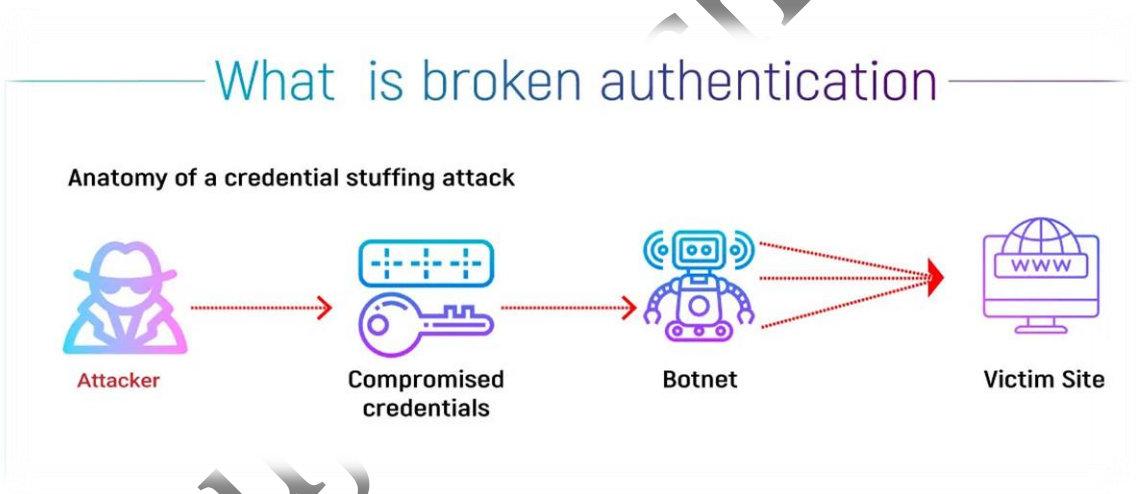
Report on Broken Authentication Tools in OWASP WebGoat and Burp Suite



Anuja Panchariya

Report on Broken Authentication Tools in OWASP WebGoat and Burp Suite

This comprehensive report delves into the issue of broken authentication, a common security vulnerability. It examines how tools like OWASP WebGoat and Burp Suite can be used to identify and demonstrate these vulnerabilities. Broken authentication weaknesses allow attackers to bypass authentication controls, potentially leading to unauthorized access and account takeovers.

Table of Contents

1. Introduction to Broken Authentication

Broken authentication refers to flaws in the authentication process that allow unauthorized access to resources. These vulnerabilities often stem from weak credentials, poor session management, and insufficient protection of authentication tokens. This section explores the importance of addressing broken authentication in modern web applications.

2. Types of Broken Authentication Vulnerabilities

Broken authentication can manifest in various ways, including:

- Credential Stuffing: Attackers use lists of leaked credentials to gain access to accounts.
- Brute Force Attacks: Automated scripts repeatedly try different password combinations.
- Session Fixation: Attackers set or fix a session ID before the victim authenticates, then use that session to access the account.
- Improper Logout Management: Lack of proper logout mechanisms can lead to unauthorized access through persistent sessions.

3. OWASP WebGoat and Authentication Testing

OWASP WebGoat is an interactive training platform that includes lessons on various security vulnerabilities. Its modules on authentication vulnerabilities offer hands-on experience with broken authentication scenarios, such as:

- Password Reset Module: Demonstrates how weak password recovery can lead to unauthorized access.
- Insecure Password Storage: Illustrates the risks of storing passwords in encrypted.

Through these exercises, WebGoat highlights common misconfigurations and weaknesses in authentication mechanisms.

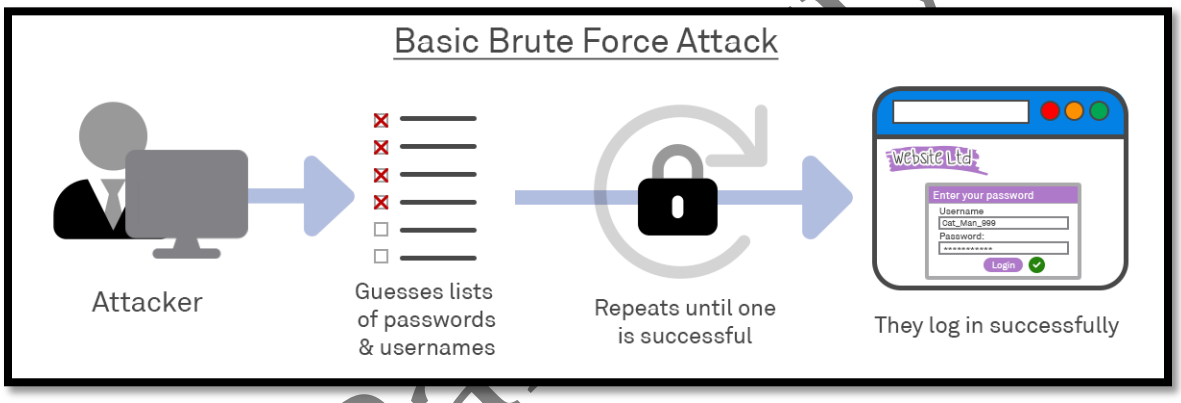


Fig. Basic Brute Force Attack

4. Using Burp Suite to Detect Authentication Issues

Burp Suite is a versatile web application security testing tool widely used for identifying authentication issues. Key features of Burp Suite include:

- Intruder: For brute-force and credential stuffing attacks.
- Repeater: Allows testers to modify and resend requests, testing for session management flaws.
- Sequencer: Analyzes session token randomness and detects weak token algorithms.

Burp Suite's suite of tools makes it particularly effective in pinpointing flaws in login systems and session management.

5. Case Studies & Real-World Examples

To illustrate the impact of broken authentication, consider these real-world cases:

- Case Study: XYZ Corp: An attacker leveraged a weak password reset mechanism to access sensitive user data.
- Session Hijacking Example: In a social media platform, session tokens were exposed over an insecure network, allowing attackers to impersonate users.

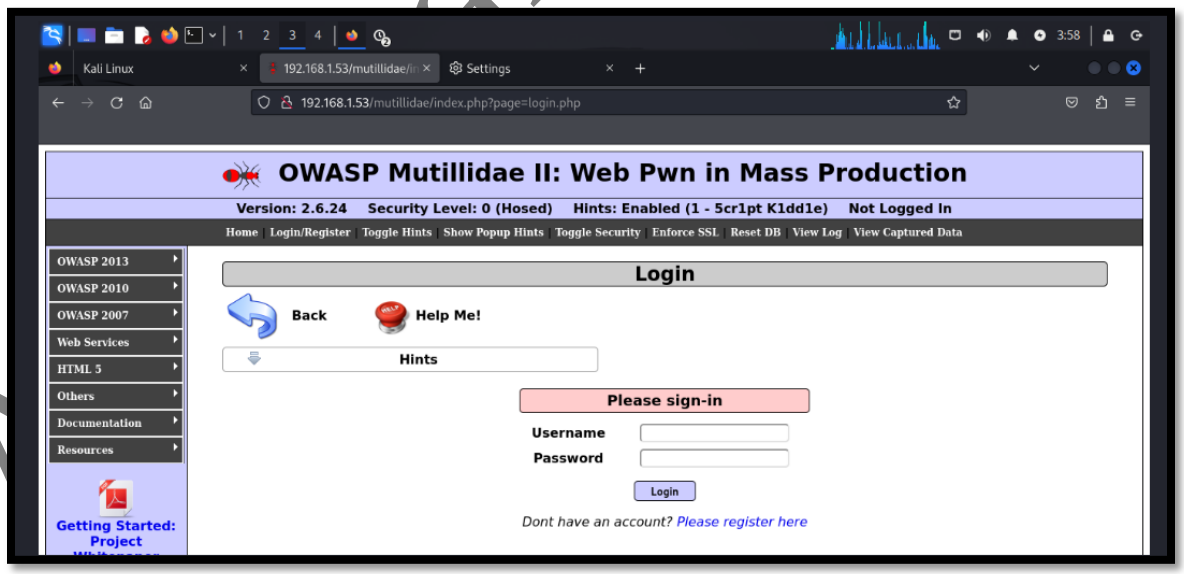
These examples underscore the potential damage that broken authentication vulnerabilities can cause if left unaddressed.

Steps :

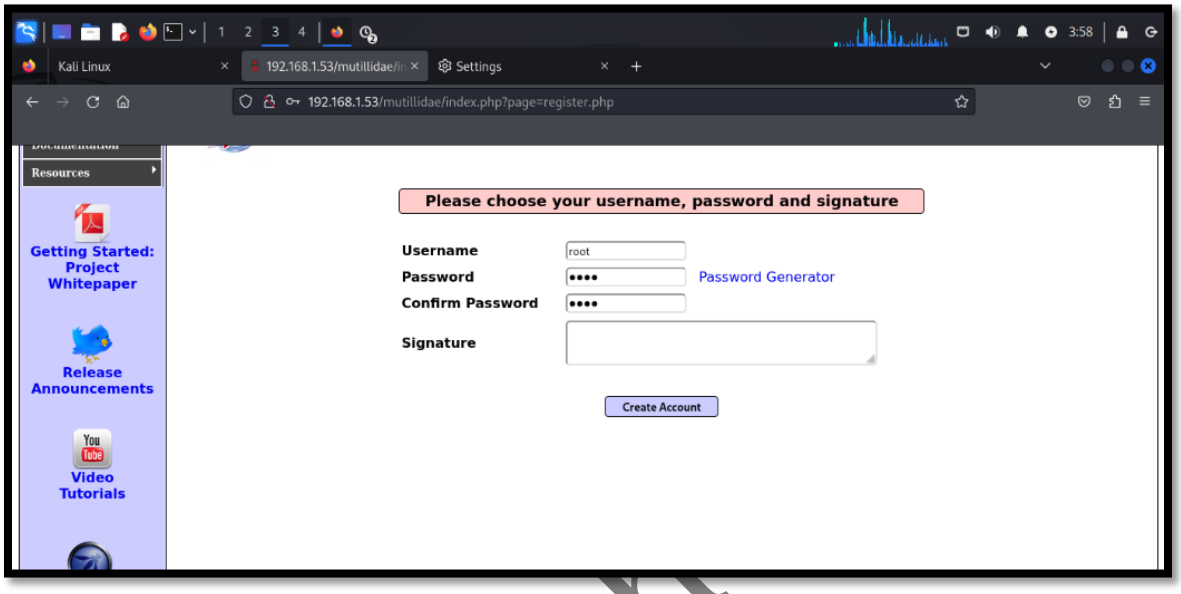
1. Broken Authentication Via Cookies

Go to Broken Authentication And Session Management > Authentication Bypass>Via Cookies

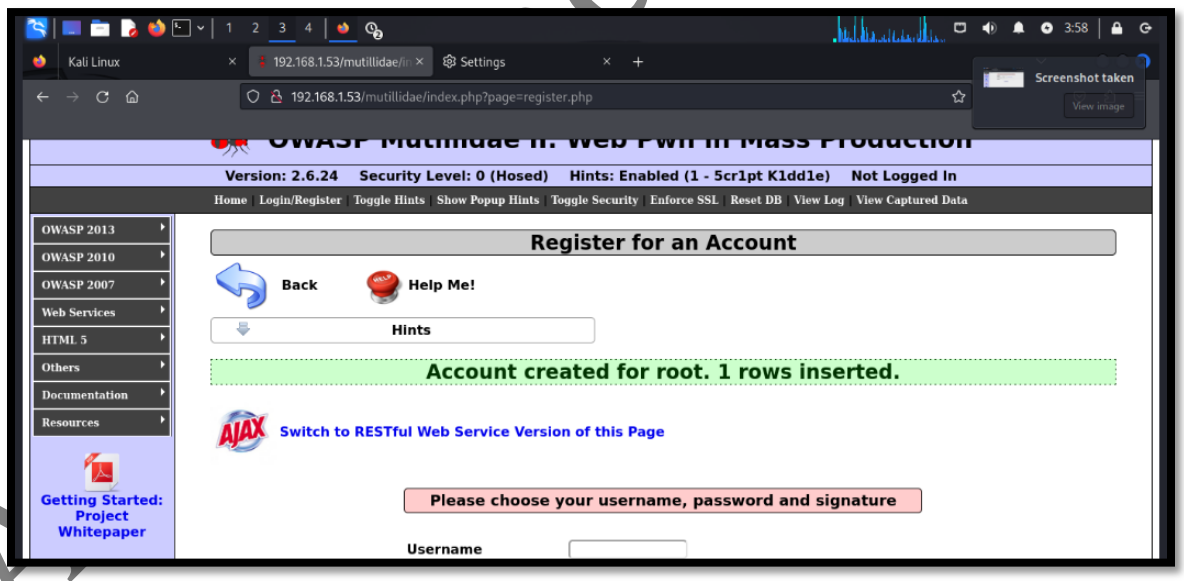
- Create Account



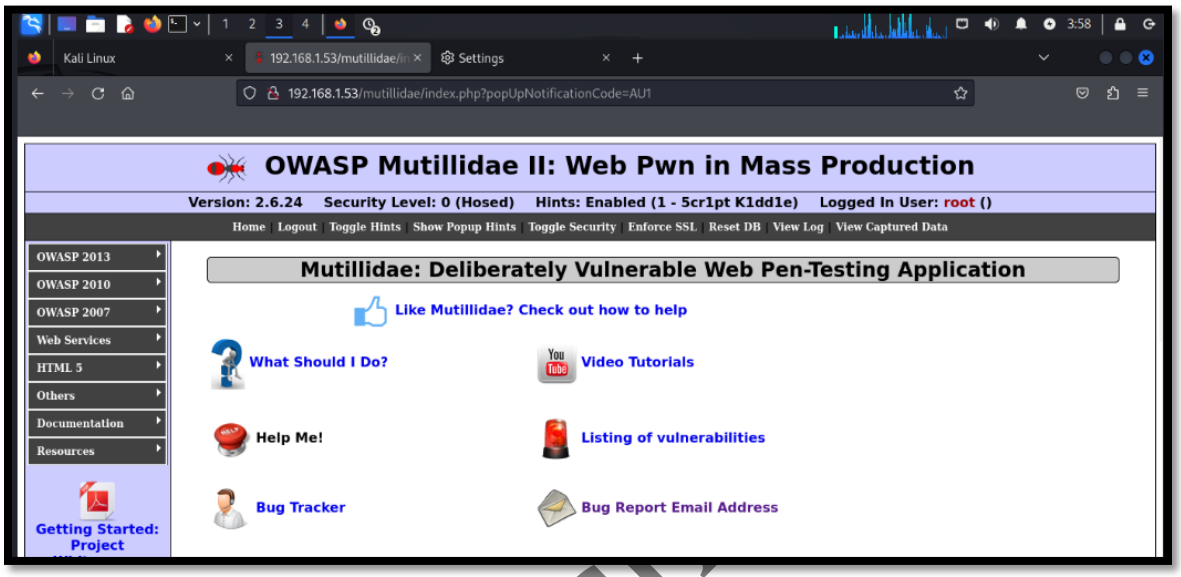
- Let’s create account as Root



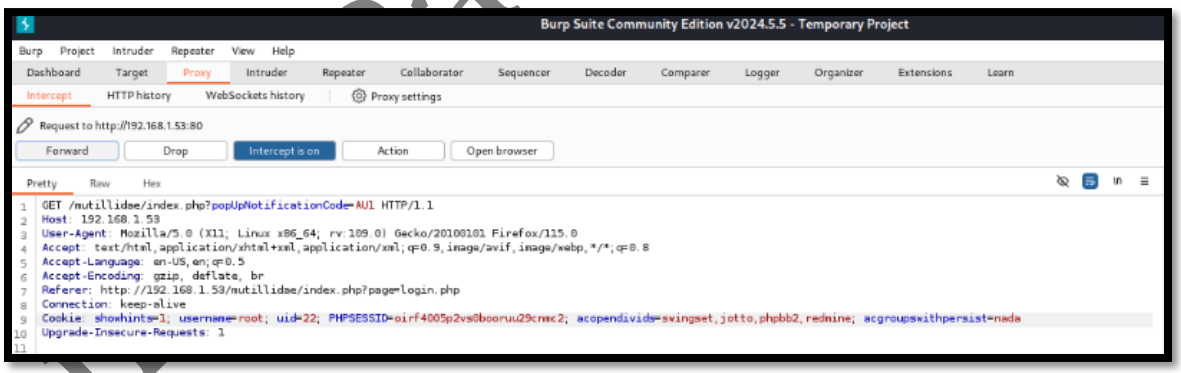
- Account created for root



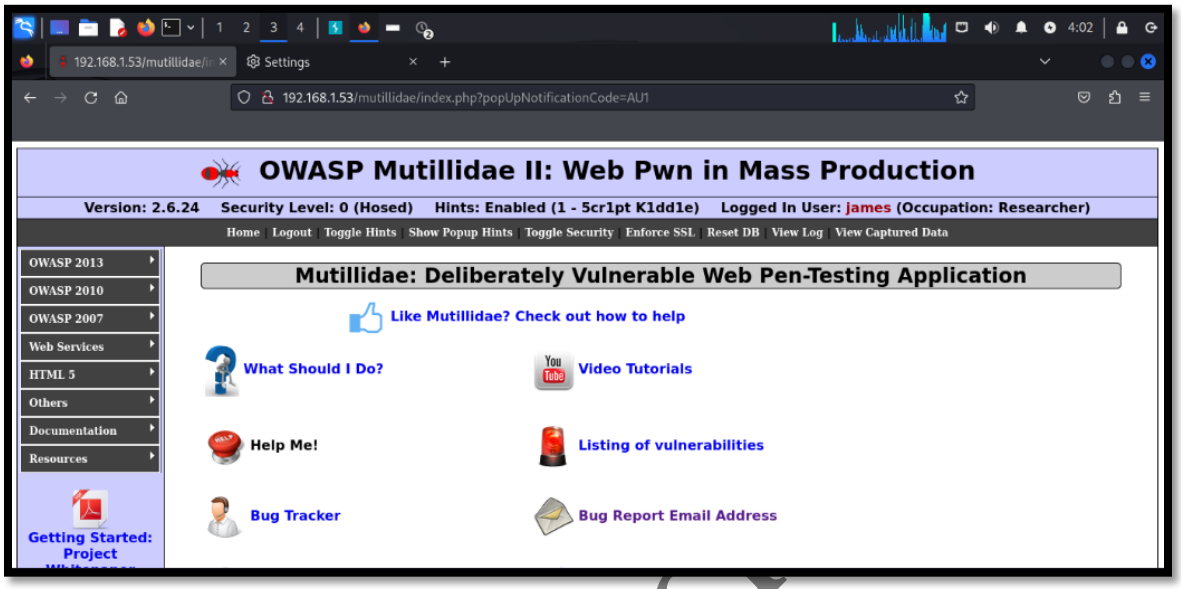
- User logged in as Root



- Intercept and change uid to 22

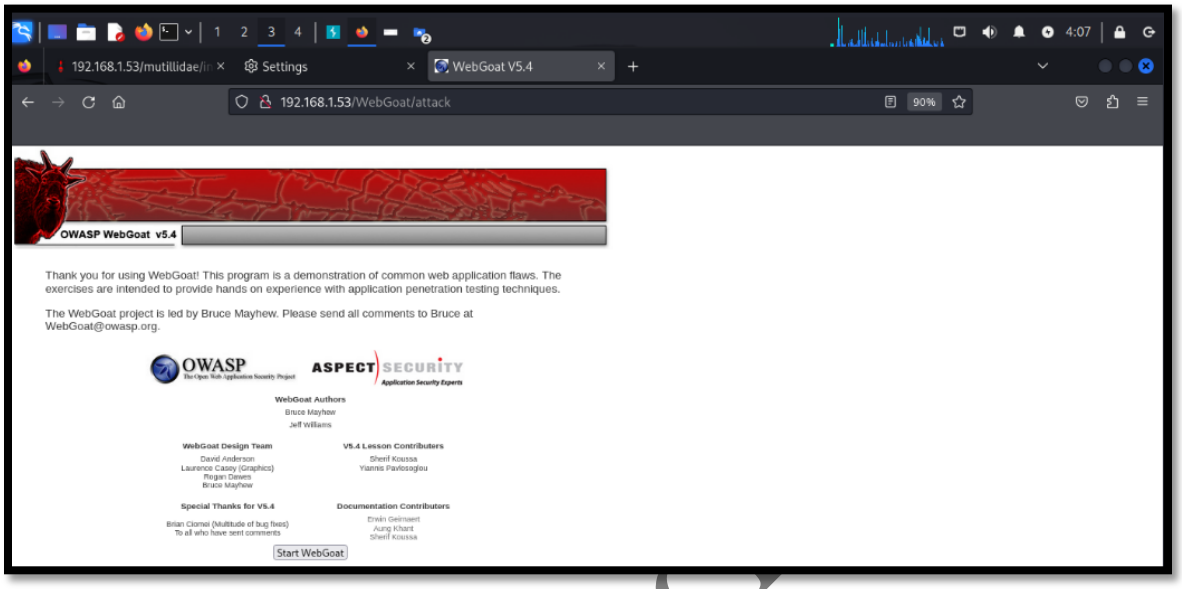


- After changing UID INTO 22 logged in as james

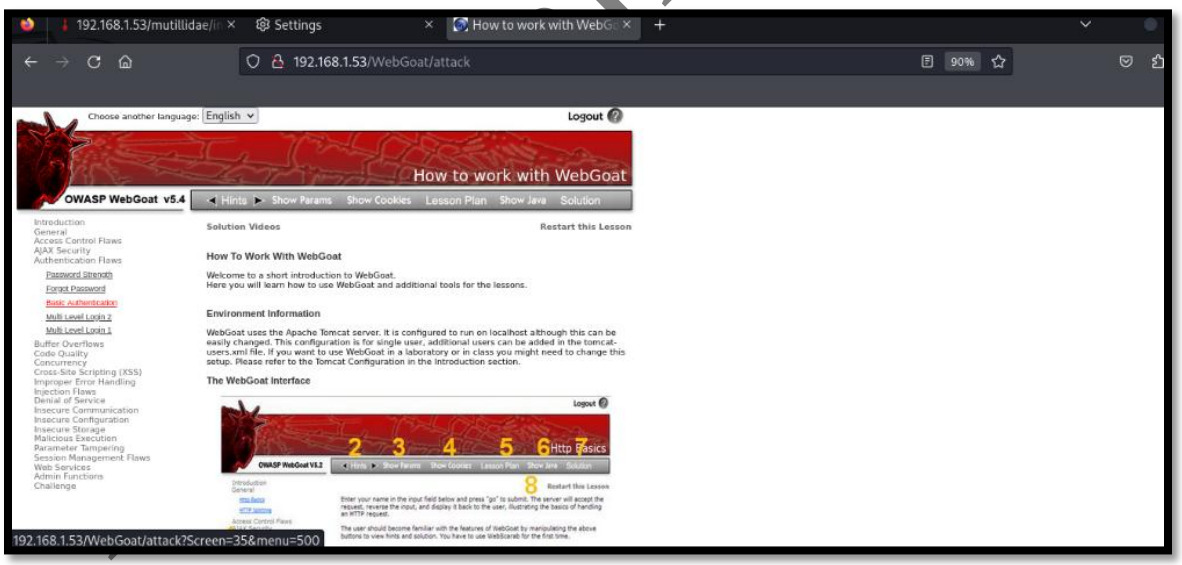


2. Basic Authentication In HTTP Request

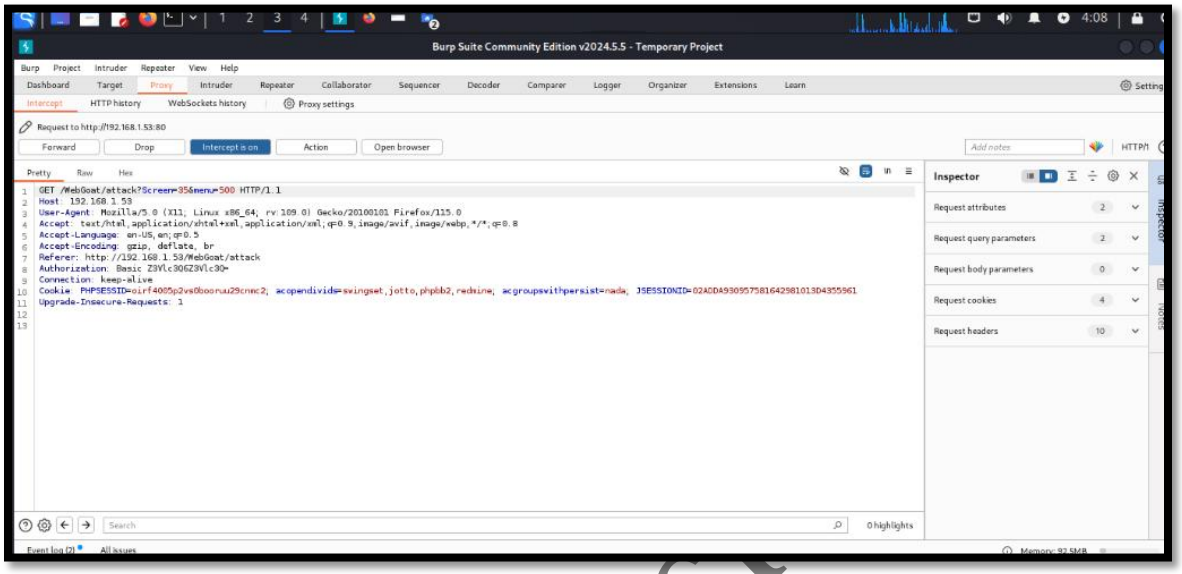
- Go to OWASP WebGoat > Authentication flaws >Basic Authentication



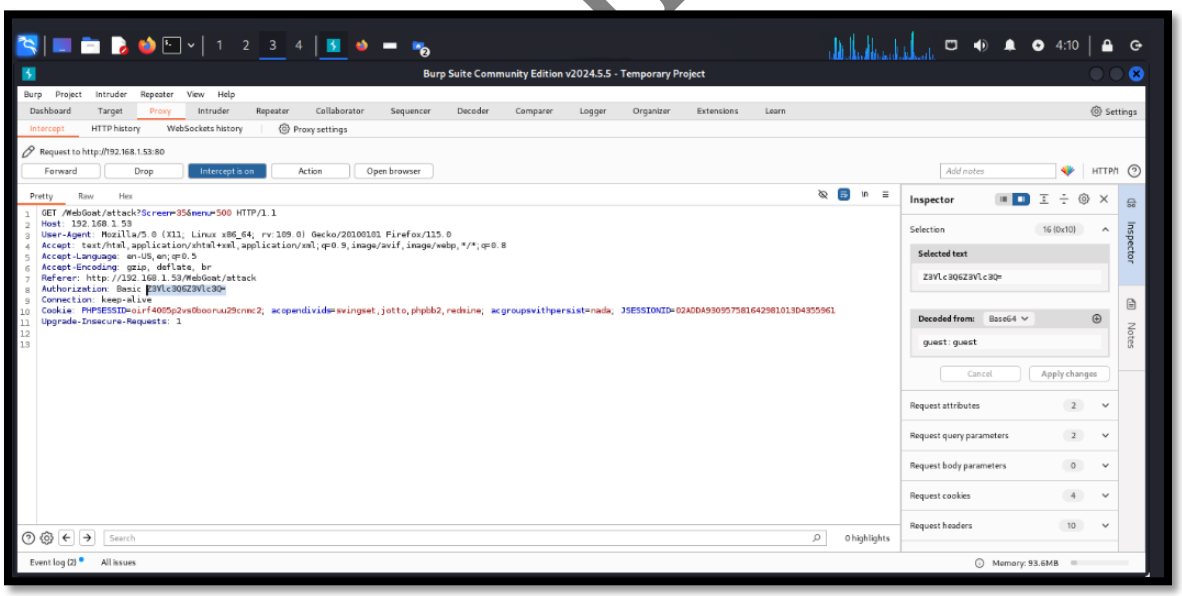
- Go To The Basic Authentication



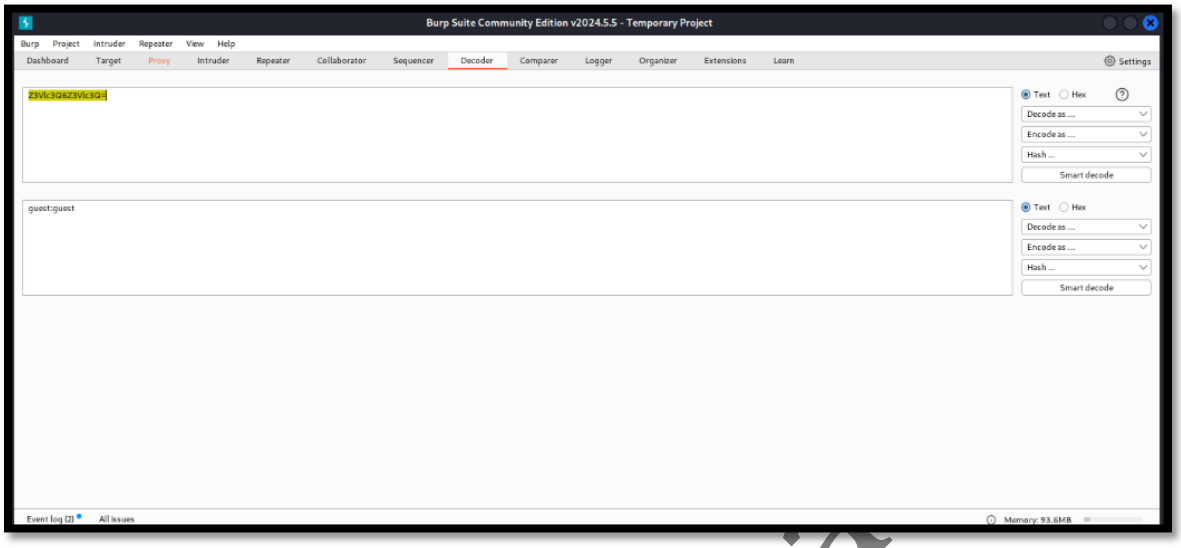
- Turn on the Intercept



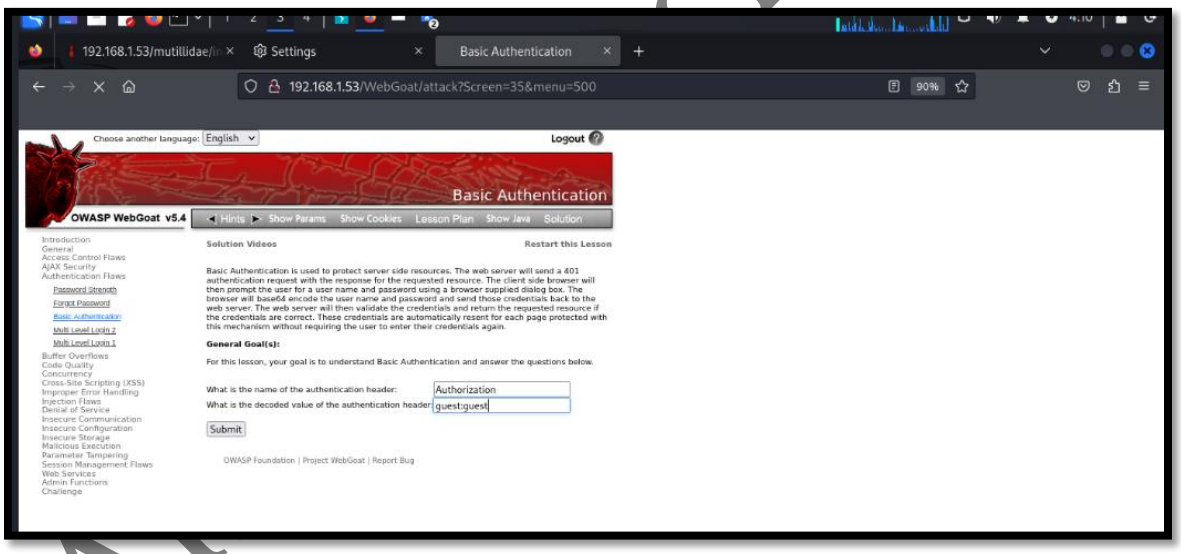
- Decode the Authorization key



- Decoded key is here, guest:guest as username and password

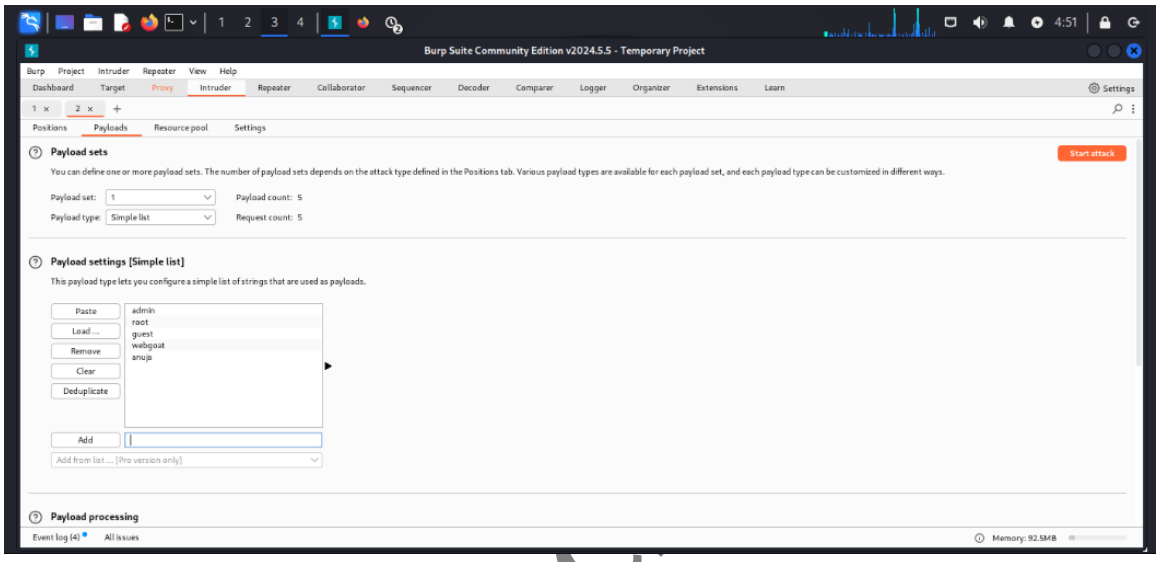


- This decoded key is paste on user and password field

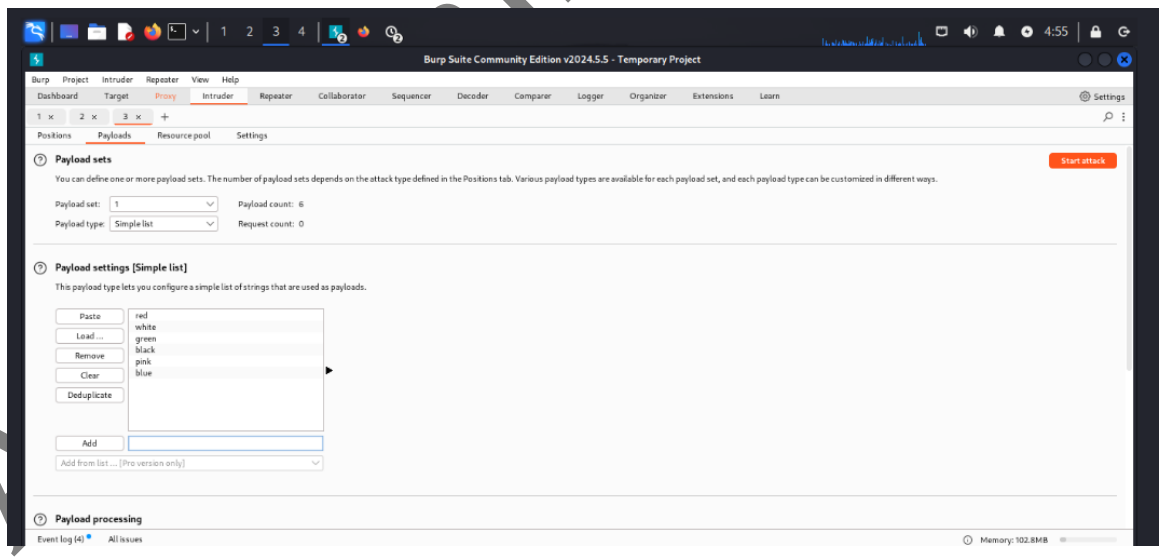


3. Forgot Password

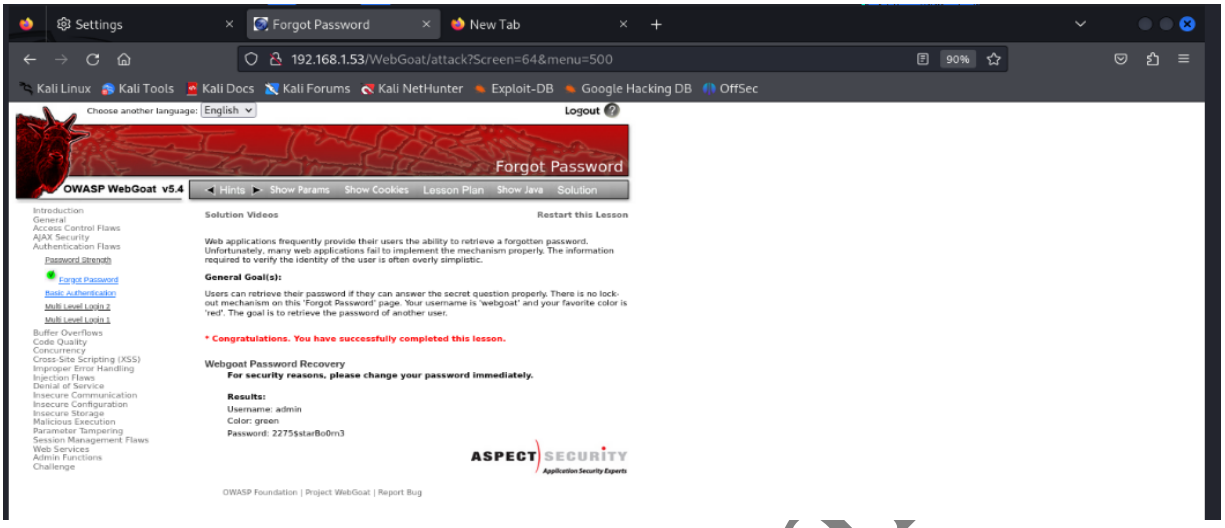
- Go to authentication flaws> forgot Password , logged in as wrong then intercept the request add payloads . Choose attack type to cluster bomb



- Add passwords and perform grep match

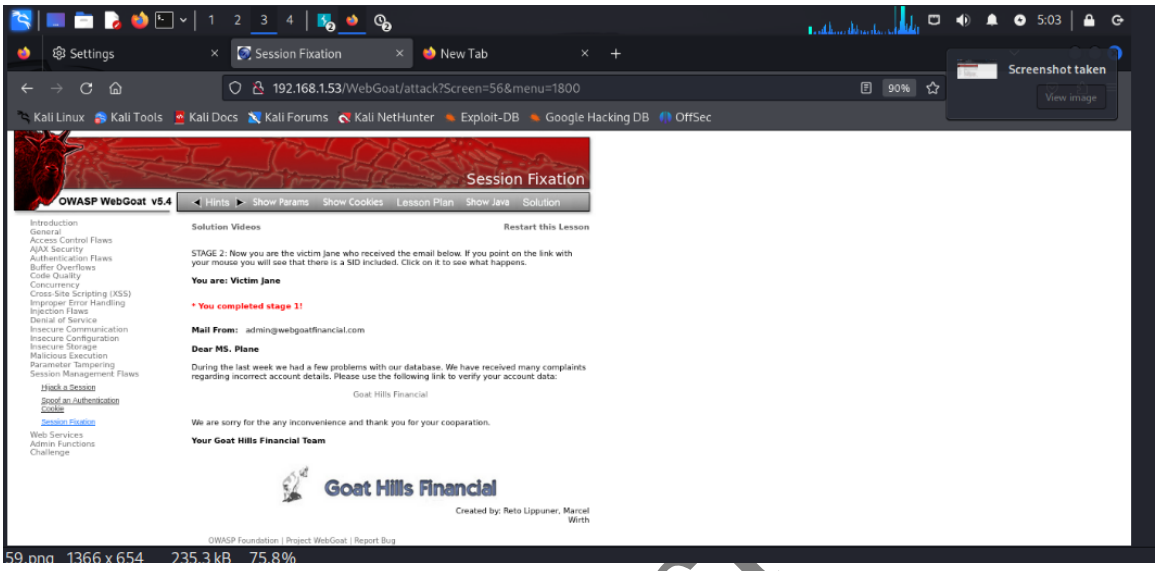


- Now , you can access the account

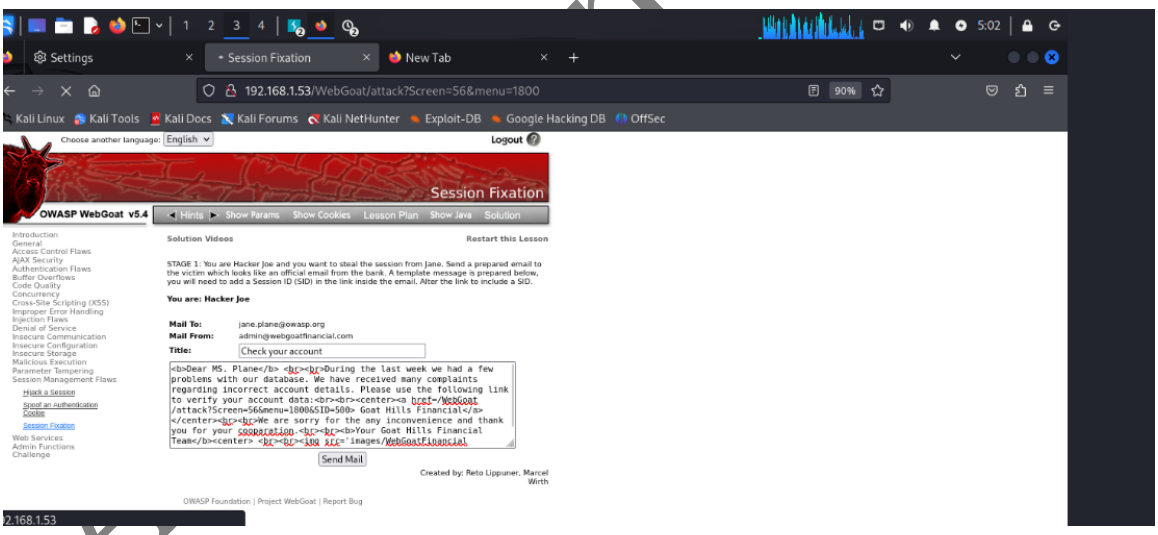


4. Session Fixation

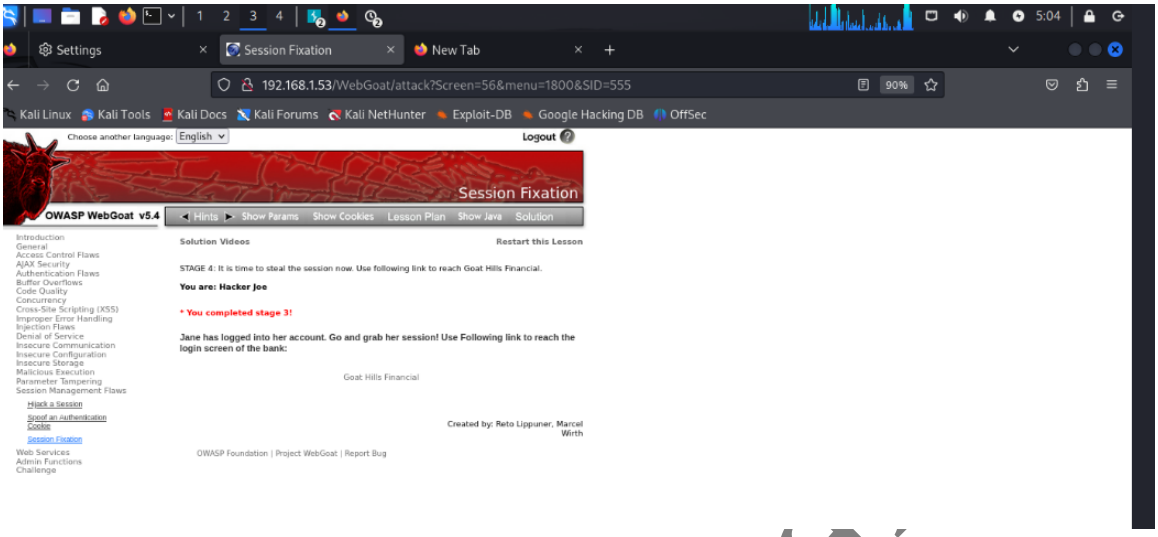
- Go to session management flaws>session fixation



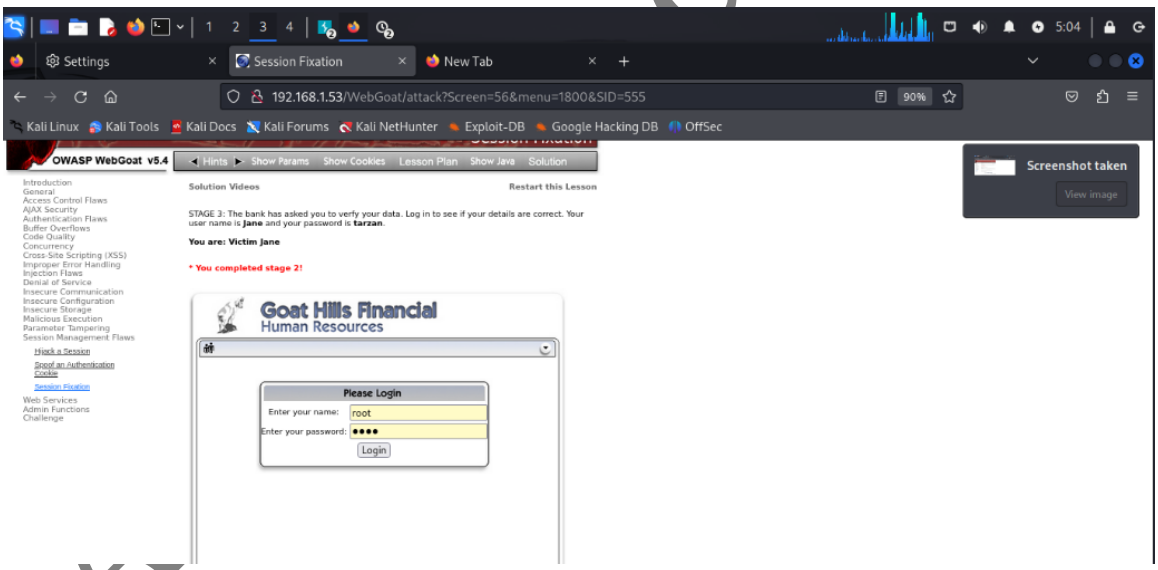
- Change webgoat to WebGoat and send mail



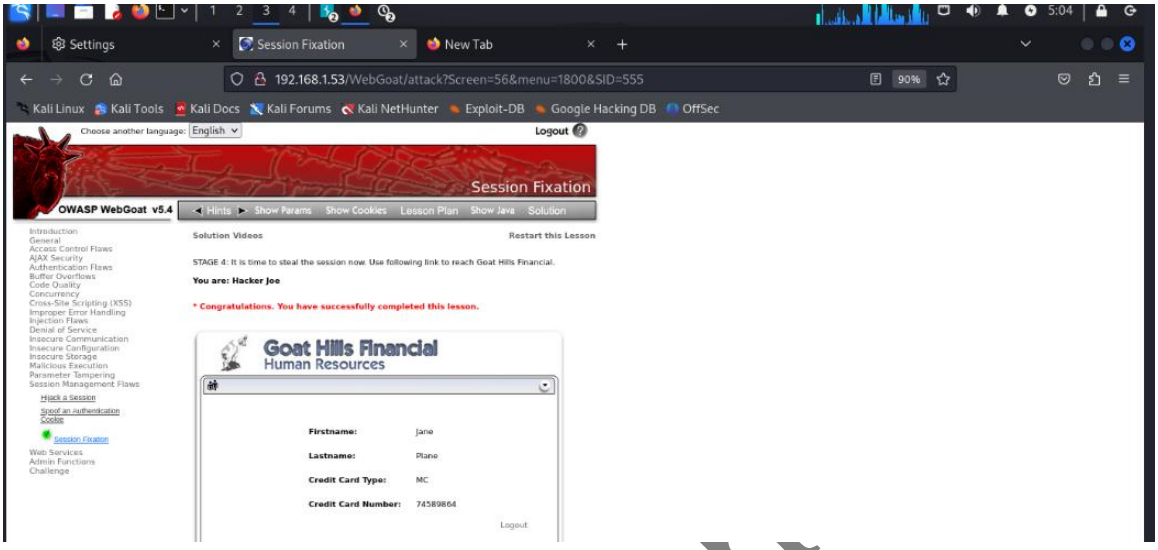
- Click on the link



- Log in



- Log in as victim now , you can access the data



Conclusion

Broken authentication vulnerabilities pose significant risks to web applications and user data. Using tools like WebGoat and Burp Suite, developers and testers can identify and address these vulnerabilities effectively. By understanding common authentication flaws and implementing advanced security measures, organizations can safeguard their applications against unauthorized access.