Project 2 | 1Stop |CS_KLEEN Security

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Problem Statement:

Take some website(vulnerable website). Scan using OWASP ZAP Tool (quick/automated). Set Vulnerabilities --> Make report with mitigations.

Vulnerability: Cross Site Scripting (Reflected)

URL:

GET: http://testphp.vulnweb.com/hpp/params.php?p=%3Cscript%3Ealert%281%29%3B%3C%2Fscript%3E&pp=12

Description:

Cross-site Scripting (XSS) is an attack technique that involves echoing attacker-supplied code into a user's browser instance. A browser instance can be a standard web browser client, or a browser object embedded in a software product such as the browser within WinAmp, an RSS reader, or an email client. The code itself is usually written in HTML/JavaScript, but may also extend to VBScript, ActiveX, Java, Flash, or any other browser-supported technology.
When an attacker gets a user's browser to execute his/her code, the code will run within the security context (or zone) of the hosting web site. With this level of privilege, the code has the ability to read, modify and transmit any sensitive data accessible by the browser. A Cross-site Scripted user could have his/her account hijacked (cookie theft), their browser redirected to another location, or possibly shown fraudulent content delivered by the web site they are visiting. Cross-site Scripting attacks essentially compromise the trust relationship between a user and the web site. Applications utilizing browser object instances which load content from the file system may execute code under the local machine zone allowing for system compromise.

There are three types of Cross-site Scripting attacks: non-persistent, persistent and DOM-based.

Non-persistent attacks and DOM-based attacks require a user to either visit a specially crafted link laced with malicious code, or visit a malicious web page containing a web form, which when posted to the vulnerable site, will mount the attack. Using a malicious form will oftentimes take place when the vulnerable resource only accepts HTTP POST requests. In such a case, the form can be submitted automatically, without the victim's knowledge (e.g. by using JavaScript). Upon clicking on the malicious link or submitting the malicious form, the XSS payload will get echoed back and will get interpreted by the user's browser and execute. Another technique to send almost arbitrary requests (GET and POST) is by using an embedded client, such as Adobe Flash.
Persistent attacks occur when the malicious code is submitted to a web site where it's stored for a period of time. Examples of an attacker's favorite targets often include message board posts, web mail messages, and web chat software. The unsuspecting user is not required to interact with any additional site/link (e.g. an attacker site or a malicious link sent via email), just simply view the web page containing the code.

Payload:

http://testphp.vulnweb.com/hpp/params.php?p=%3Cscript%3Ealert%20(%22You%20are%20Hacked%20buddy!!!%20change%20your%20configuration%22)%3C%2Fscript%3E&pp=12

Remedies:

Preventing cross-site scripting is trivial in some cases but can be much harder depending on the complexity of the application and the ways it handles user-controllable data.

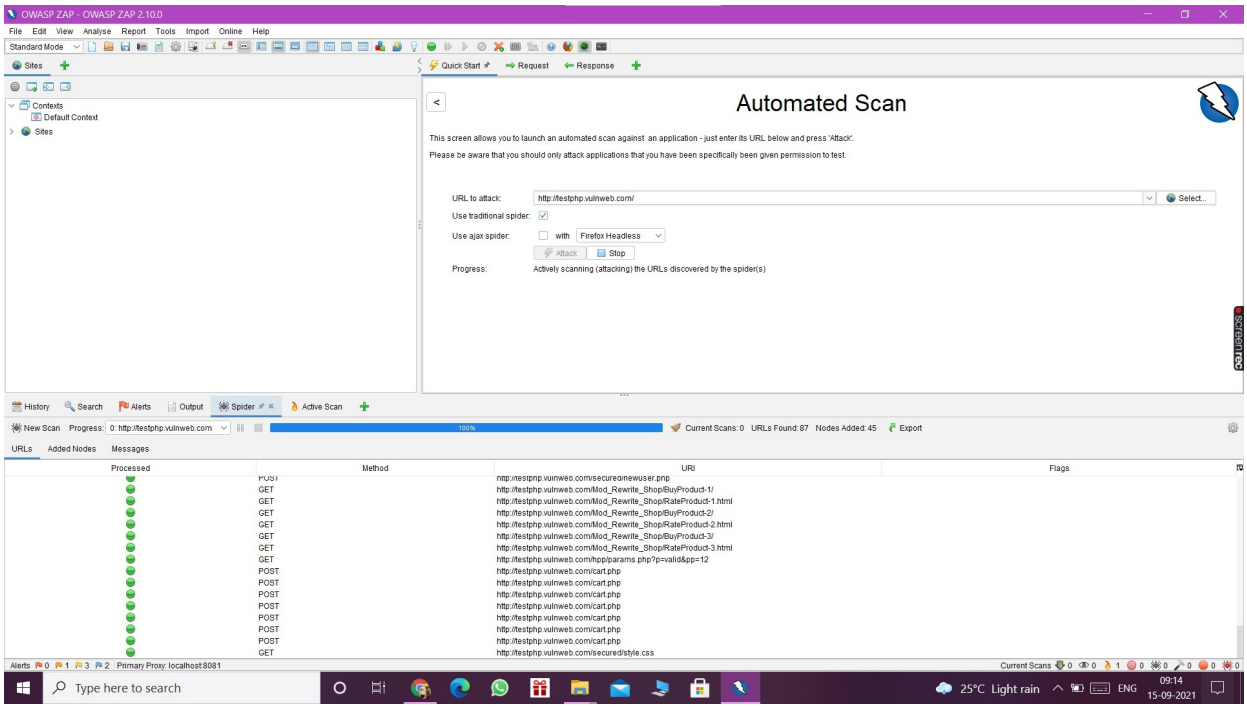
In general, effectively preventing XSS vulnerabilities is likely to involve a combination of the following measures:

- **Filter input on arrival.** At the point where user input is received, filter as strictly as possible based on what is expected or valid input.
- **Encode data on output.** At the point where user-controllable data is output in HTTP responses, encode the output to prevent it from being interpreted as active content. Depending on the output context, this might require applying combinations of HTML, URL, JavaScript, and CSS encoding.
- **Use appropriate response headers.** To prevent XSS in HTTP responses that aren't intended to contain any HTML or JavaScript, you can use the `Content-Type` and `X-Content-Type-Options` headers to ensure that browsers interpret the responses in the way you intend.
- **Content Security Policy.** As a last line of defense, you can use Content Security Policy (CSP) to reduce the severity of any XSS vulnerabilities that still occur.

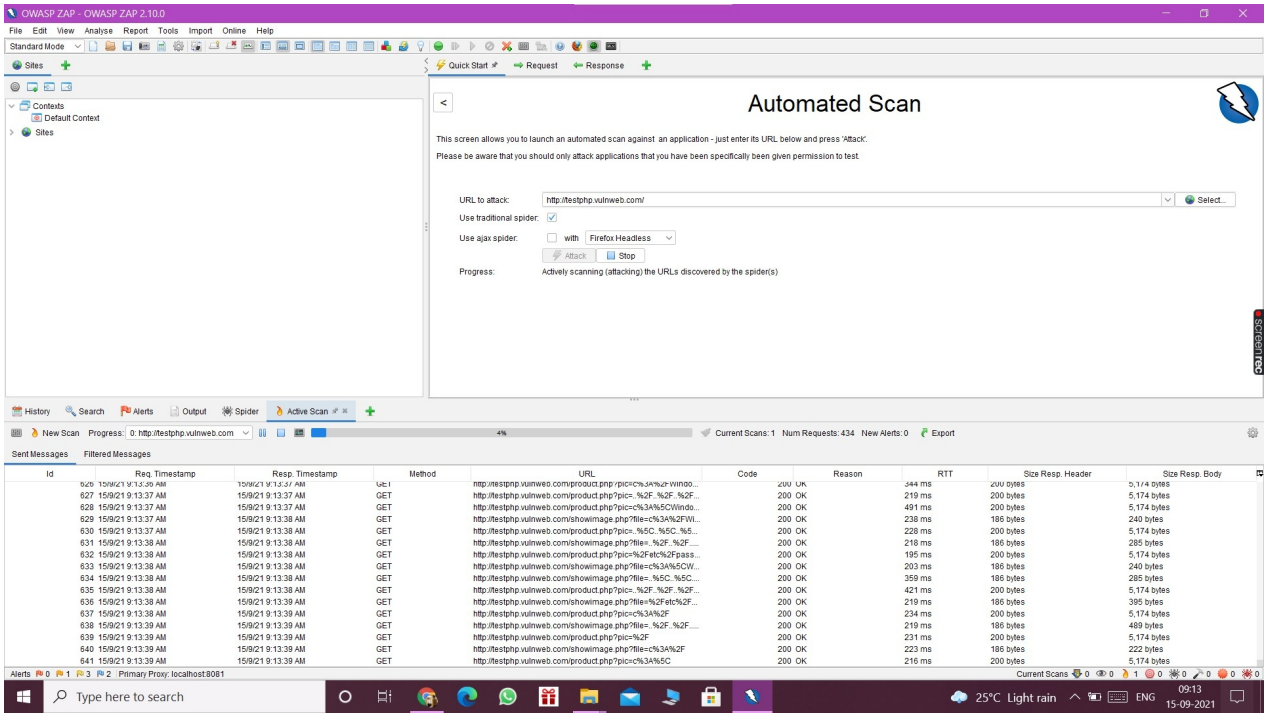
Reference:

https://portswigger.net/web-security/cross-site-scripting

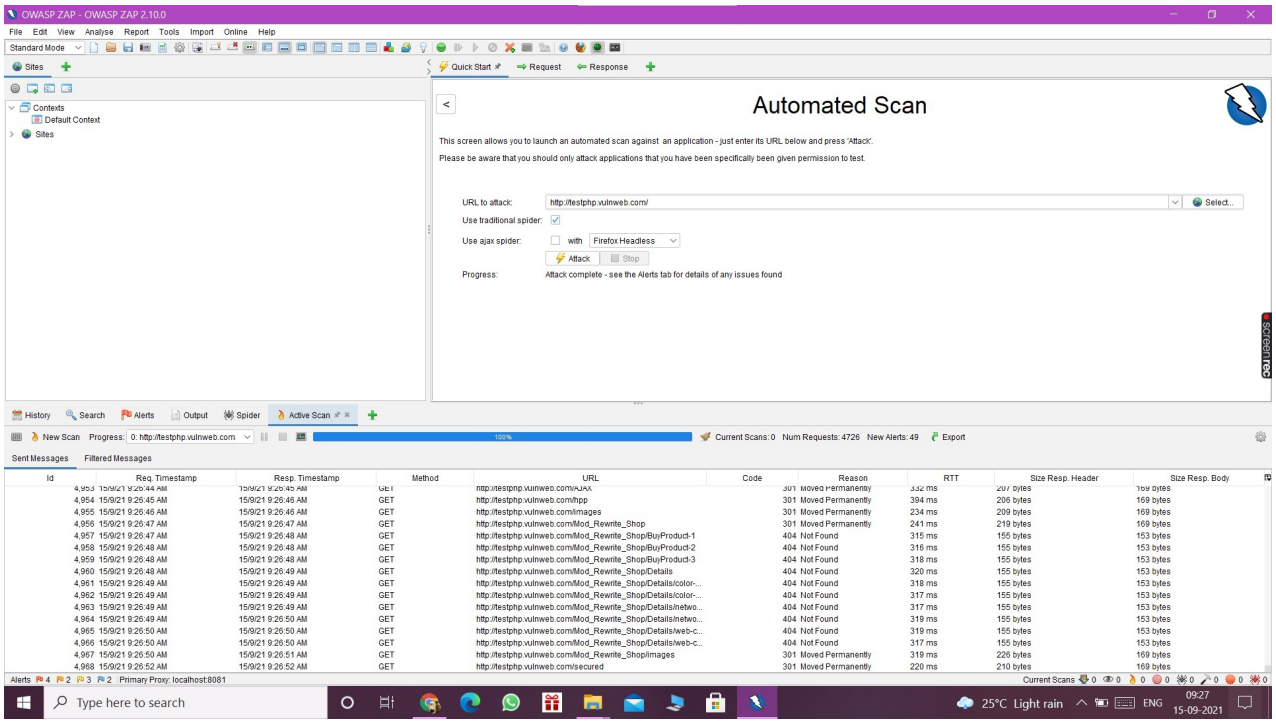
Screenshot 1:



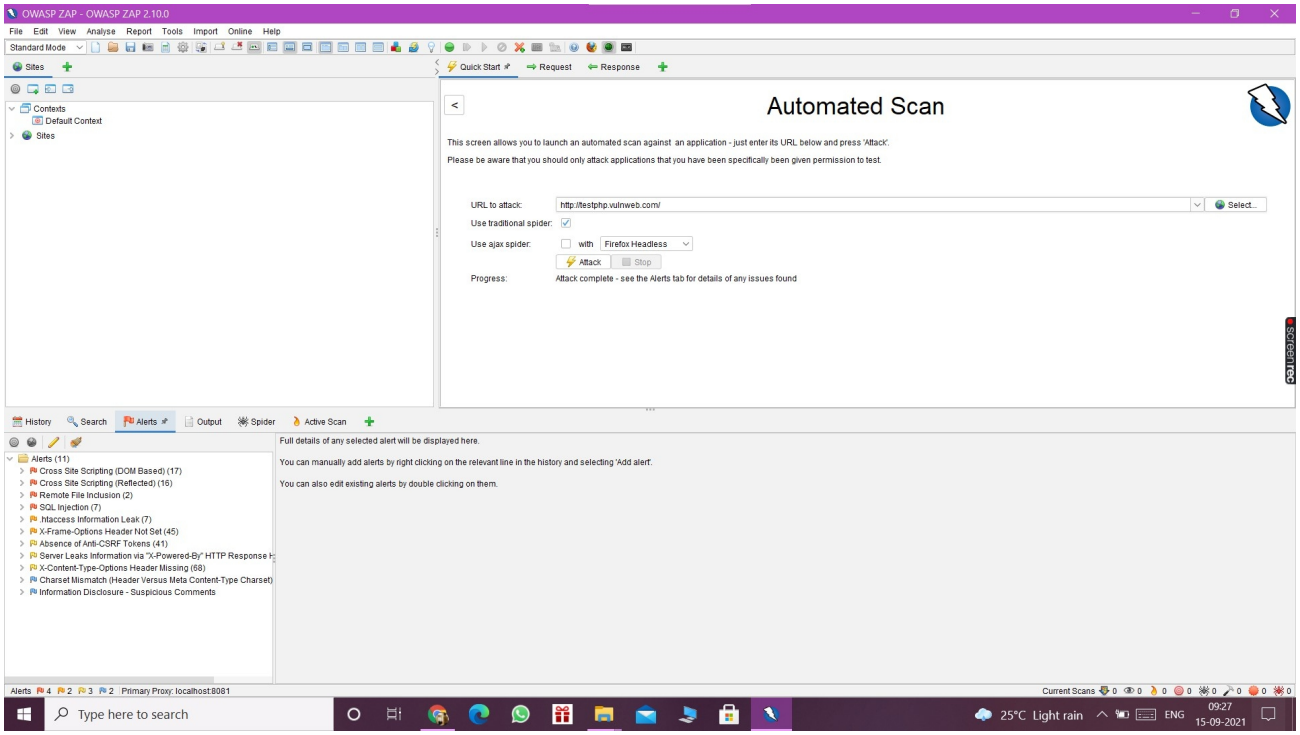
Screenshot 2:



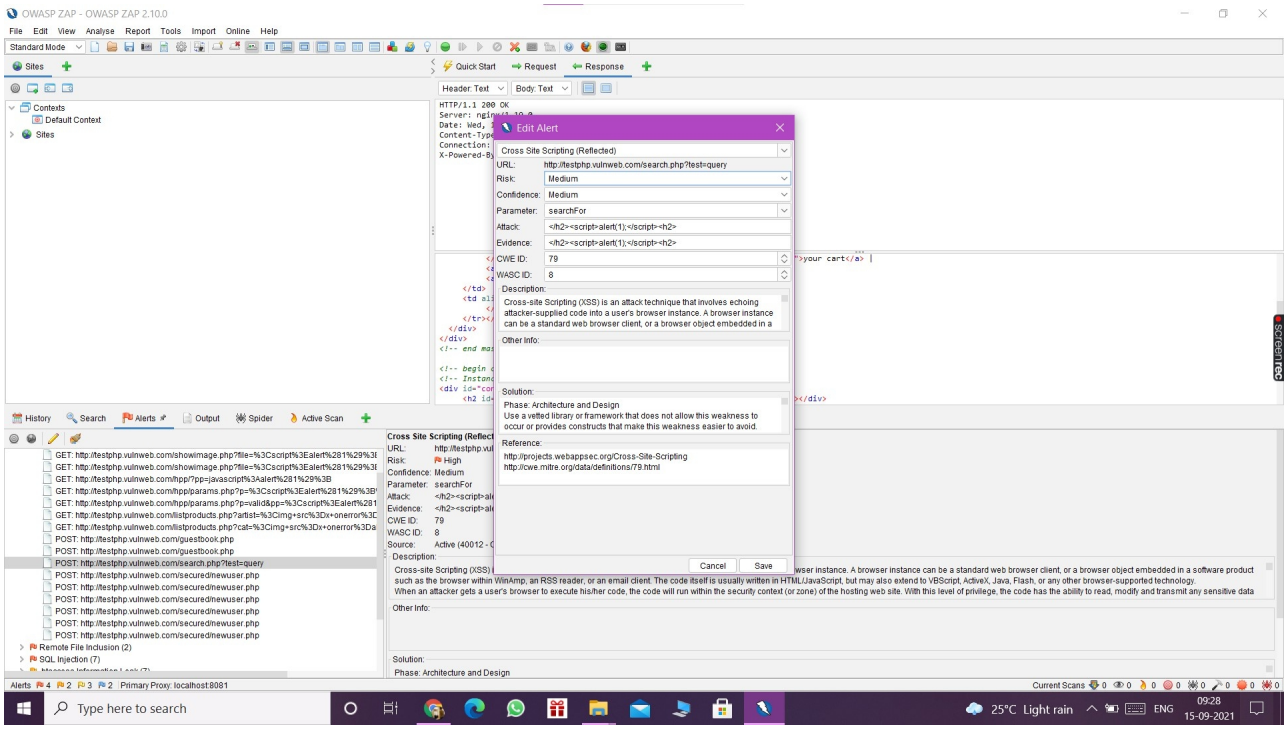
Screenshot 3:



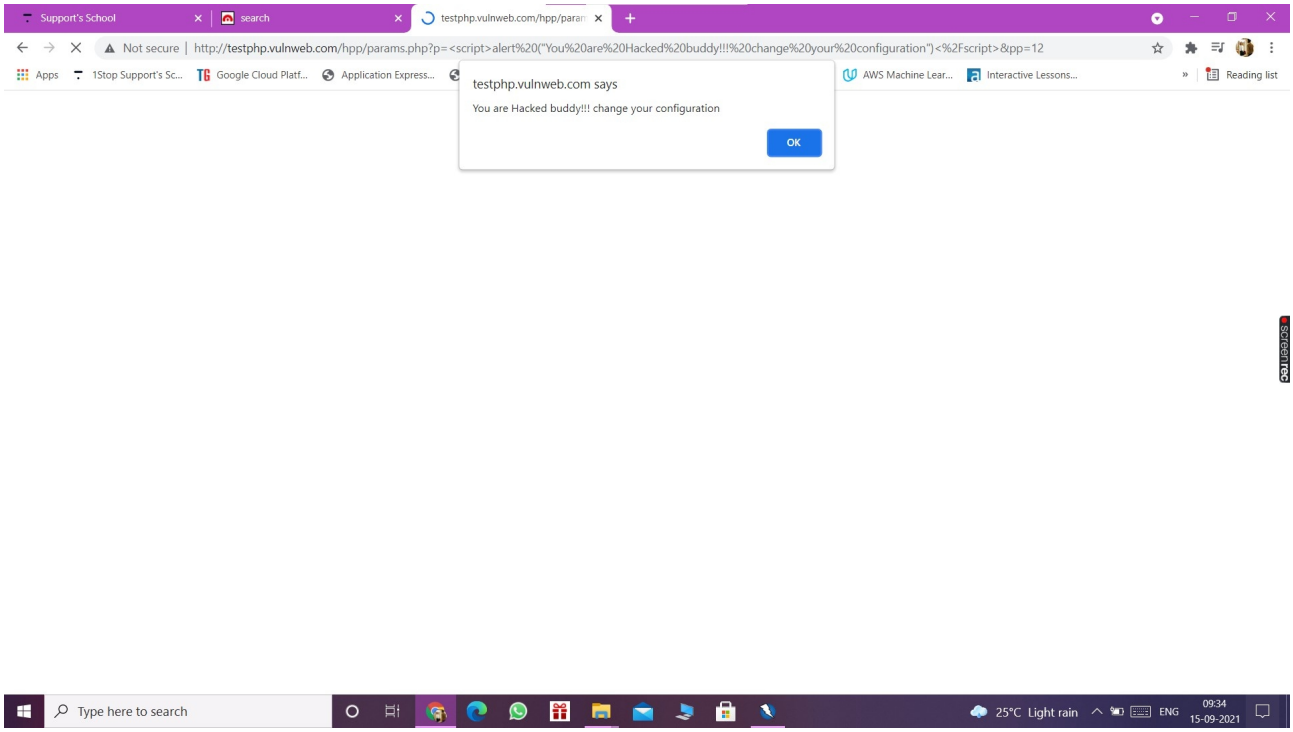
Screenshot 4:



Screenshot 5:



Screenshot 6:



Screenshot 7:

ZAP Scanning Report

Summary of Alerts

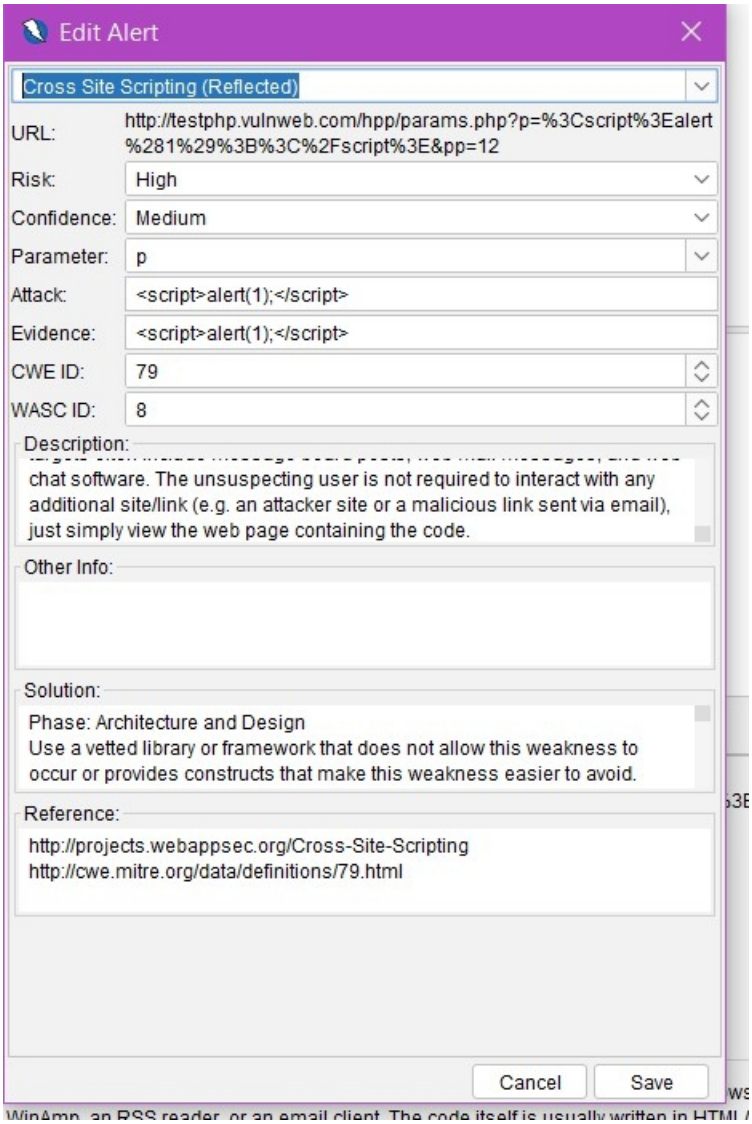
Generated on Wed, 15 Sep 2021 09:35:12

Risk Level	Number of Alerts
High	5
Medium	3
Low	3
Informational	2

Alerts

Name	Risk Level	Number of Instances
Cross Site Scripting (DOM Based)	High	17
Cross Site Scripting (Reflected)	High	15
Remote File Inclusion	High	2
SQL Injection	High	7
.htaccess Information Leak	Medium	7
Cross Site Scripting (Reflected)	Medium	1
X-Frame-Options Header Not Set	Medium	45
Absence of Anti-CSRF Tokens	Low	41
Server Leaks Information via "X-Powered-By" HTTP Response Header Field(s)	Low	63
X-Content-Type-Options Header Missing	Low	68
Charset Mismatch (Header Versus Meta Content-Type Charset)	Informational	32
Information Disclosure - Suspicious Comments	Informational	1

Screenshot 8:



Screenshot 9: