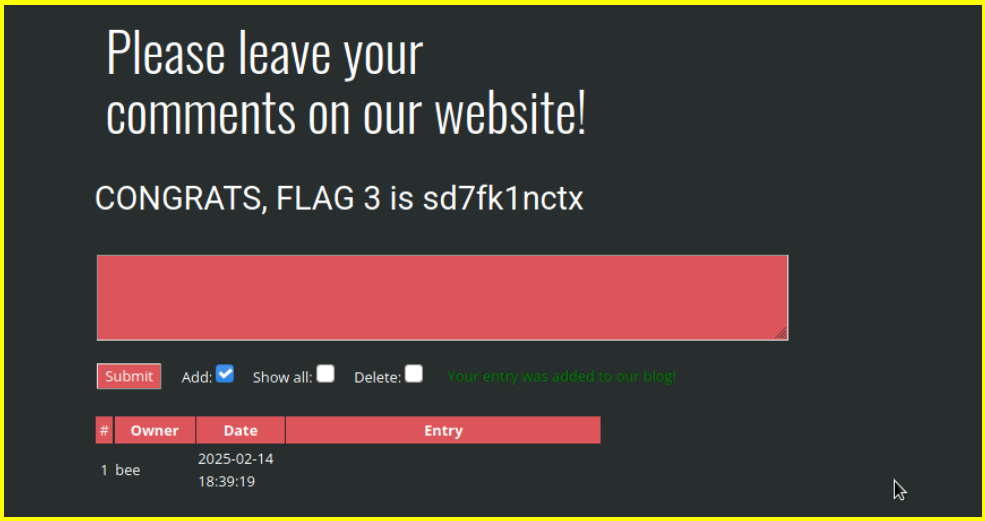
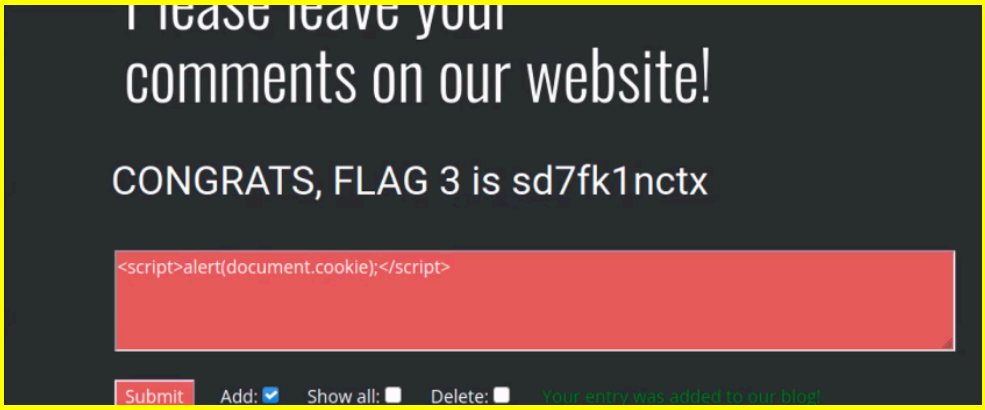
Vulnerability 1	Web App Findings
Title	Flag 1
Type (Web app / Linux OS / WIndows OS)	Web App
Risk Rating	Critical
Description	To uncover Flag 1 I performed a XSS Payload exploit on the welcome page using the script: <script>alert</script>

Images	
Affected Hosts	192.168.14.35/Welcome.php - Totalrekall.xyz
Remediation	Finding ways to implement input validation

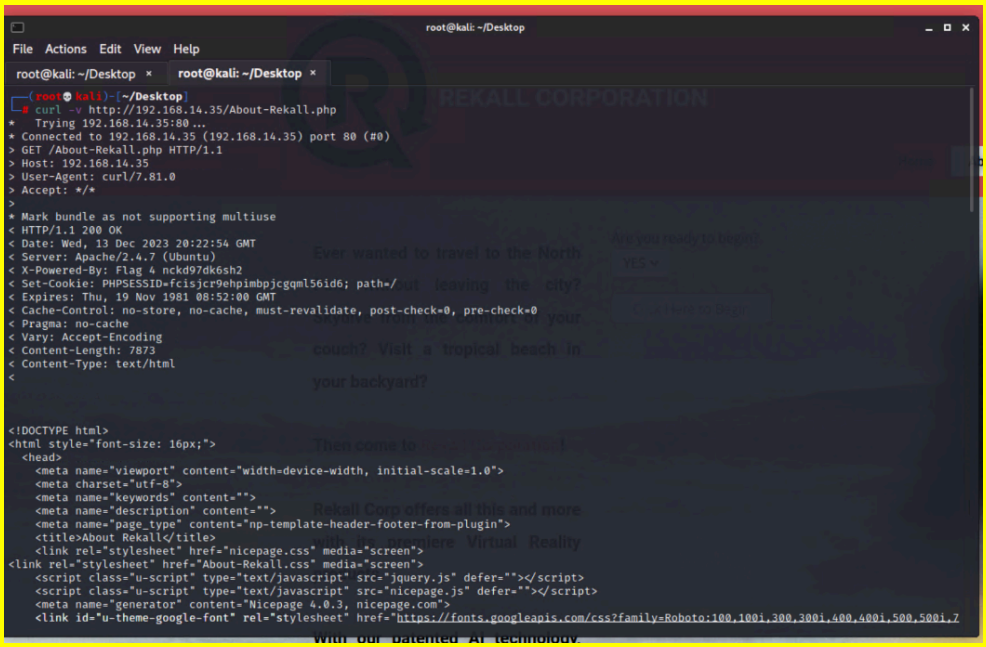
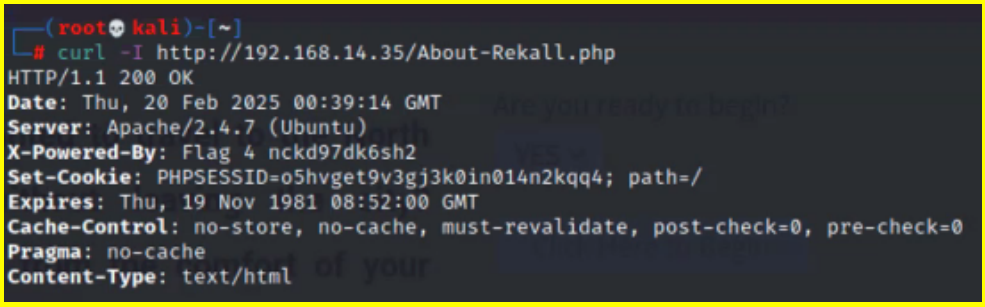
Vulnerability 2	**Web App Findings**
Title	Flag 2
Type (Web app / Linux OS / WIndows OS)	Web App
Risk Rating	Critical
Description	For Flag 2, I figured out that this was a XSS Payload exploit and was used in the “Choose Your Character” field <SCRIPscriptT>alert("hi")</SCRIPscripTt>

Images	 
Affected Hosts	192.168.14.35/Memory-planner.php - Totalrekall.xyz
Remediation	HTML Sanitization

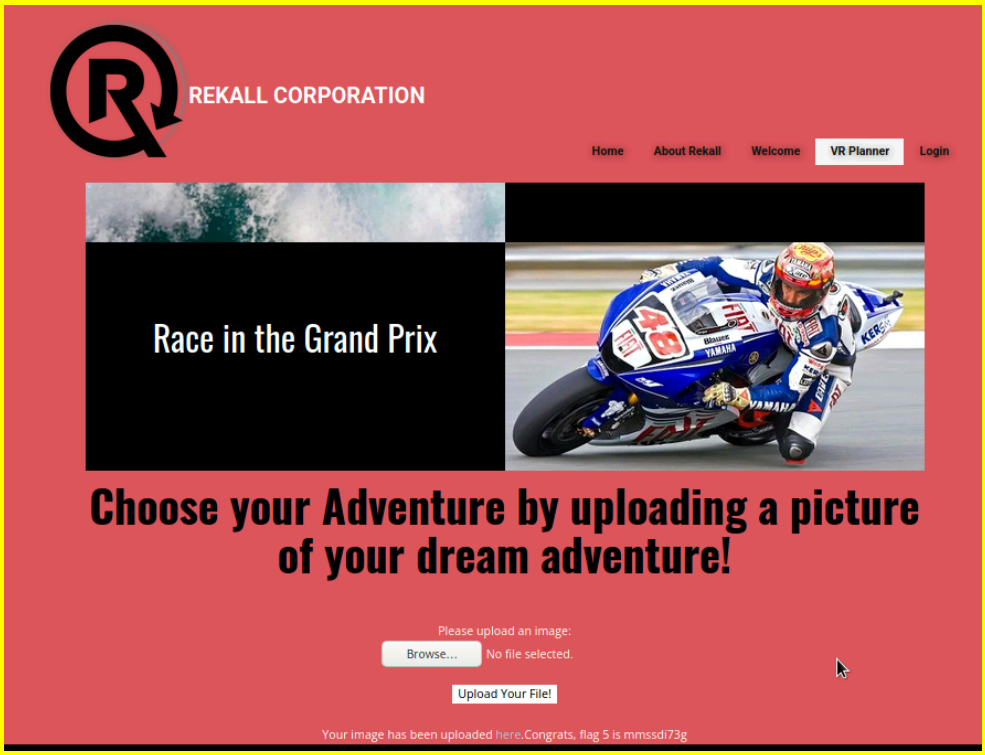
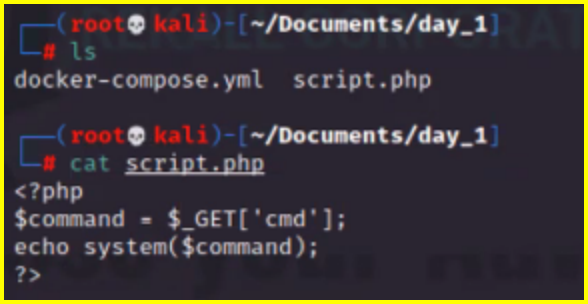
Vulnerability 3	Web App Findings
Title	Flag 3
Type (Web app / Linux OS / WIndows OS)	Web App
Risk Rating	Critical
Description	For Flag 3, I had to navigate to the Rekall website 192.168.14.15/comments.php page to where in the comments box I used the following XSS script <script>alert(document.cookie);</script> to activate Flag 3 on screen.

Images	 
Affected Hosts	192.168.14.35/comments.php
Remediation	Comment box encoding

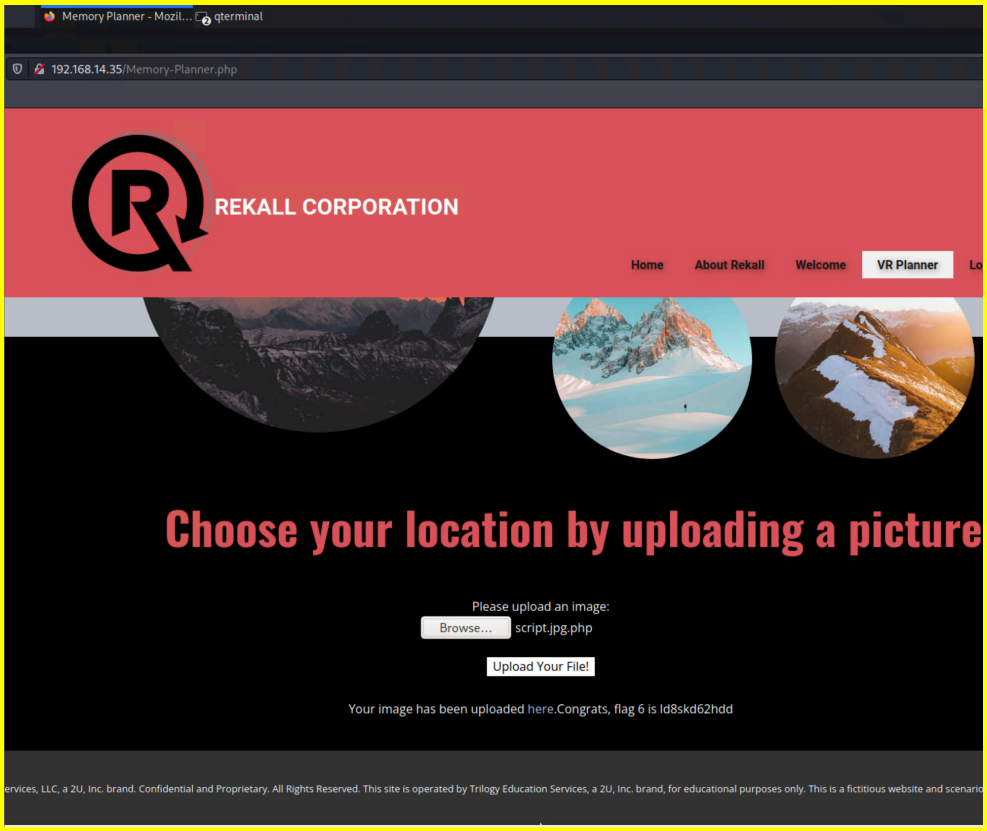
Vulnerability 4	Web App Findings
Title	Flag 4
Type (Web app / Linux OS / WIndows OS)	Web App
Risk Rating	Critical
Description	To capture Flag 4, within the linux terminal in Kali, I opened a new command prompt terminal and used the command: curl -v http://192.168.14.35/About-Rekall.php to grab website information and locate Flag 4.

Images	 
Affected Hosts	192.168.14.35/About-Rekall.php - TotalRekall.xyz
Remediation	Configure proper access channels

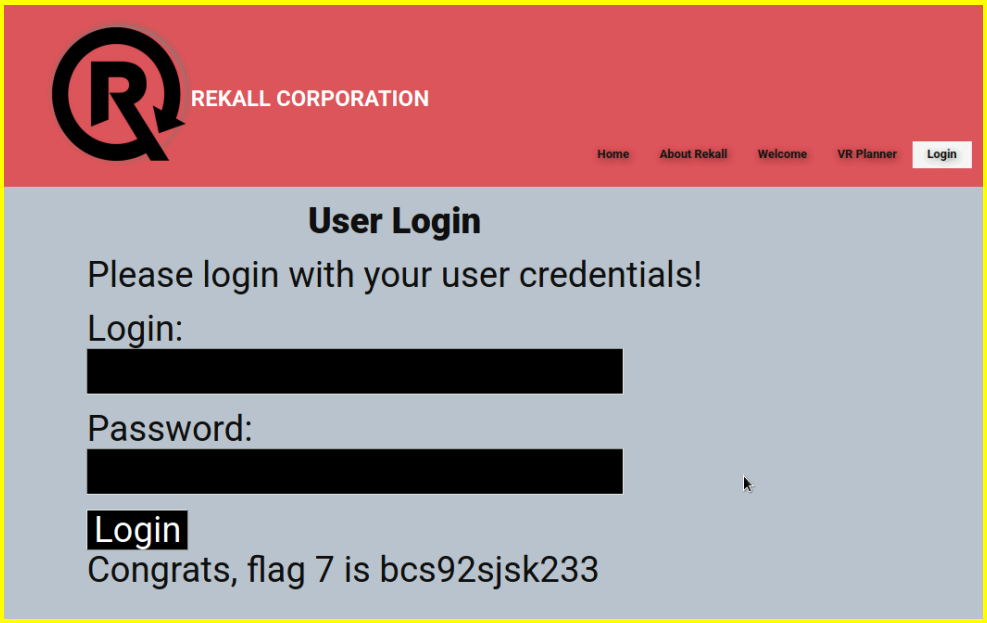
Vulnerability 5	Web App Findings
Title	Flag 5 - Local File Inclusion (LFI) exploit
Type (Web app / Linux OS / WIndows OS)	Web App
Risk Rating	Critical
Description	For Flag 5, in the linux terminal, I created a script.php file and uploaded it to the first upload field on the memory-planner page.

Images	 
Affected Hosts	192.168.13.45/memory-planner.php
Remediation	File Upload Validation - Make sure that only .jpg files or image files are the only required upload files to be uploaded

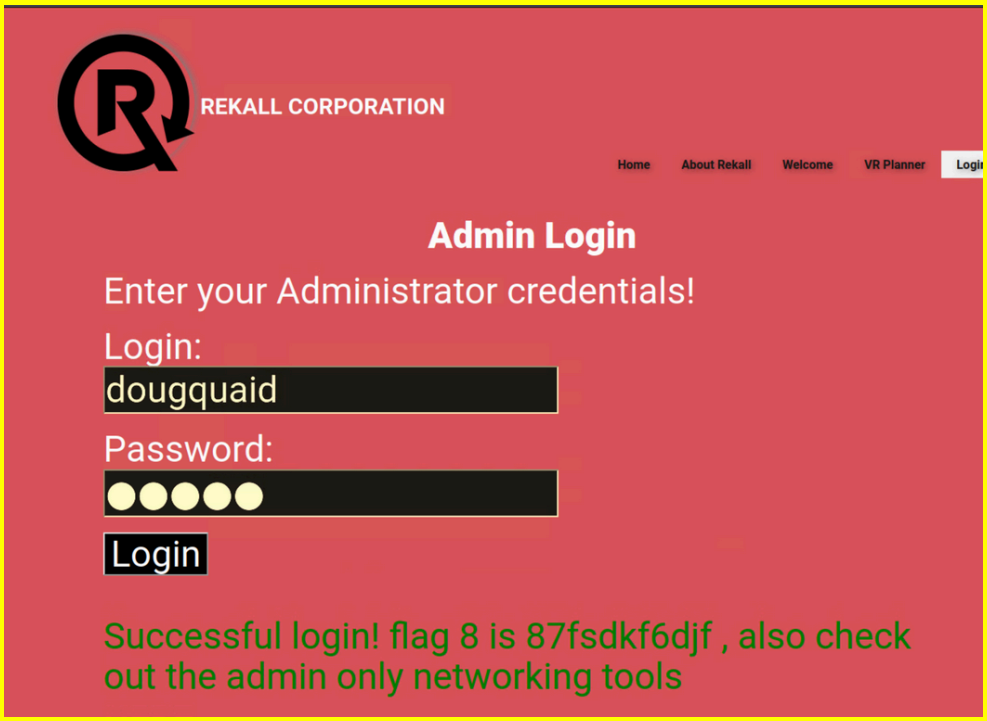
Vulnerability 6	Web App Findings
Title	Flag 6 - LFI (advanced)
Type (Web app / Linux OS / WIndows OS)	Web App
Risk Rating	Critical
Description	To locate Flag 6 I uploaded a file ending in “jpg.php”. upload the file to the Memory-Planner.php page to reveal this flag.

Images	
Affected Hosts	192.168.13.45/Memory-planner.php
Remediation	File validation; Make sure that only the required files are the only files that can be uploaded.

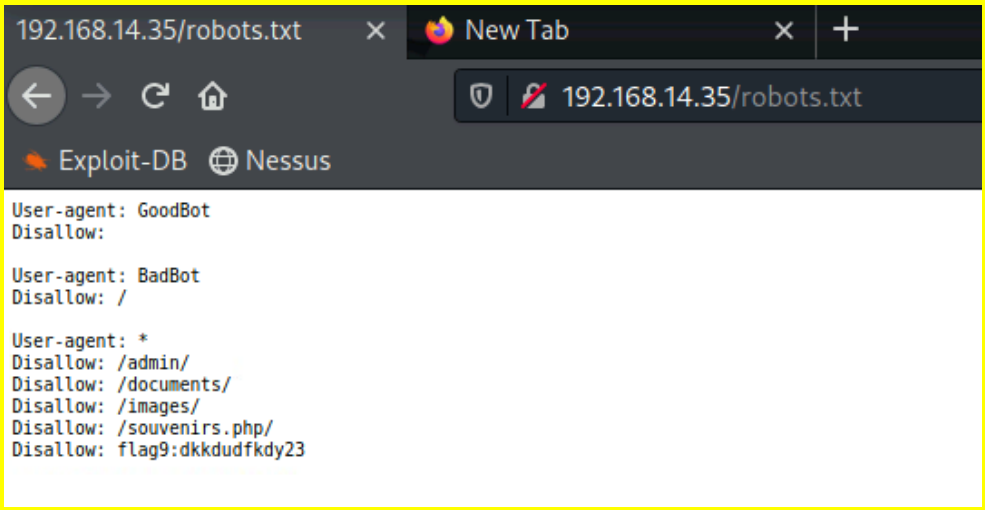
Vulnerability 7	Web App Findings
Title	Flag 7 - SQL injection
Type (Web app / Linux OS / WIndows OS)	Web App
Risk Rating	Critical
Description	To locate Flag 7, I navigated to the 192.168.13.35/Login.php on the Rekall website and performed a SQL injection in the username and password section to find Flag 7.

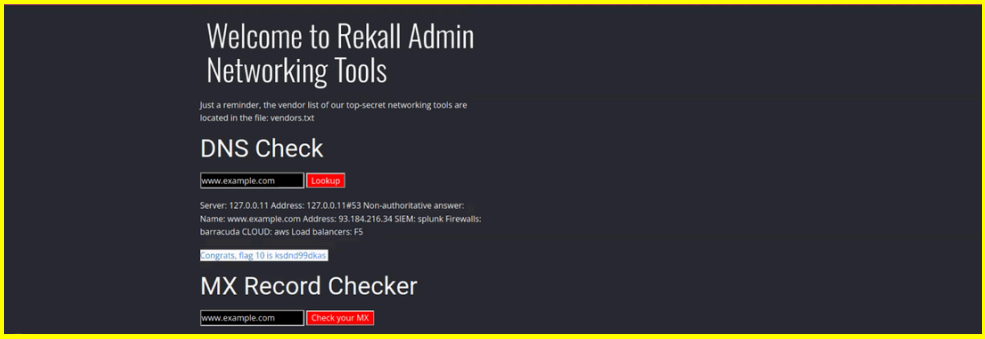
Images	
Affected Hosts	192.168.13.35/Login.php
Remediation	Don't build SQL queries by combining strings. They should use prepared statements to keep user inputs separate from what the SQL code is.

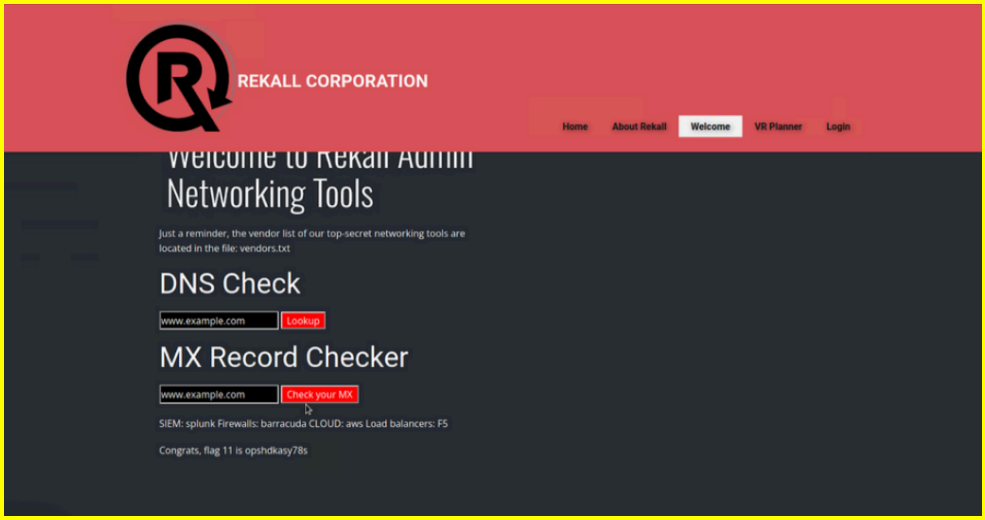
Vulnerability 8	Web App Findings
Title	Flag 8
Type (Web app / Linux OS / WIndows OS)	Web App
Risk Rating	High
Description	I discovered Flag 8 within the HTML source code from the Login page. While inspecting the code I discovered the login credentials ‘dougquaid:kuato’ which then i used to log on the admin page and was able to get Flag 8.

Images	
Affected Hosts	192.168.13.35, Login.php
Remediation	Conduct regular security audits and respond to any suspicious activities of login attempts.

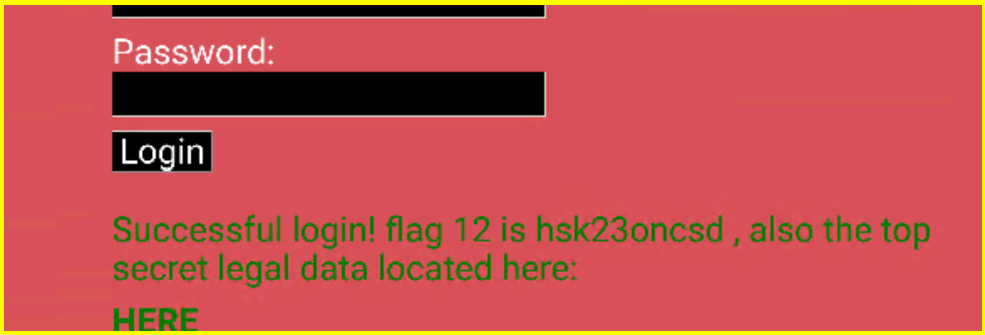
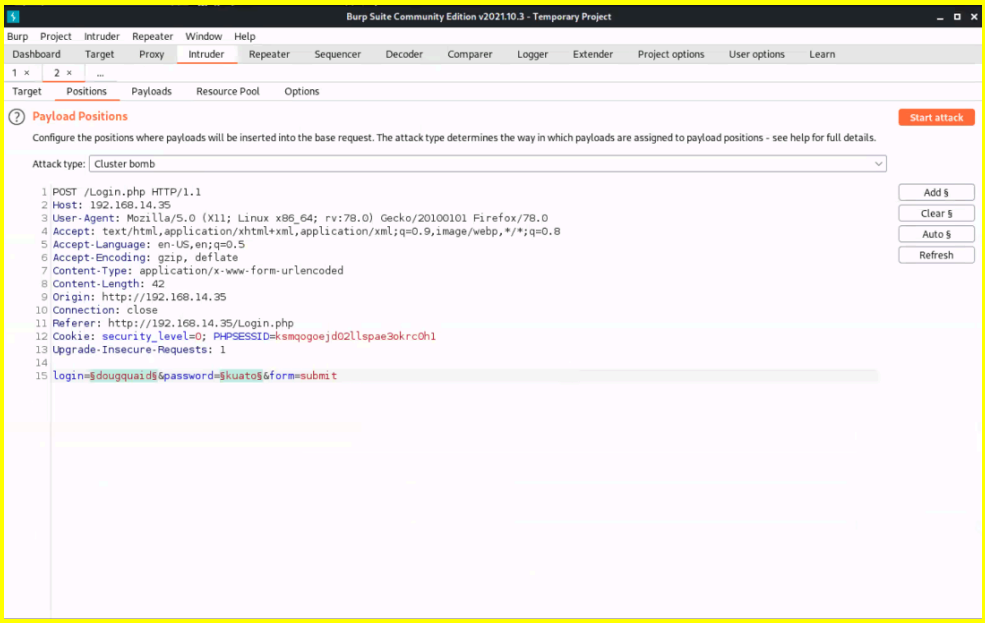
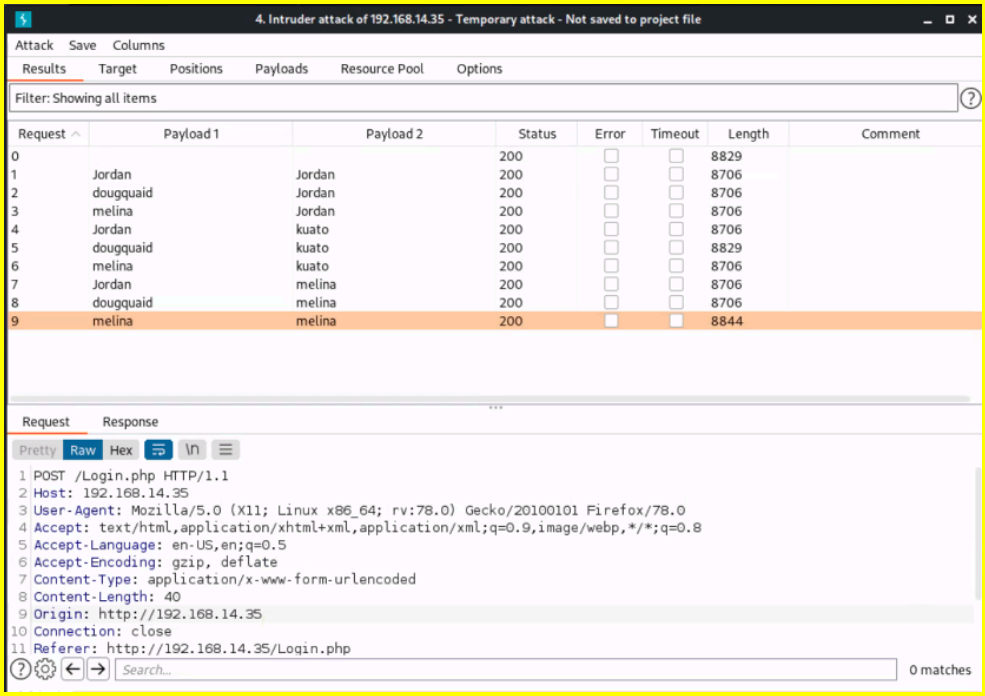
Vulnerability 9	Web App Findings
Title	Flag 9 - Sensitive data exposure
Type (Web app / Linux OS / WIndows OS)	Web App
Risk Rating	Medium
Description	To locate Flag 9, I accessed 192.168.14.15/robots.txt which contained information on Flag 9.

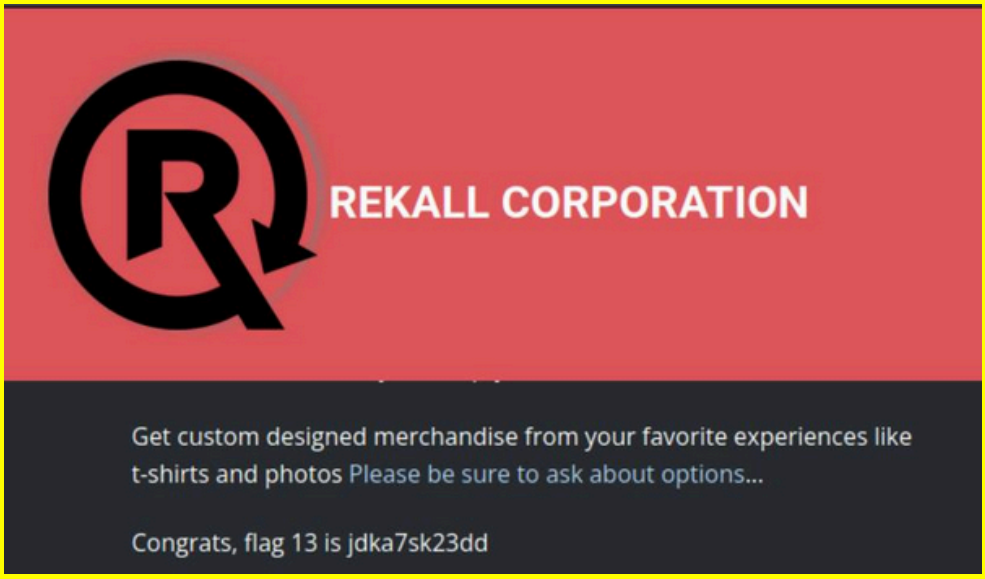
Images	
Affected Hosts	192.168.14.35
Remediation	Ensure that only authorized users have access to certain information

Vulnerability 10	Web App Findings
Title	Flag 10 - Command injection
Type (Web app / Linux OS / WIndows OS)	Web App
Risk Rating	Medium
Description	To capture Flag 10, I navigated to 192.168.14.15/network.php page and exploited a command injection vulnerability which allowed me to locate Flag 10.
Images	
Affected Hosts	192.168.14.15/network.php
Remediation	Identity compromised systems

Vulnerability 11	Web App Findings
Title	Flag 11 - Command injection (advanced)
Type (Web app / Linux OS / WIndows OS)	Web App
Risk Rating	High
Description	For Flag 11, I executed a command injection payload on the Networking page in the MX Record Checker section which allowed me to find Flag 11.
Images	
Affected Hosts	192.168.14.15/network.php
Remediation	Identity compromised systems

Vulnerability 12	Web App Findings
Title	Flag 12 - Brute force attacks
Type (Web app / Linux OS / WIndows OS)	Web App
Risk Rating	Medium
Description	I accessed the 192.168.14.15/login.php page and attempted to log in using melina in both the user and password fields and gained entry. I discovered these credentials by using a simple password payload in burp intruder and found melina:melina. This led me to find Flag 12.

Images	  
Affected Hosts	192.168.13.35, Login.php
Remediation	Enforce strong password policies and educate users about strong and unique passwords.

Vulnerability 13	Web App Findings
Title	Flag 13 - PHP injection
Type (Web app / Linux OS / WIndows OS)	Web App
Risk Rating	High
Description	I navigated to 192.168.14.15/souvenirs.php page which I accessed after finding Flag 9. On this page, I exploited a PHP injection vulnerability using the payload ;system( ), which allowed me to reveal Flag 13.
Images	
Affected Hosts	192.168.14.15/souvenirs.php
Remediation	implement security policies to prevent payloads being entered.

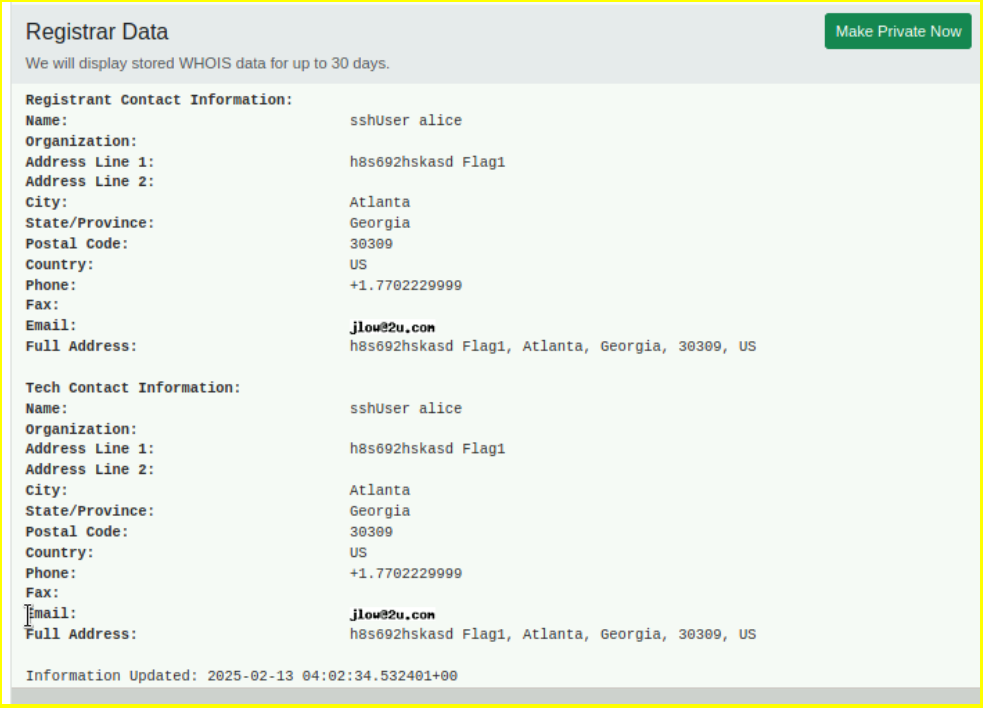
Vulnerability 14	Web App Findings
Title	Flag 14 - Session management
Type (Web app / Linux OS / WIndows OS)	Web App
Risk Rating	Medium
Description	I exploited a session management vulnerability on the admin_legal_data.php page by using Burp Intruder to brute-force session IDs. This allowed me to successfully retrieve Flag 14.

Images	
Affected Hosts	192.168.14.35/admin_legal_data.php
Remediation	Policies need to be in place to prevent payloads.

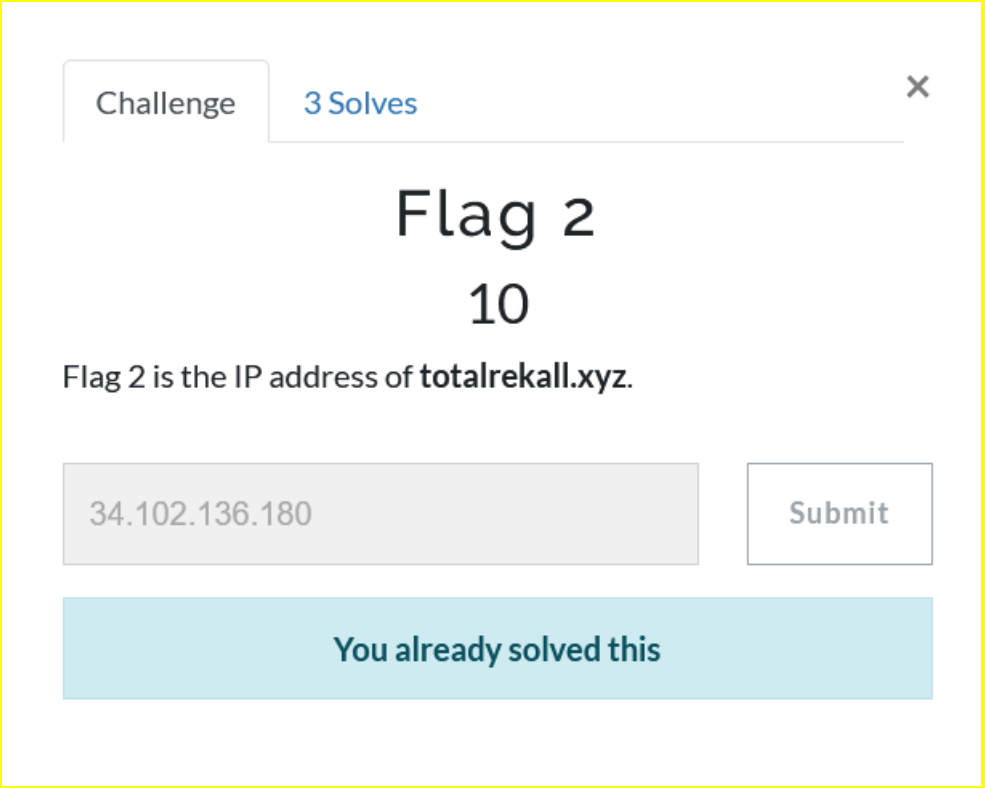
Vulnerability 15	Web App Findings
Title	Flag 15 - Directory traversal
Type (Web app / Linux OS / WIndows OS)	Web App
Risk Rating	Medium
Description	I discovered Flag 15 by exploiting a directory traversal vulnerability on the disclaimer.php page. By navigating to the old_disclaimers directory, I found the flag in a file named disclaimer_1.txt.

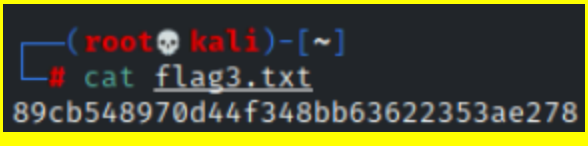
Images	
Affected Hosts	192.168.14.35/disclaimer.php
Remediation	Security policies need to be in place to prevent payloads.

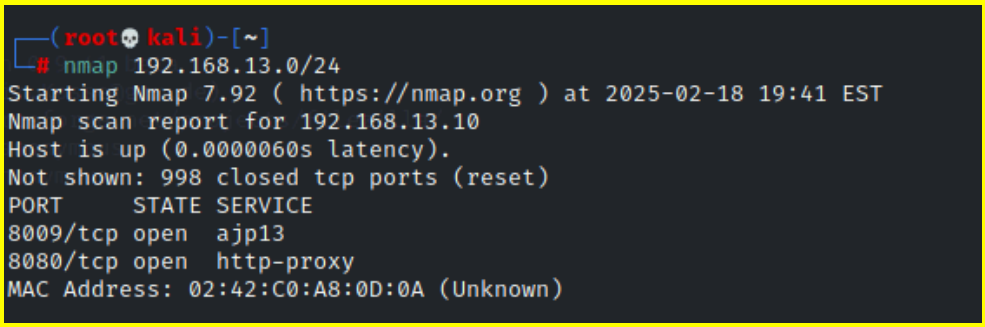
Vulnerability 1	Linux Findings
Title	Linux Flag 1 - Reconnaissance
Type (Web app / Linux OS / WIndows OS)	Linux OS
Risk Rating	Low
Description	To find Flag 1 on the Linux system, I visited https://centralops.net/co/DomainDossier.aspx and selected the "Domain WHOIS Record" option. This allowed me to view the WHOIS data for totalrekall.xyz, where I found Flag 1.

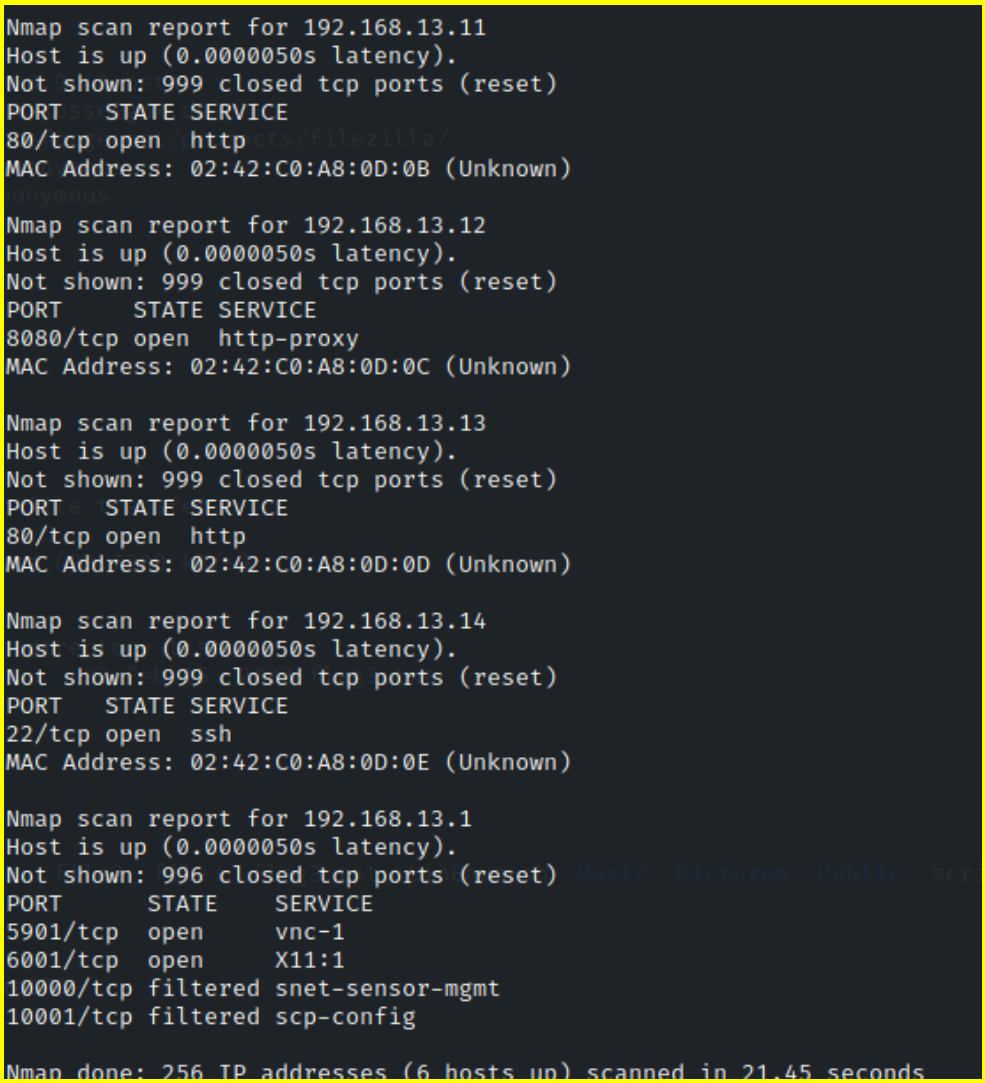
Images	
Affected Hosts	TotalRekall.xyz
Remediation	Conduct web application vulnerability scans regularly.

Vulnerability 2	Linux Findings
Title	Linux Flag 2 - Reconnaissance
Type (Web app / Linux OS / WIndows OS)	Linux OS
Risk Rating	Low
Description	To find Flag 2, I navigated to https://centralops.net/co/DomainDossier.aspx and selected "DNS Records" on the Domain Dossier webpage. I then viewed the WHOIS data for totalrekall.xyz. The class was provided with the IP address for totalrekall.xyz which led me to Flag 2, but there was an issue with the IP address it returned.

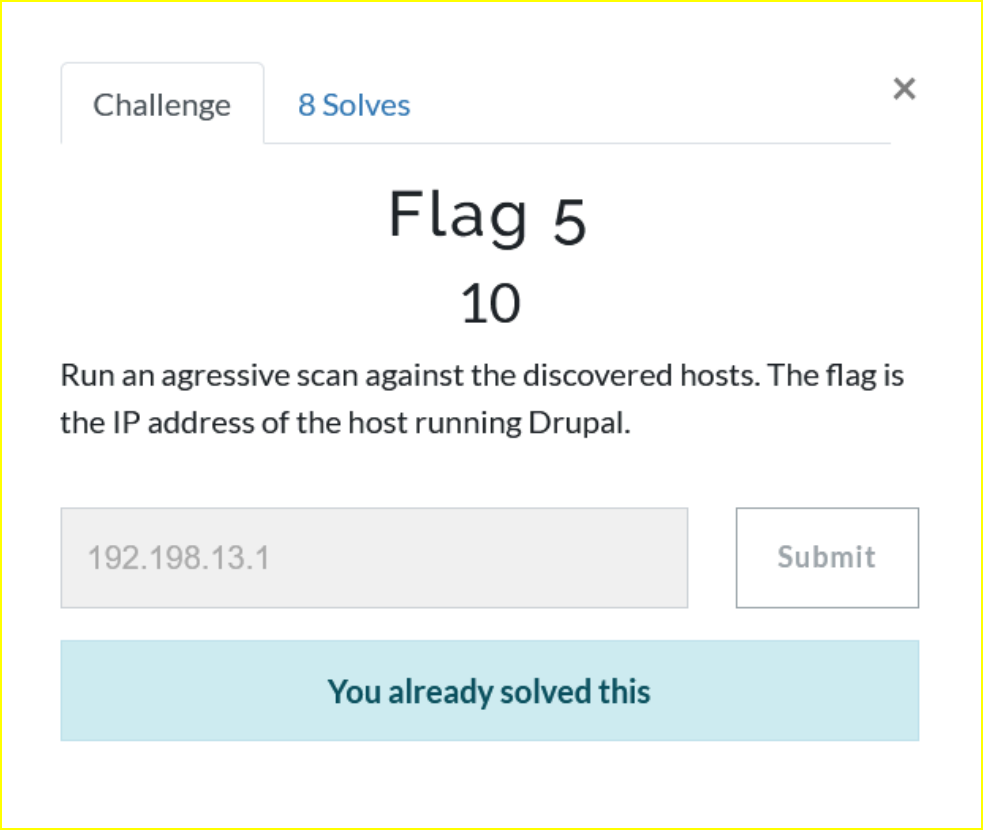
Images	
Affected Hosts	34.102.136.180
Remediation	Check IP Addresses for any suspicious activity.

Vulnerability 3	Linux Findings
Title	Linux Flag 3 - Reconnaissance
Type (Web app / Linux OS / WIndows OS)	Linux OS
Risk Rating	Low
Description	Flag 3 involved me performing an FTP connection to the IP address 172.22.117.20 to retrieve the data. After transferring the files to my local Kali machine, I was able to locate and extract Flag 3 and after performing the cat command on the flag3.txt I was able to gather the flag information.
Images	
Affected Hosts	172.22.117.20
Remediation	Monitor FTP Data

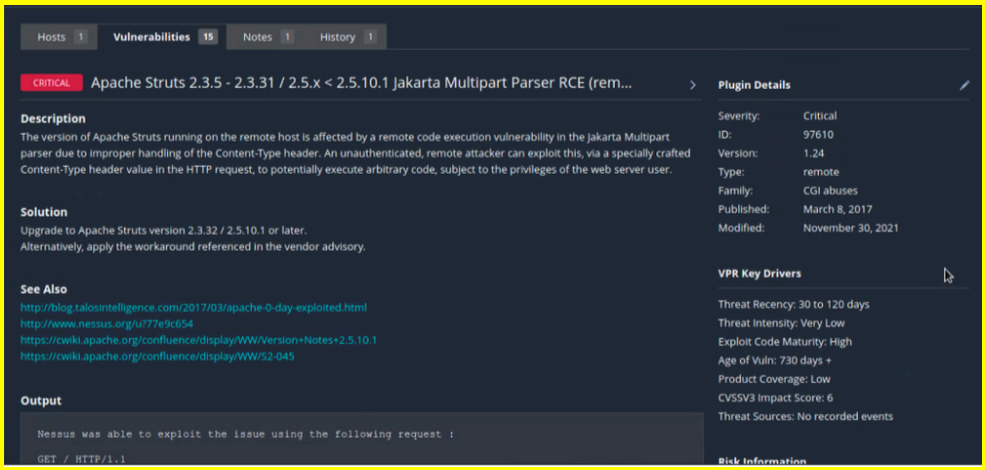
Vulnerability 4	Linux Findings
Title	Linux Flag 4 - Scanning
Type (Web app / Linux OS / WIndows OS)	Linux OS
Risk Rating	Medium
Description	To find Flag 4 I conducted an Nmap scan on the network using nmap 192.168.13.0/24, which revealed a total of five hosts. The flag corresponded to the number of detected hosts, excluding the one I was scanning from.
Images	

	
Affected Hosts	Nessus
Remediation	Identify and close any open ports that are not actively used.

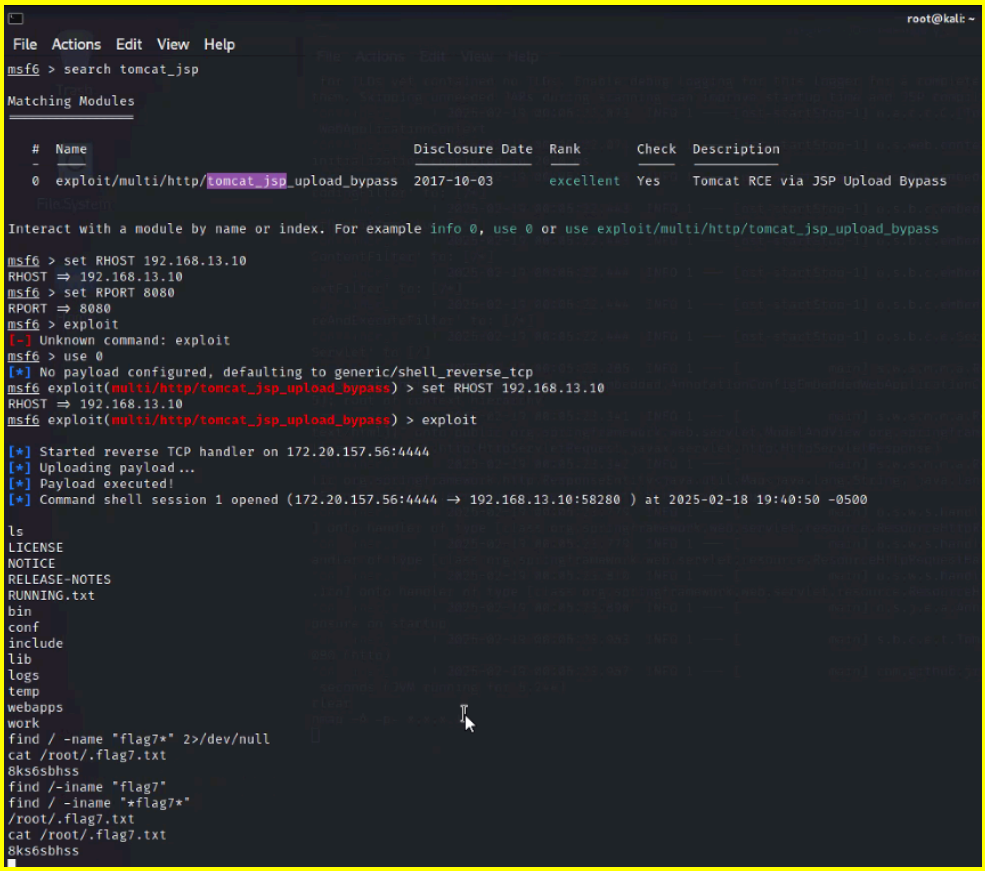
Vulnerability 5	Linux Findings
Title	Linux Flag 5
Type (Web app / Linux OS / WIndows OS)	Linux OS
Risk Rating	Medium
Description	To uncover Flag 5 I ran an aggressive Nmap scan, which revealed that the host IP 192.168.13.1 was running Drupal.

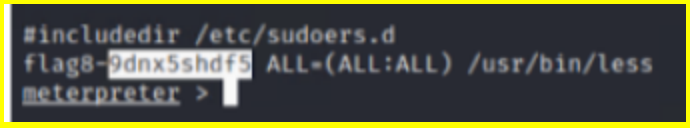
Images	
Affected Hosts	192.198.13.1
Remediation	Monitor scans to vulnerable threats.

Vulnerability 6	Linux Findings
Title	Linux Flag 6 - Scanning
Type (Web app / Linux OS / WIndows OS)	Linux OS
Risk Rating	Medium
Description	To find Flag 6, I ran a Nessus scan on the IP 192.168.13.12 and identified a critical vulnerability. The flag was displayed as ID 97610 in the top right corner of the scan results page.

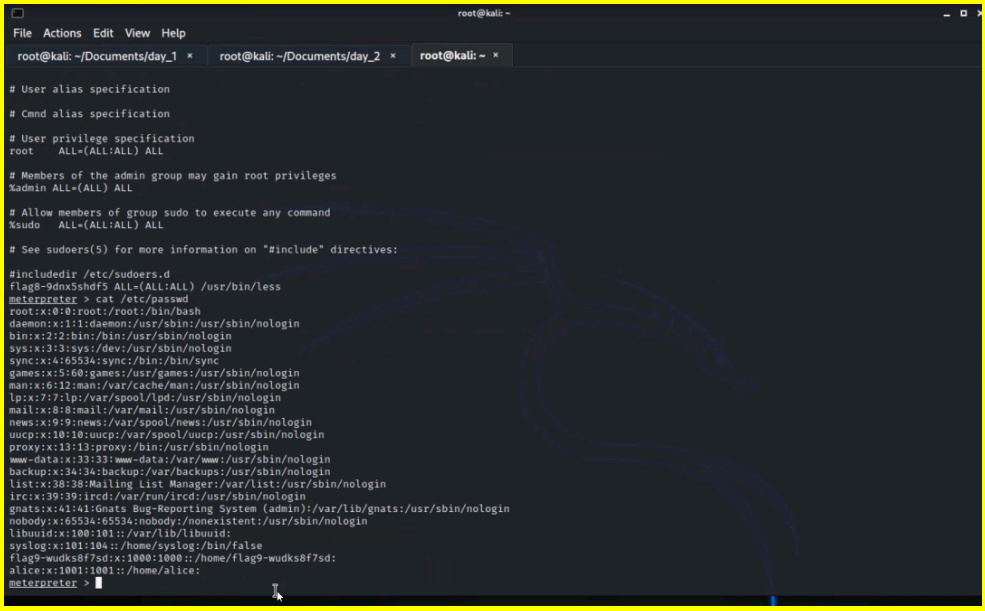
Images	
Affected Hosts	192.168.13.12
Remediation	Update and patch software on a regular basis and always monitor for vulnerabilities.

Vulnerability 7	Linux Findings
Title	Linux Flag 7 - Exploit
Type (Web app / Linux OS / WIndows OS)	Linux OS
Risk Rating	Critical
Description	Using MSFConsole, I searched for exploits targeting Tomcat and JSP. After configuring the RHOST to 192.168.13.10 and RPORT to 8080, I ran the exploit multiple times until I finally uncovered flag7.txt. A quick cat command later, and I secured.

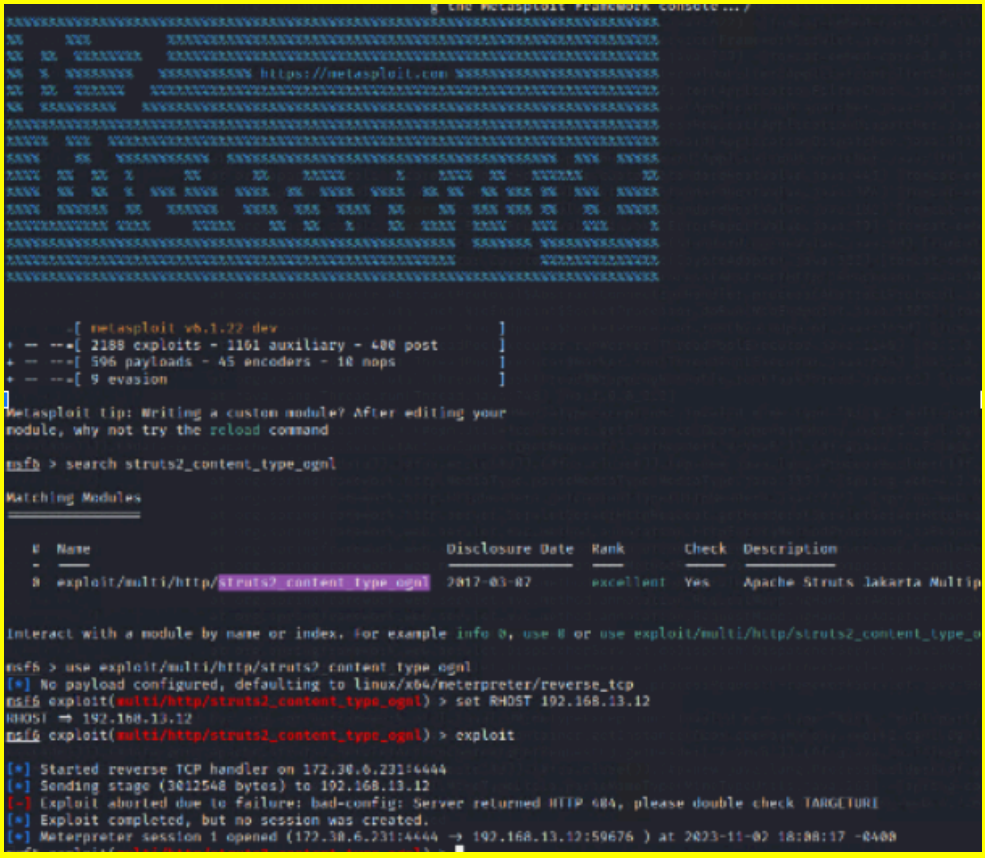
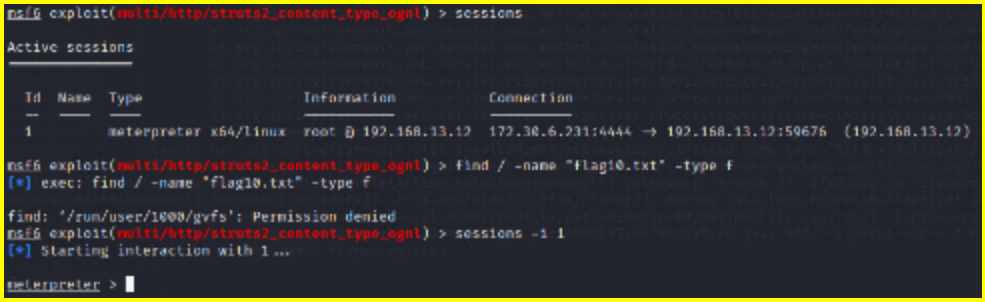
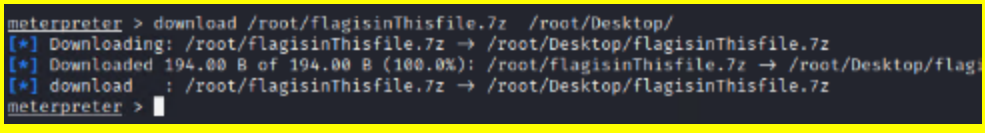
Images	
Affected Hosts	192.168.13.10
Remediation	Configure access controls, limit user access and disable any unnecessary services.

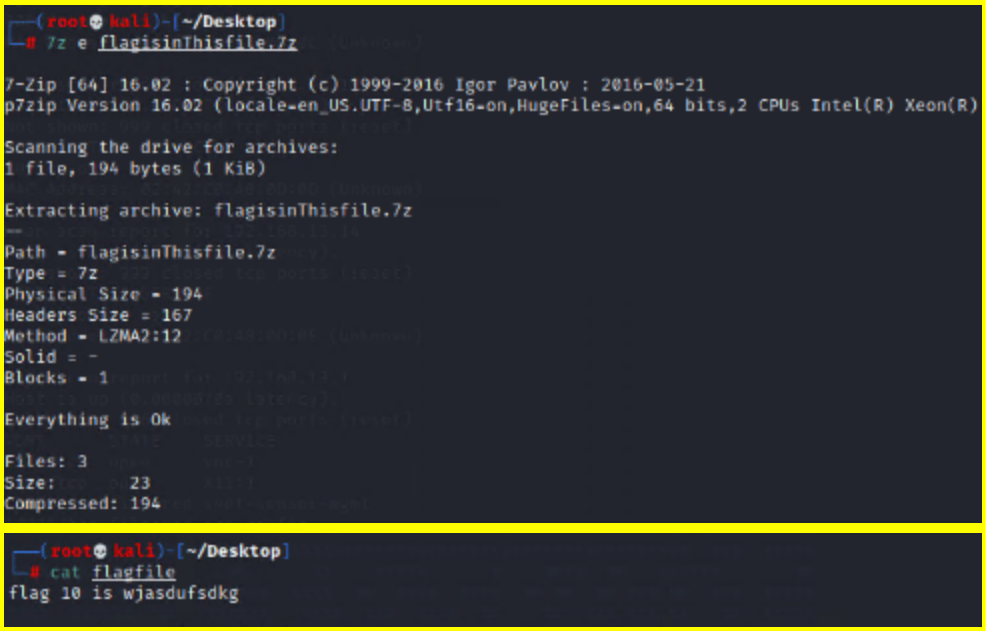
Vulnerability 8	Linux Findings
Title	Linux Flag 8 - Scanning
Type (Web app / Linux OS / WIndows OS)	Linux OS
Risk Rating	High
Description	To discover Flag 8 I used MSFConsole and searched for Shellshock exploits. I was able to use the exploit: exploit/multi/http/apache_mod_cgi_bash_env_exec I set the necessary options, and ran the exploit. Once I got a shell, I ran cat /etc/sudoers and then I captured Flag 8.
Images	

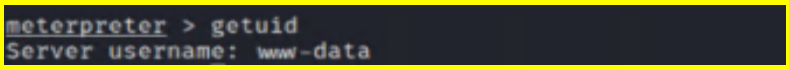
Affected Hosts	192.198.13.1
Remediation	Identify unnecessary services running on Linux systems

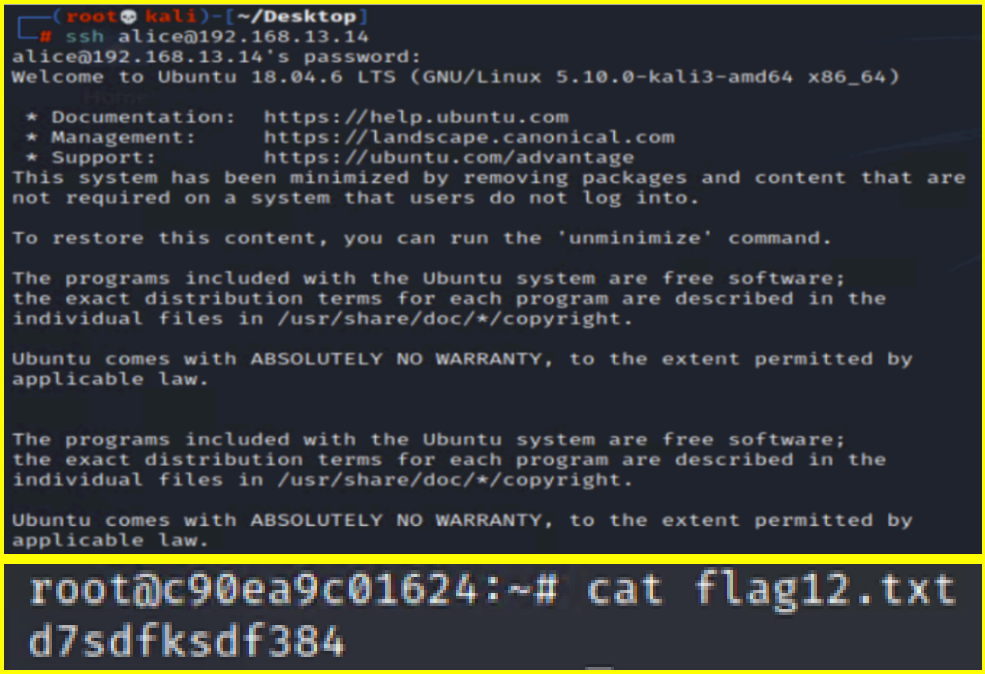
Vulnerability 9	**Linux Findings**
Title	Linux Flag 9 - Scanning
Type (Web app / Linux OS / WIndows OS)	Linux OS
Risk Rating	Medium
Description	Using the same machine where I previously discovered Flag 8, I conducted more investigation and was able to locate and capture Flag 9.
Images	
Affected Hosts	192.198.13.1
Remediation	Network scanning and access.

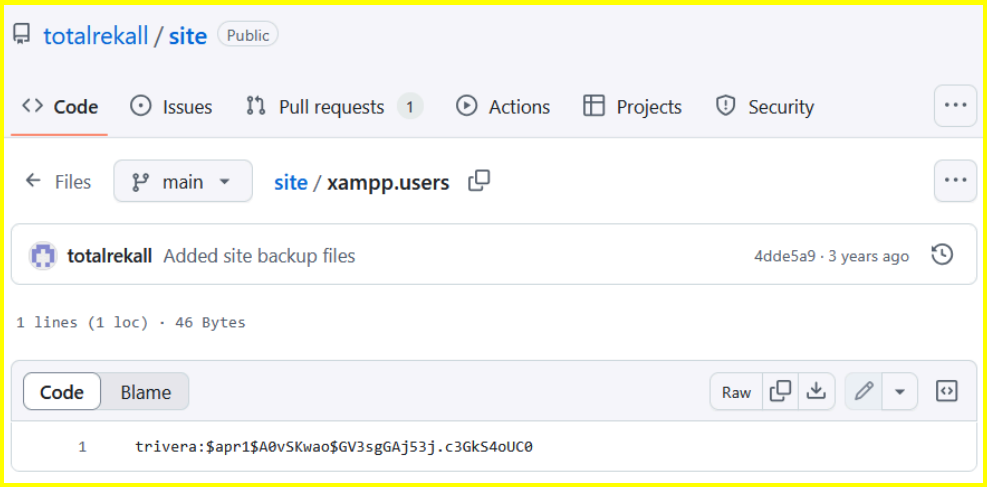
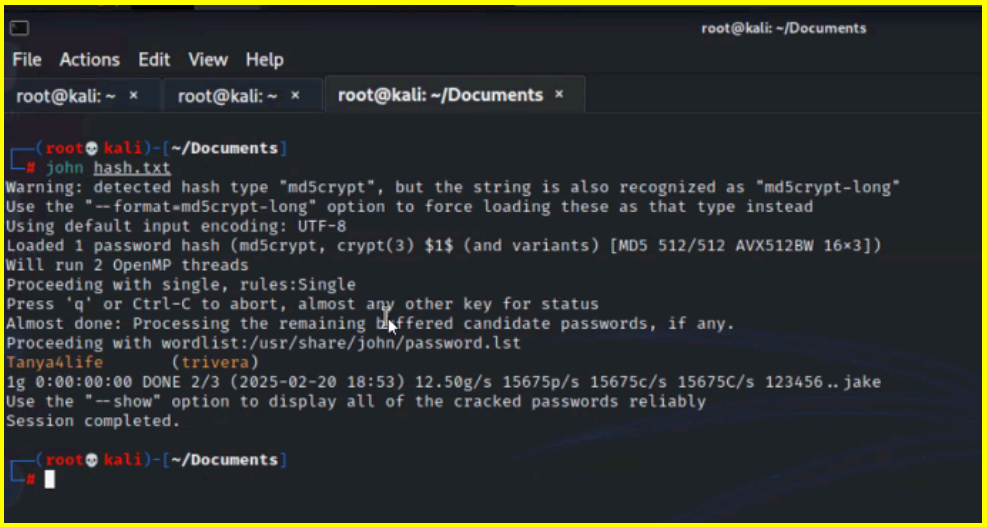
Vulnerability 10	**Linux Findings**
Title	Linux Flag 10 - Scanning
Type (Web app / Linux OS / WIndows OS)	Linux OS
Risk Rating	Medium

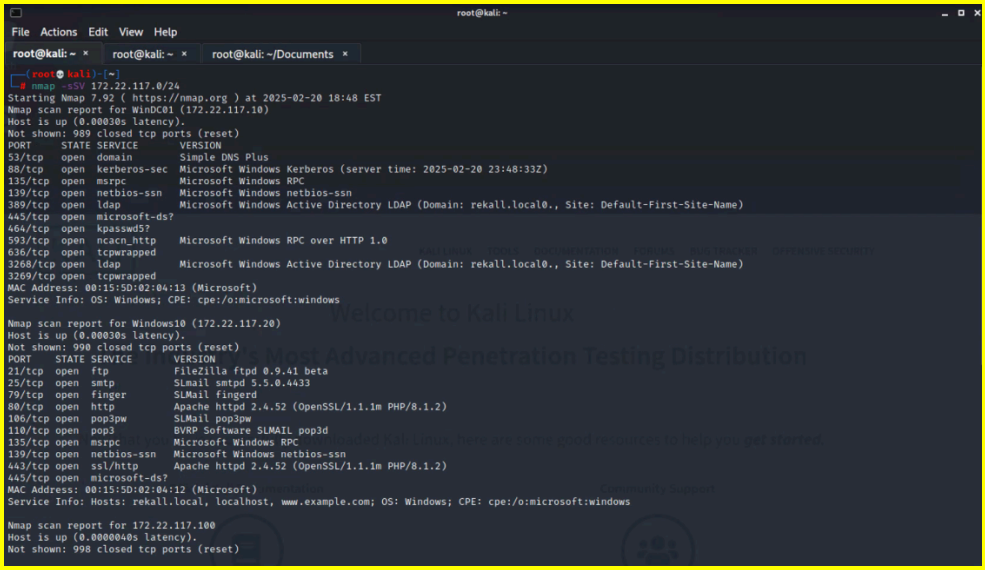
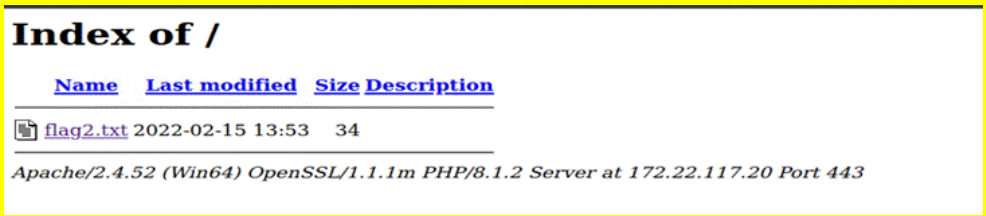
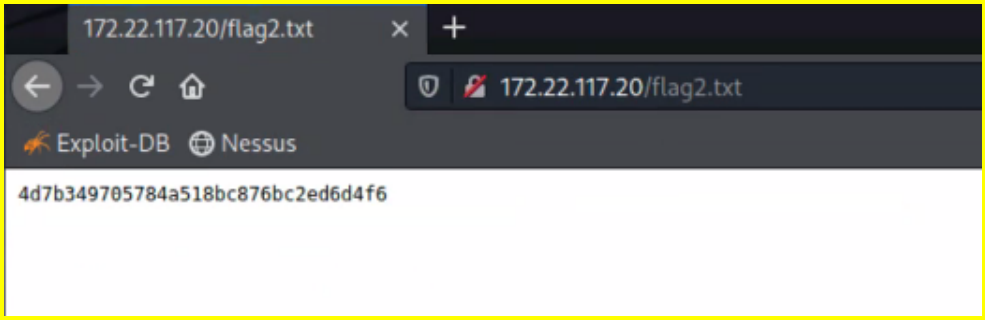
Description	To find Flag 10 I went into MSFConsole, then I searched for Struts exploits and selected exploit/multi/http/struts2_content_type_ognl. After setting RHOSTS to 192.168.13.12, I executed the exploit and gained access through Meterpreter. From there, I downloaded /root/flagisinThisfile.7z and extracted its contents. I ran cat on the extracted file to reveal Flag 10.
Images	  

	
Affected Hosts	192.168.13.12
Remediation	Monitor system configurations, scheduled tasks, and startup processes.

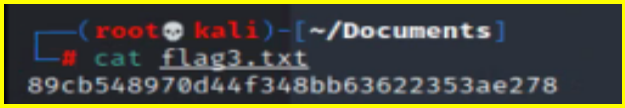
Vulnerability 11	Linux Findings
Title	Linux Flag 11 - Scanning
Type (Web app / Linux OS / WIndows OS)	Linux OS
Risk Rating	High
Description	To get Flag 11 I launched MSFConsole and searched for Drupal exploits, selecting unix/webapp/drupal_restws_unserialize to gain a Meterpreter shell. After executing the exploit, I ran getuid to retrieve the server's username. Flag 11 was www-data.
Images	
Affected Hosts	192.168.13.13
Remediation	Perform security audits and vulnerability scans for sensitive data.

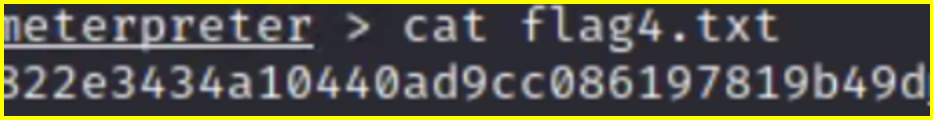
Vulnerability 12	Linux Findings
Title	Linux Flag 12
Type (Web app / Linux OS / WIndows OS)	Linux OS
Risk Rating	High
Description	To retrieve Flag 12, I SSH'd into the server using ssh alice@192.168.13.14 and successfully guessed the password as "alice". Once inside, I performed privilege escalation by running sudo -u#-1 cat /root/flag12.txt After executing the command, I was able to access and retrieve the Flag 12.
Images	
Affected Hosts	192.158.13.14
Remediation	Enforce strong password policies, enforce multi-factor authentication and educate users on the importance of password strength.

Vulnerability 1	Windows Findings
Title	Windows Flag 1 - OSINT
Type (Web app / Linux OS / WIndows OS)	Windows OS
Risk Rating	Critical
Description	I searched on GitHub repositories to find content related to totalrekall. While reviewing the repository, I found the xampp.users page, which contained the following credentials: **trivera:$apr1$A0vSKwao$GV3sgGAj53j.c3GkS4oUC0** I saved the username and hash into a file named hash.txt using nano and then used John to crack the hash. The process revealed the password "Tanya4life", which unlocked Flag 1.
Images	 
Affected Hosts	TotalRekall Web-Server
Remediation	Remove user Credentials from Github

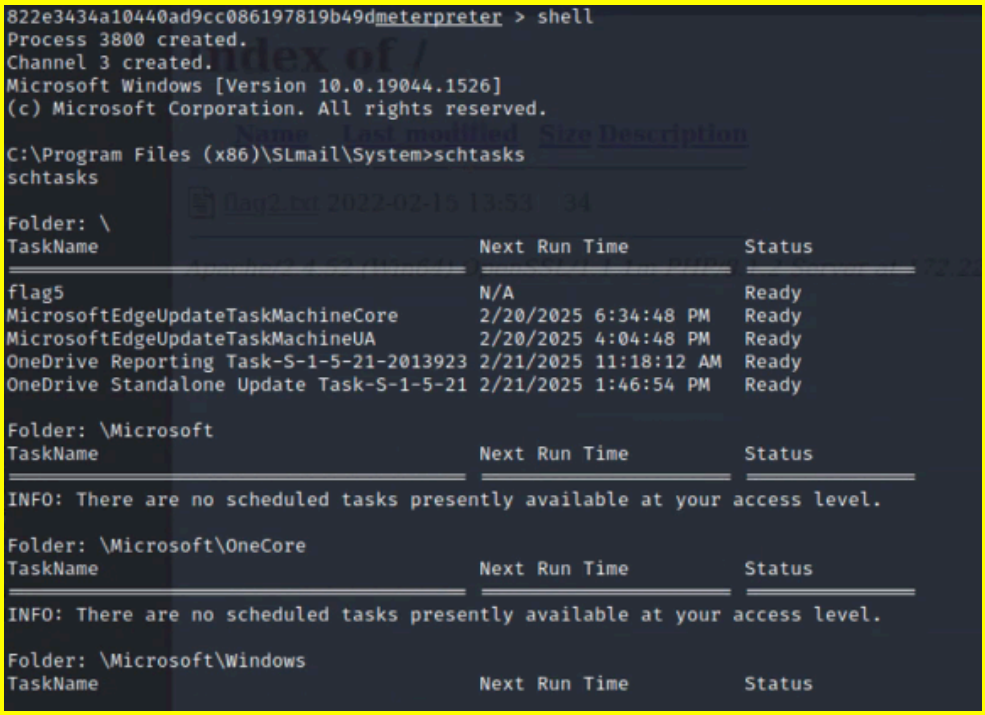
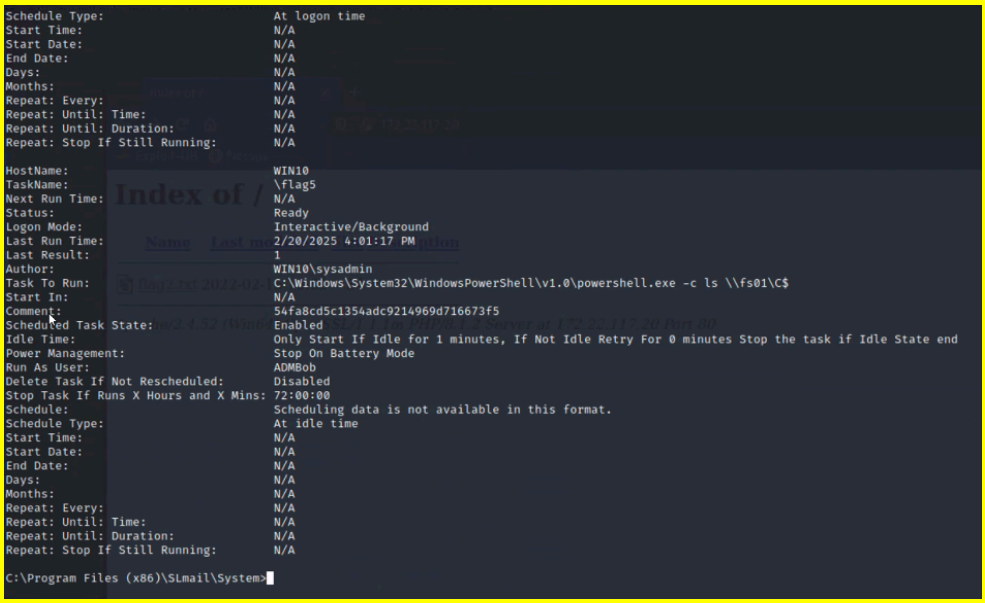
Vulnerability 2	Windows Findings
Title	Windows Flag 2 - HTTP Enumeration
Type (Web app / Linux OS / WIndows OS)	Windows OS
Risk Rating	Critical
Description	To find Flag 2, I conducted an Nmap scan to identify open ports. Knowing that the Windows network operates on the subnet 172.22.117.0/24 the scan revealed that 172.22.117.20 had an accessible service. I navigated to 172.22.117.20 and used the credentials from Flag 1 (trivera:Tanya4life) to log in. Once inside, I discovered flag2.txt, successfully retrieving Flag 2.
Images	  
Affected Hosts	172.22.117.20

Remediation	Remove credentials from the public, and have a better authentication process.

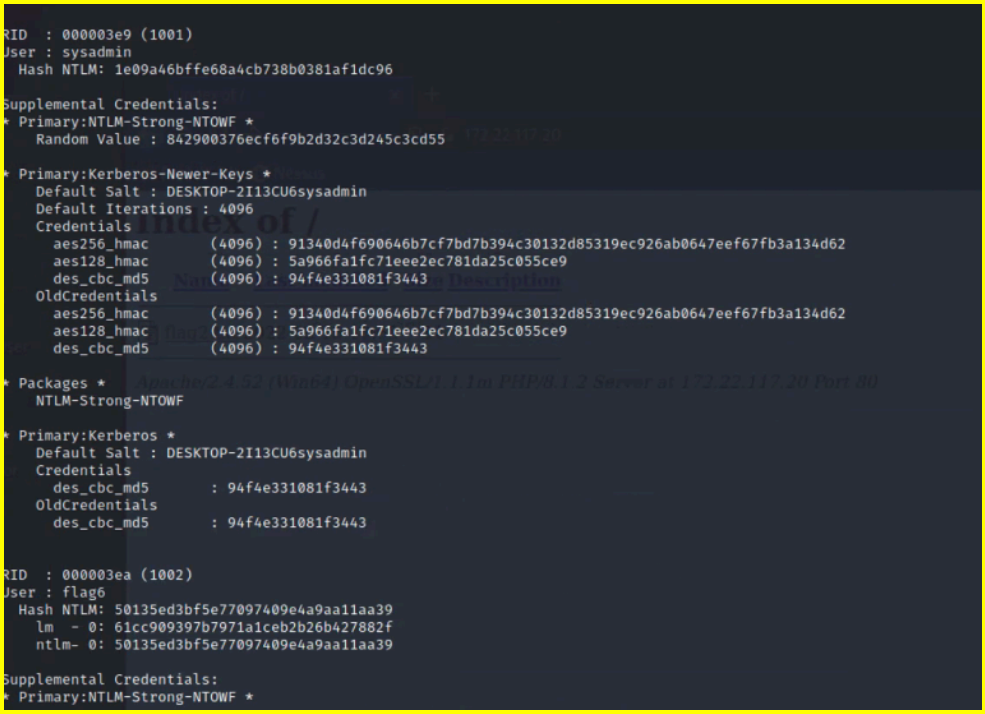
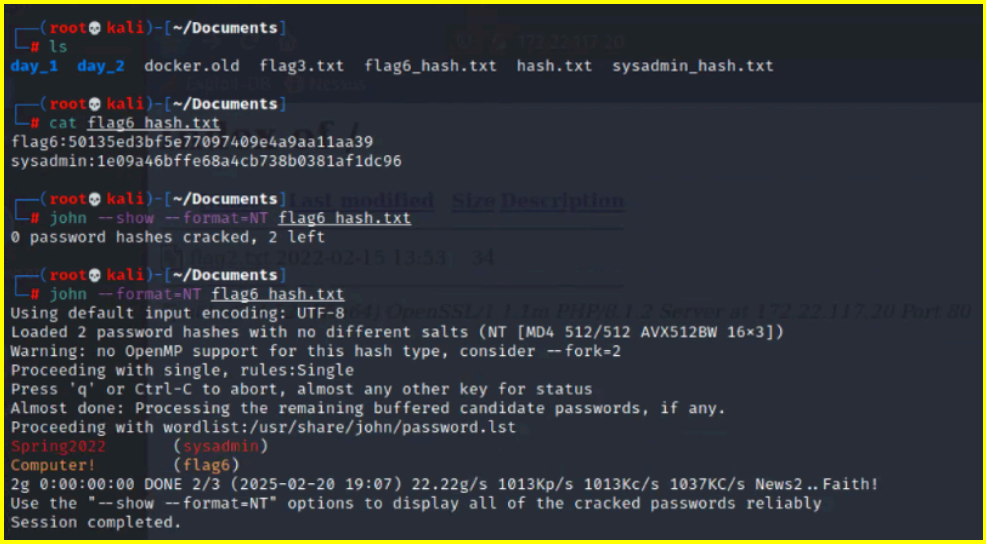
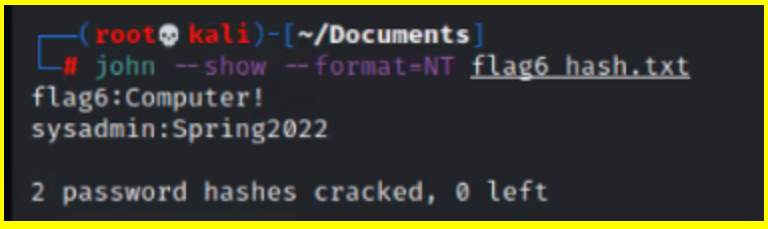
Vulnerability 3	Windows Findings
Title	Windows Flag 3 - FTP Enumeration
Type (Web app / Linux OS / WIndows OS)	Windows OS
Risk Rating	High
Description	To locate Flag 3, I conducted an aggressive Nmap scan, which revealed an open FTP service on 172.22.117.20. I logged in as anonymous, I accessed the server using the command: **ftp -p 172.22.117.20** Once connected, I navigated through the directories and successfully retrieved the file containing Flag 3.
Images	
Affected Hosts	172.22.117.20
Remediation	Monitor scans for vulnerabilities.

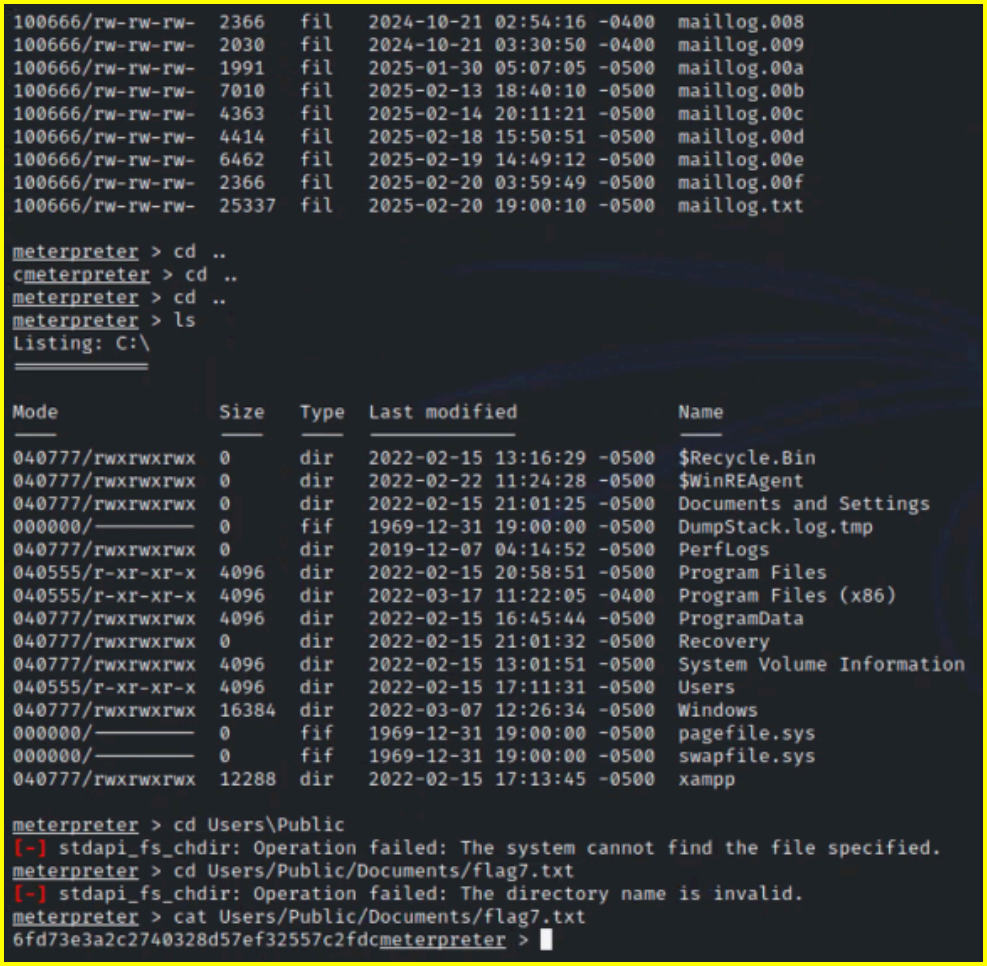
Vulnerability 4	Windows Findings
Title	Windows Flag 4 - Metasploit
Type (Web app / Linux OS / WIndows OS)	Windows OS
Risk Rating	Medium
Description	I identified a machine running the SLMail service and used Metasploit via MSFConsole to exploit it. After selecting the appropriate exploit, I configured the following parameters: LHOST = 172.22.117.100 (my local machine within the subnet) RHOST = 172.22.117.20 (target machine) RPORT = 110 (SLMail POP3 service port) Once the exploit was successfully executed, I navigated the system and used cat flag4.txt, revealing Flag 4.
Images	
Affected Hosts	172.22.117.20
Remediation	Install antivirus and anti-malware software on the Windows server hosting SLmail and monitor port 110.

Vulnerability 5	Windows Findings
Title	Windows Flag 5 - Common Tasks
Type (Web app / Linux OS / WIndows OS)	Windows OS
Risk Rating	High
Description	After gaining access to the Windows 10 machine, I evaluated scheduled tasks to identify potential issues. Within Meterpreter, I dropped into a command shell and executed the following command to query scheduled tasks: schtasks /query /tn "flag5" /v This command displays detailed information about Flag 5 tasks, and successfully reveals Flag 5.

Images	 
Affected Hosts	172.22.117.20
Remediation	Review and update startup processes and scheduled tasks.

Vulnerability 6	Findings
Title	Windows Flag 6 - User Enumeration
Type (Web app / Linux OS / WIndows OS)	Windows OS
Risk Rating	Critical

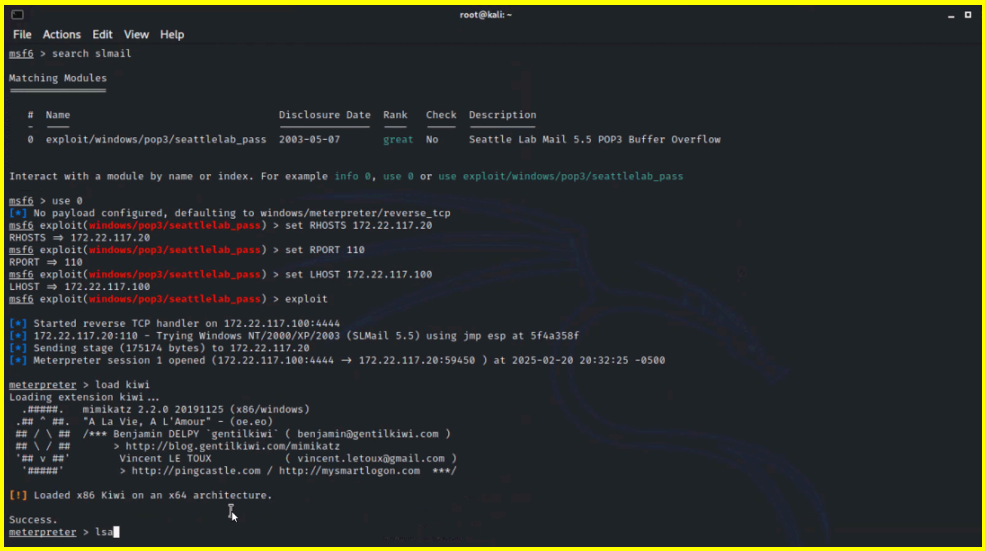
Description	For Flag 6, continuing to exploit the same Windows 10 machine, I loaded Kiwi within Meterpreter to extract password hashes from system users. After retrieving the hashes, I saved them into a file and used John to crack the NTLM hash. This process successfully revealed the plaintext password, which was Flag 6.
Images	  
Affected Hosts	172.22.117.20
Remediation	Enforce strong password policies and store password hashes in a secure location.

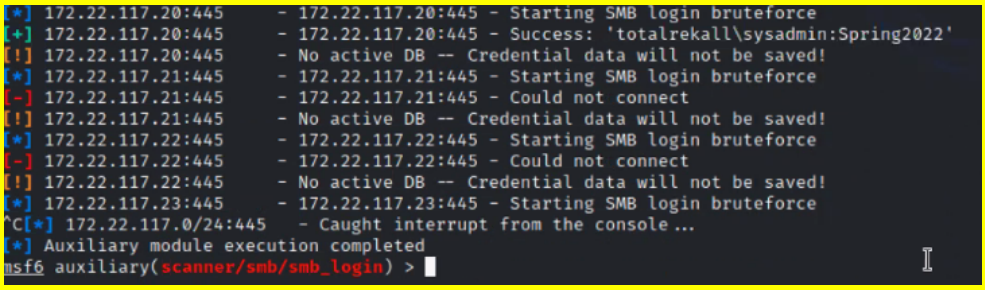
Vulnerability 7	Findings
Title	Windows Flag 7 - File Enumeration
Type (Web app / Linux OS / WIndows OS)	Windows OS
Risk Rating	Medium
Description	To locate Flag 7 I continued on the same Windows 10 machine, I conducted a file search within Meterpreter to locate potential flag files. I used the following command: **search -f *flag.txt*** The search returned multiple results, but one stood out: **C:\Users\Public\Documents\flag7.txt** Upon navigating to this directory and inspecting the file, I successfully retrieved Flag 7.
Images	
Affected Hosts	172.22.117.20

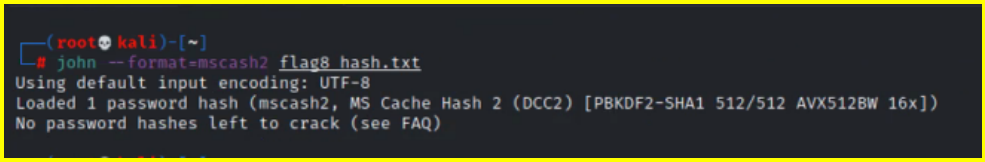
Remediation	Regularly monitor permissions and ensure users and groups have the correct privileges.

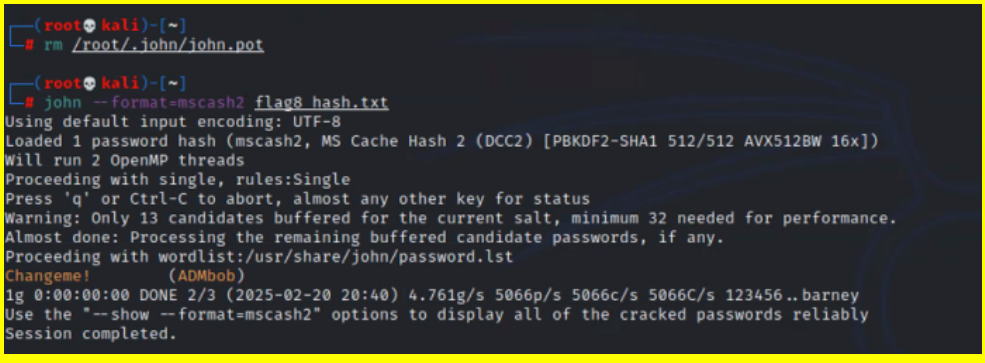
Vulnerability 8	Findings
Title	Windows Flag 8 - User Enumeration pt.2
Type (Web app / Linux OS / WIndows OS)	Windows OS
Risk Rating	High
Description	To find Flag 8 I was using Kiwi within Meterpreter. I dumped cached credentials from the Windows 10 machine. The output revealed cached credentials for administrators, including ADMBob. I extracted the usernames and NTLM hashes to which I saved them into a .txt file and used John to crack them. The cracked password was: Changeme! Using these credentials, I moved to WinDC and enumerated user accounts discovering Flag 8.

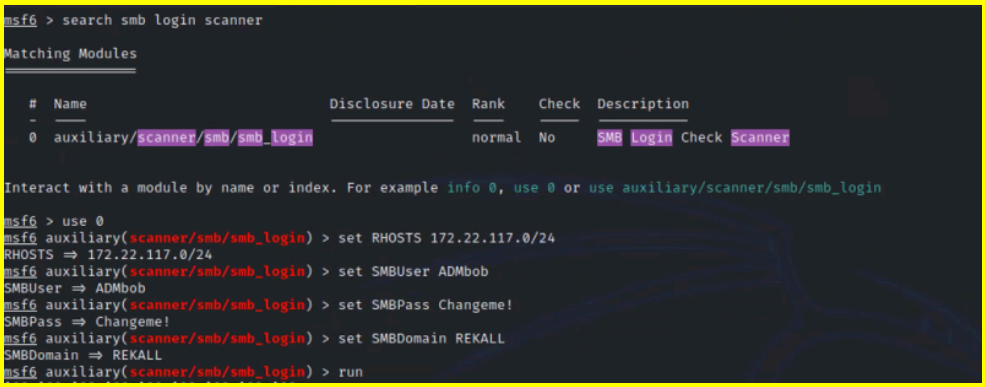
Images

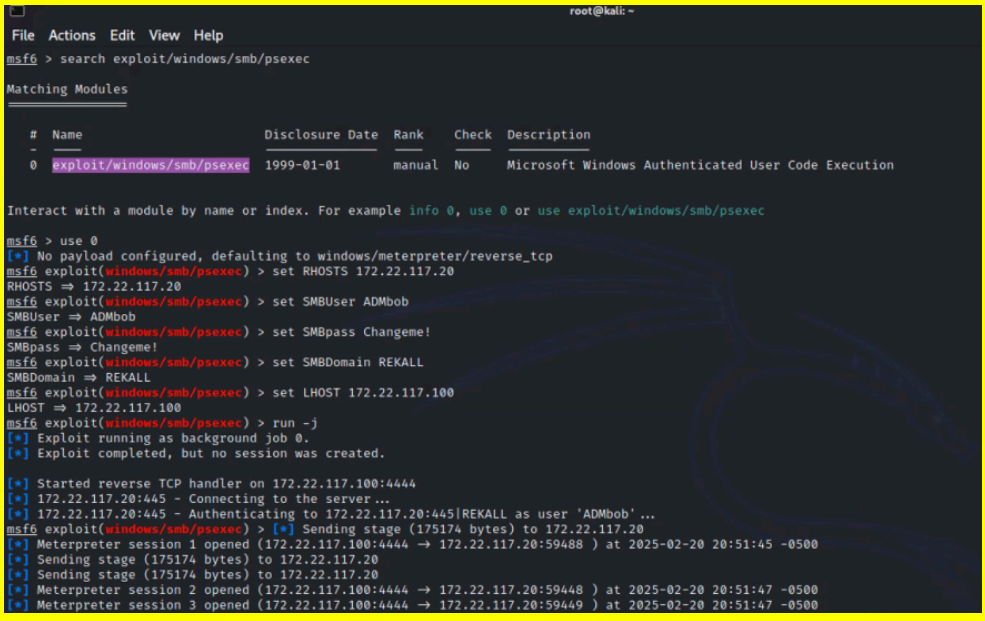


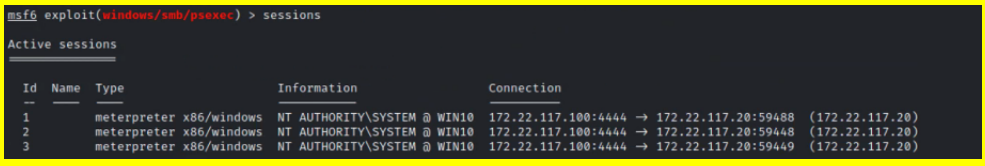


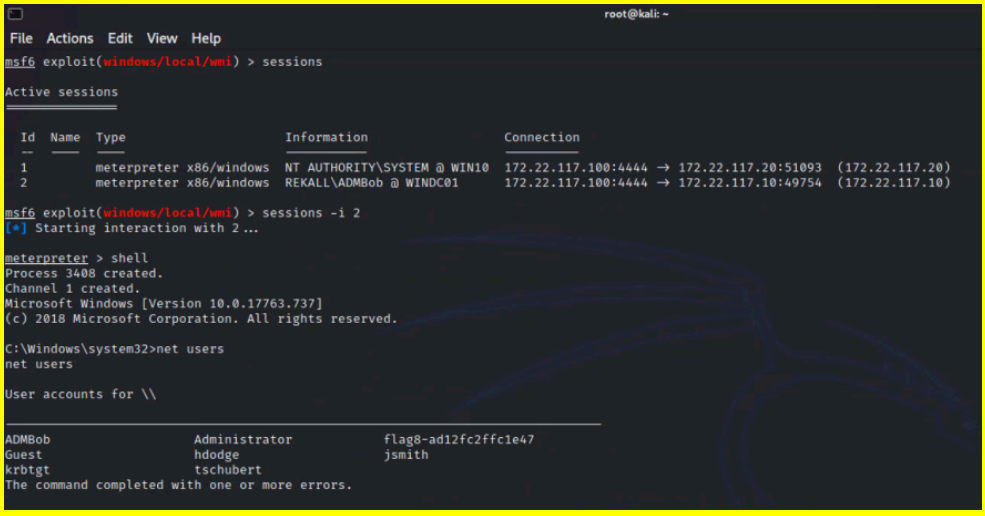






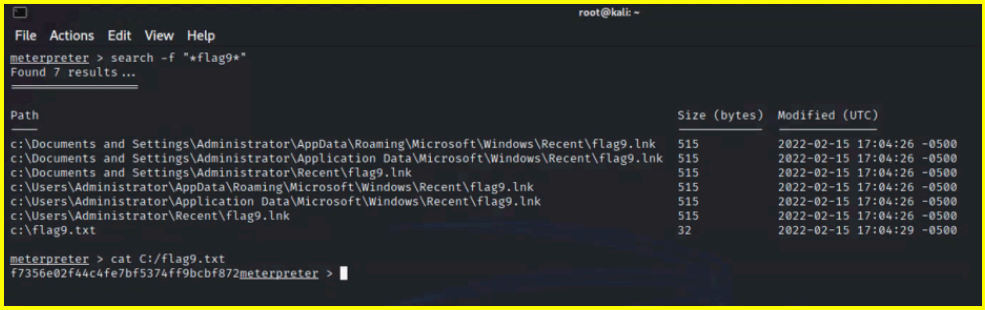


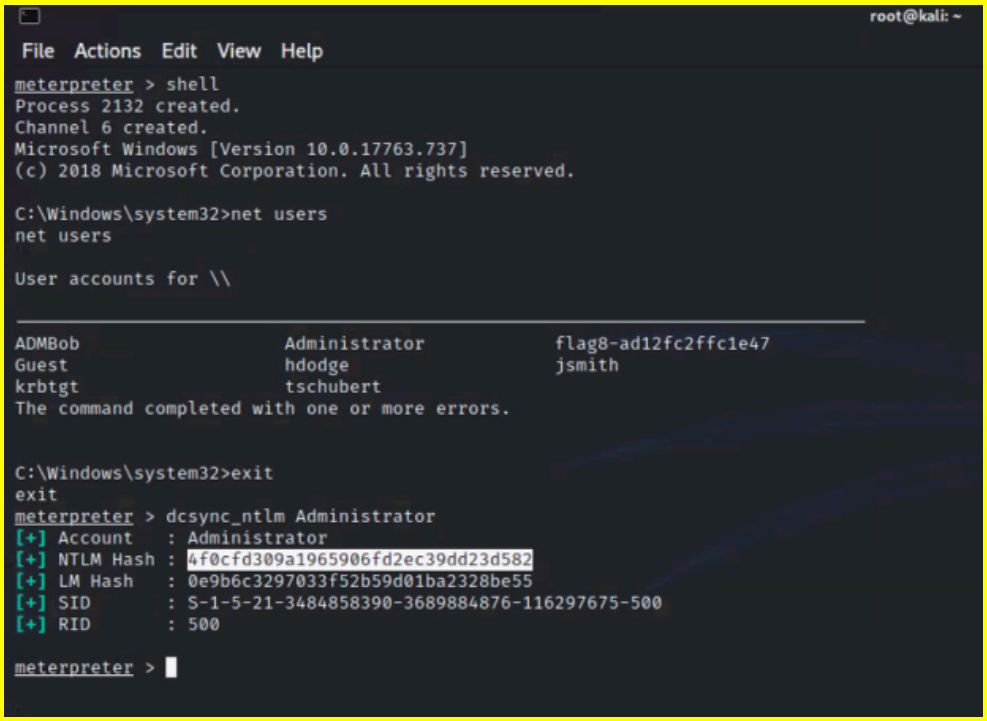




Affected Hosts	172.22.117.20

Remediation	Regularly audit account privileges and limit network segmentation to limit lateral movement.

Vulnerability 9	Windows Findings
Title	Windows Flag 9 - Escalating Access
Type (Web app / Linux OS / WIndows OS)	Windows OS
Risk Rating	High
Description	Finding Flag 9 required me to continue to enumerate the WinDC machine. I conducted a file search in Meterpreter to locate flag files. I used the following command: search -f *flag9.txt* The search returned multiple results. I navigated through the filesystem and identified Flag 9 in a system directory. To reveal its contents, I ran the command: cat flag9.txt And this successfully displayed the information for Flag 9.
Images	
Affected Hosts	172.22.117.20
Remediation	Implement steps to detect privilege escalation attempts.

Vulnerability 10	Findings
Title	Windows Flag 10 - Compromising Admin
Type (Web app / Linux OS / WIndows OS)	Windows OS
Risk Rating	High
Description	For the final Flag, while in Meterpreter, I launched a shell and used Kiwi to perform a DCSync attack on the Administrator account. This method allowed me to gather the NTLM password hash directly from the Domain Controller. This successfully extracted the NTLM hash, which was Flag 10.
Images	
Affected Hosts	172.22.117.20
Remediation	Immediately isolate compromised accounts and systems to prevent further damage and data loss.