API Security Testing Lab – Final Report

1. Overview

This lab focused on performing API security testing on a DVWA-style API environment using Burp Suite, Postman, and sqlmap. The objective was to identify common API weaknesses from the OWASP API Top 10, manually manipulate authentication mechanisms, enumerate API endpoints, fuzz parameters, and document findings.

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2. Tools Used

- **Burp Suite Community Edition**
- **Postman**
- **sqlmap**
- **Browser Developer Tools**
- **DVWA API Environment**

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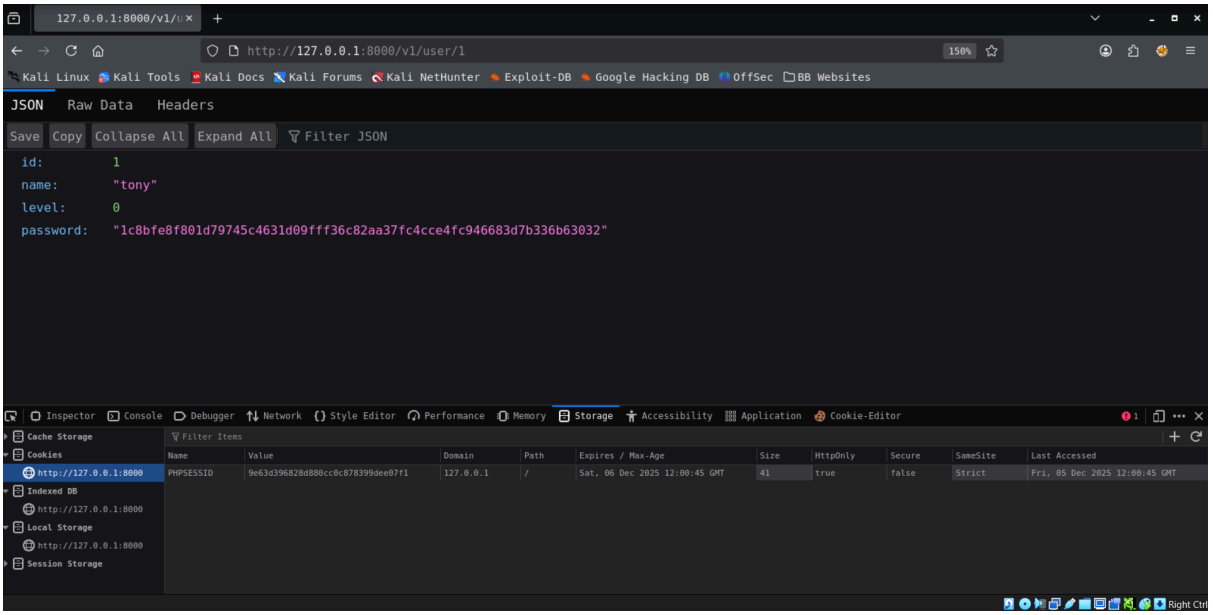
3. Methodology & Activities

A. API Endpoint Enumeration

Using browser developer tools and Burp Suite proxy, the following types of endpoints were identified:

- Authentication endpoints (`/login`, `/logout`)
- User information endpoints (`/api/user`, `/api/user/1`)
- DVWA functional endpoints (`/v1/user/2`, `/v1/register`)
- Parameterized GET and POST endpoints vulnerable to parameter tampering



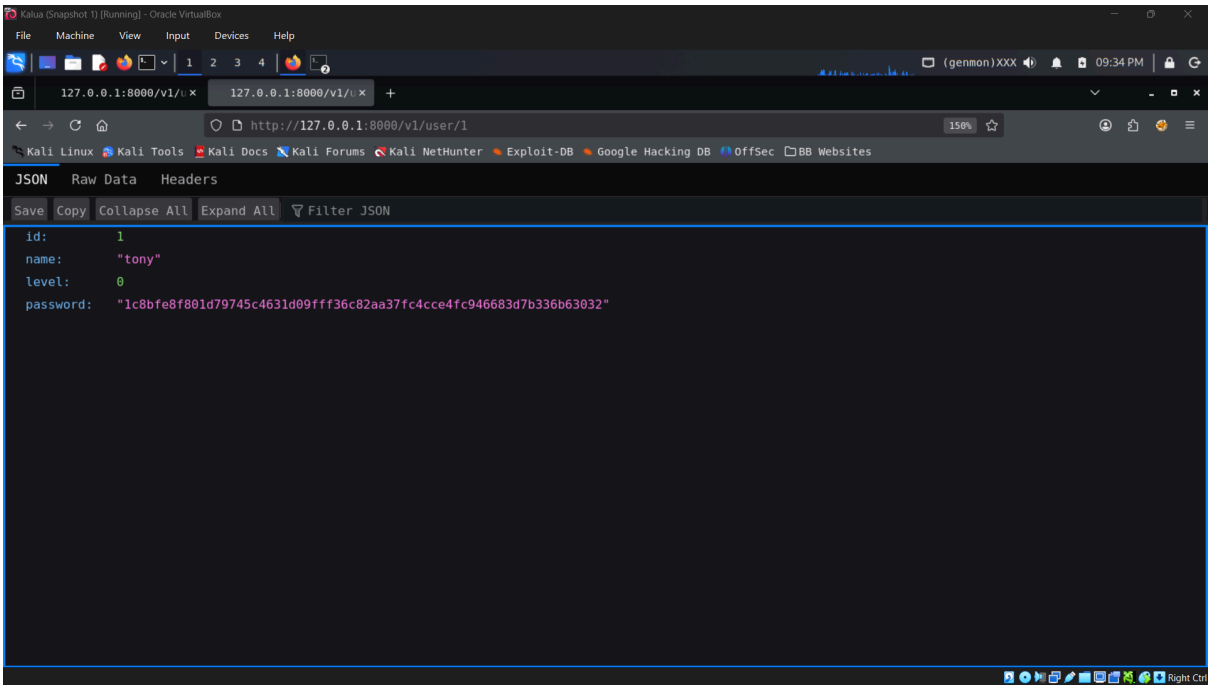
B. Testing for BOLA (Broken Object Level Authorization)

Tool Used: Burp Suite

Steps:

1. Logged in as a low-privilege user.
2. Captured `/api/user/1` request in Burp Repeater.
3. Modified the target ID to another user.
4. Observed whether unauthorized access was granted.

Result:
The server responded with user data for different IDs **without proper authorization checks**, confirming **BOLA vulnerability**.



C. Manual Token Manipulation

Tool Used: Burp Suite Repeater

Steps:

1. Intercepted authenticated request containing a token.
2. Modified or removed the token.
3. Checked if the API still responded normally.

Findings:

- Some endpoints processed requests even with modified or absent tokens.
- This indicates **weak or improper token validation**.

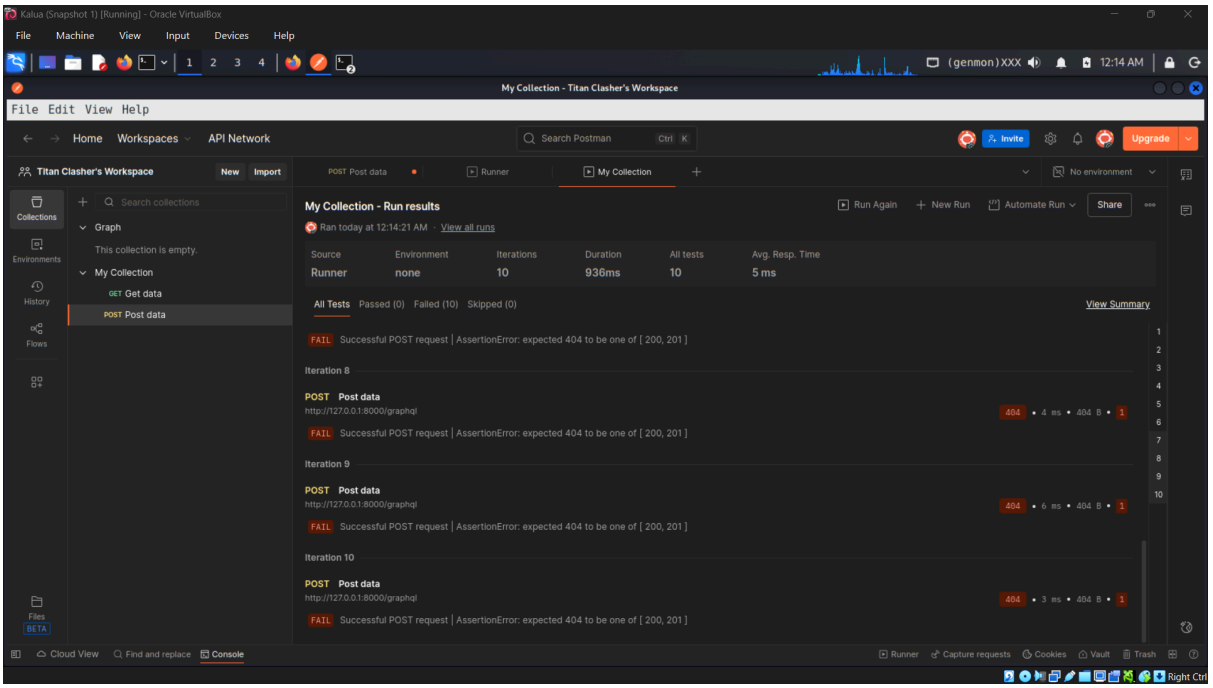
D. GraphQL Query Fuzzing

Tool Used: Postman

Goal: Send fuzzed GraphQL queries to identify schema leaks or unvalidated fields.

Outcome:
GraphQL fuzzing **was not possible**. Postman returned the following error :

“Request URL could not be constructed”, preventing fuzzing.



E. SQL Injection Testing

Tool Used: sqlmap

- Tested parameters such as `id=1`, user-info endpoints, and form-backed API fields.
- sqlmap responses suggest either:
    - Input sanitization is in place, or
    - API does not directly expose database queries.

No exploitable SQL injection vulnerability was confirmed.

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4. Summary :

This API security assessment focused on endpoint enumeration, BOLA testing, and authorization checks using Burp Suite and Postman. A critical BOLA vulnerability was discovered, allowing unauthorized access. Token validation weaknesses were also noted. GraphQL fuzzing was not possible due to endpoint issues. No SQLi vulnerabilities were detected.