

Practical 7: Web Application Vulnerability Testing

Aim

To perform web application vulnerability testing on a deliberately vulnerable web application and identify security flaws using a web proxy tool.

Tools & Environment

- Operating System: Kali Linux
- Web Proxy Tool: Burp Suite Community Edition
- Vulnerable Application: OWASP Juice Shop

Application Setup

The OWASP Juice Shop application was deployed using a container-based approach. The application was accessed locally through a web browser and verified to be running successfully.

Command used:

```
podman run -d -p 3000:3000 docker.io/bkimminich/juice-shop
```

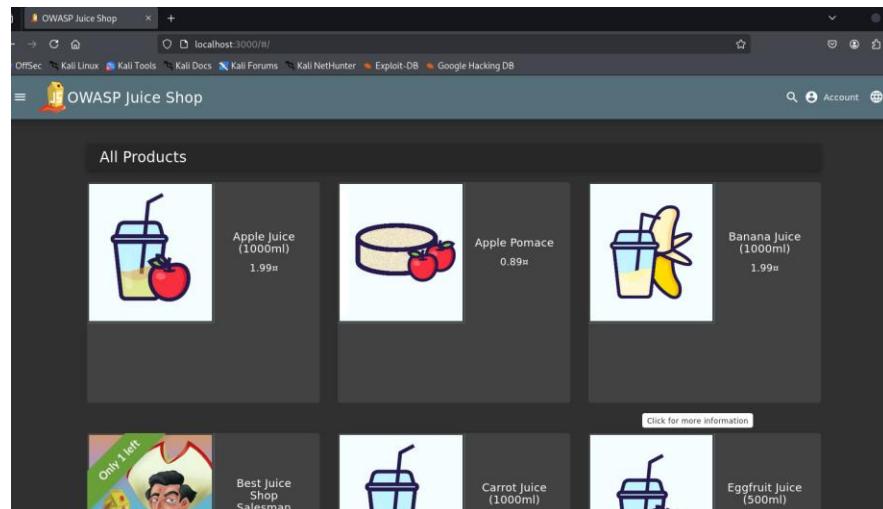


```
(stark@windows)-[~]
$ podman ps

CONTAINER ID  IMAGE          COMMAND           CREATED        STATUS        PORTS
              NAMES
985e5bfa0cf3  docker.io/bkimminich/juice-shop:latest /juice-shop/build...  3 minutes ago  Up 3 minutes  0.0.0.0
:3000->3000/tcp  boring_torvalds

(stark@windows)-[~]
$
```

Application URL:<http://localhost:3000>



Proxy Configuration

The browser was configured to route all HTTP traffic through the web proxy tool. This allowed interception and modification of requests between the browser and the web application.

Request Interception

After configuring the proxy, HTTP requests from the browser were successfully intercepted using Burp Suite.

Burp Suite Community Edition v2025.3.4 - Temporary Project

OWASP Juice Shop | localhost:3000/#/

All Products

Apple Juice (1000ml)
The all-time classic.
1.99¤

Reviews ()

x Close

Intercept on Forward Drop Open browser

Time Type Direction Method URL

10:23... HT... → Request GET http://localhost:3000/test/user/whoami

10:23... HT... → Request GET http://localhost:3000/test/reviews?sort=desc

10:23... HT... → Request GET http://localhost:3000/socket.io/?EIO=4&transport=websocket&sid=WnQfjn2qgq_u-XAAAC

10:23... HT... → Request GET http://localhost:3000/socket.io/?EIO=4&transport=polling&t=Pm03NEQ

10:23... HT... → Request GET http://localhost:3000/rest/products/1/reviews

10:23... HT... → Request GET http://localhost:3000/socket.io/?EIO=4&transport=polling&t=Pm03SiV

Request

Pretty Raw Hex

1 GET /rest/user/whoami HTTP/1.1

2 Host: localhost:3000

3 sec-ch-ua-platform: "Linux"

4 Accept: */*

5 Accept-Encoding: gzip, deflate

6 sec-ch-uas: "Net/4.0/Brand">v="99".

7 User-Agent: Mozilla/5.0 (X11; Linux x86_64)

8 AppleWebKit/537.36 (KHTML, like Gecko)

9 Chrome/136.0.6795.152 Safari/537.36

10 sec-ch-ua-mobile: ?0

11 Sec-Fetch-Site: same-origin

12 Sec-Fetch-Mode: cors

13 Sec-Fetch-Dest: empty

14 Referer: http://localhost:3000/

15 Accept-Encoding: gzip, deflate, br

16 Content-Language: en

17 Content-Type: application/json

18 welcomebanner_status=dississ

19 Connection: keep-alive

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Test Description

The search input field was tested by injecting a script payload to check for client-side script execution.

Payload Used

```
<script>alert('XSS')</script>
```

Observation

The injected script executed successfully in the browser, confirming the presence of a Cross-Site Scripting vulnerability.

Response Analysis

The application responses differed based on user input. Malicious input resulted in unexpected behavior, confirming the presence of vulnerabilities.

Identified Vulnerabilities

Vulnerability	Risk Level
SQL Injection	High
Cross-Site Scripting (XSS)	Medium

Impact Analysis

- Unauthorized access to application functionality
 - Potential exposure of sensitive information
 - Execution of malicious scripts in user browsers
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Mitigation Measures

- Implement input validation and sanitization
- Use parameterized queries

- Encode output data
 - Apply secure coding practices
 - Conduct regular security assessments
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Conclusion

This practical demonstrated the identification of common web application vulnerabilities using a web proxy tool. The results highlight the importance of secure input handling and defensive coding practices to protect web applications.