Vulnerability Audit and Assessment - Baseline Analysis and Plan

Introduction

This analysis outlines the approach, methodologies, and tools for auditing and assessing the security vulnerabilities and non-compliance with Web Content Accessibility Guidelines (WCAG), General Data Protection Regulation (GDPR), and Payment Card Industry Data Security Standard (PCI DSS) of Gin & Juice Shop website (G&J) (https://ginandjuice.shop/).

Potential Security Challenges and Non-Compliance

Based on Open Worldwide Application Security Project (OWASP) and Common Weakness Enumeration (CWE), the following security risks are relevant to G&J (CWE, 2024; Khan et al, 2019; OWASP Top10, 2021; Priyawati et al., 2022):

Risk ID	**OWASP**	**Notable CWEs**	**Potential Risk**
R01	Broken Access Control	CWE-200, CWE-284	Unauthorized access, information disclosure and modification.
R02	Cryptographic Failures	CWE-259, CWE-327, CWE-331	Exposure of sensitive information.
R03	Injection	CWE-73, CWE-79, CWE-89	Execution of malicious commands or scripts.

R04	Insecure Design	CWE-209, CWE-256, CWE-501, CWE-522	Vulnerabilities resulting from poor security control design.
R05	Security Misconfiguration	CWE-16, CWE-611	Improper security settings leading to information exposure.
R06	Vulnerable and Outdated Components	CWE-1104	Exploitation of known vulnerabilities in third-party components.
R07	Identification and Authentication Failures	CWE-287, CWE-297, CWE-384	Unauthorized access.
R08	Software and Data Integrity Failures	CWE-494, CWE-502, CWE-829	Attacks on software updates, data integrity and insecure deserialization.
R09	Security Logging and Monitoring Failures	CWE-117, CWE-223, CWE-532, CWE-778	Delayed incident detection.
R10	Cross-Site Request Forgery (CSRF) and Server-Side Request Forgery (SSRF)	CWE-352, CWE-918	Unauthorized actions on authenticated users and unauthorized access to other systems.

R11	Denial of Service (DoS) and Distributed Denial of Service (DDoS) attack	CWE-400, CWE-770	Overwhelming server resources.

The following standards extracted from WCAG, GDPR, and PCI DSS are applicable to G&J (Krzyminski, 2021; Margau, 2024; Sohaib, 2016):

Risk ID	**Standard**	**Potential Non-Compliance**
R12	WCAG (WCAG, 2023)	Alternative text for images, captions or transcripts for videos, minimum contrast requirements, keyboard accessibility, duration warning during checkout, and status messages.
R13	GDPR (GDPR, 2024)	Consent mechanisms, data security measures, documentation of data processing activities, and mechanisms for users to exercise their rights.
R14	PCI DSS (PCI Security Standards Council, 2024)	Protecting cardholder data, data encryption, and requirements for accepting credit card payments.

Tests and Impacts

To enhance the security of G&J, a combination of automated and manual testing will be conducted remotely. The recommended tools are as follows:

Potential Tool	**Justification / Explanation**	**Risk ID Mapping**
Burp Suite (PortSwigger, 2024; OWASP, 2024)	A powerful web application security tool combining automated scanning and manual testing to assess vulnerabilities, including OWASP Top 10. It's compatible with multiple platforms and has paid and free versions (limited functionality).	R01 – R08, R10 – R11, R13 – R14
NSlookup (NsLookup, 2023)	A DNS query tool used to identify DNS vulnerabilities such as misconfigurations and cache poisoning.	R01, R05, R07
Manual Test	Accessibility, authentication, payment card data handling, security headers, and PAN masking.	R01, R07, R09, R12 – R14

Please refer **Appendix I** for detailed risk mapping.

Negative impacts during testing and recommendations for risk mitigation (Acunetix, 2024):

Potential impact	**Potential Mitigations**
Damage caused by injected garbage data.	Run scans on staging environment.
Data loss or broken functionality.	Restrict crawling of sensitive links.
Overwhelming web server and causing DoS symptoms.	Test during off-peak hours.

Excessive server logging causing disk space issues.	Customize scan settings.

Timeline

1. Proposal Submit: May 20, 2024
2. Approval of Proposal: May 27, 2024
3. Vulnerability Audit and Assessment:
    - Scoping and Planning: 2 working days
    - Testing and Analysis: 5 working days
    - Report Compilation: 5 working days
4. Final Executive Summary Issued: June 10, 2024

Limitations and Assumptions

1. Time limitations impacted the evaluation scope.
2. The assessment relied on free or trial versions of scanning tools, potentially affecting analysis comprehensiveness.
3. It assumes disclosed functionality of G&J without considering undisclosed or additional features.

Conclusion

The vulnerability audit and assessment of G&J will improve website security, safeguard customer data, and ensure compliance with relevant standards. The executive summary will provide actionable recommendations to mitigate risks and enhance overall website security.

Reference

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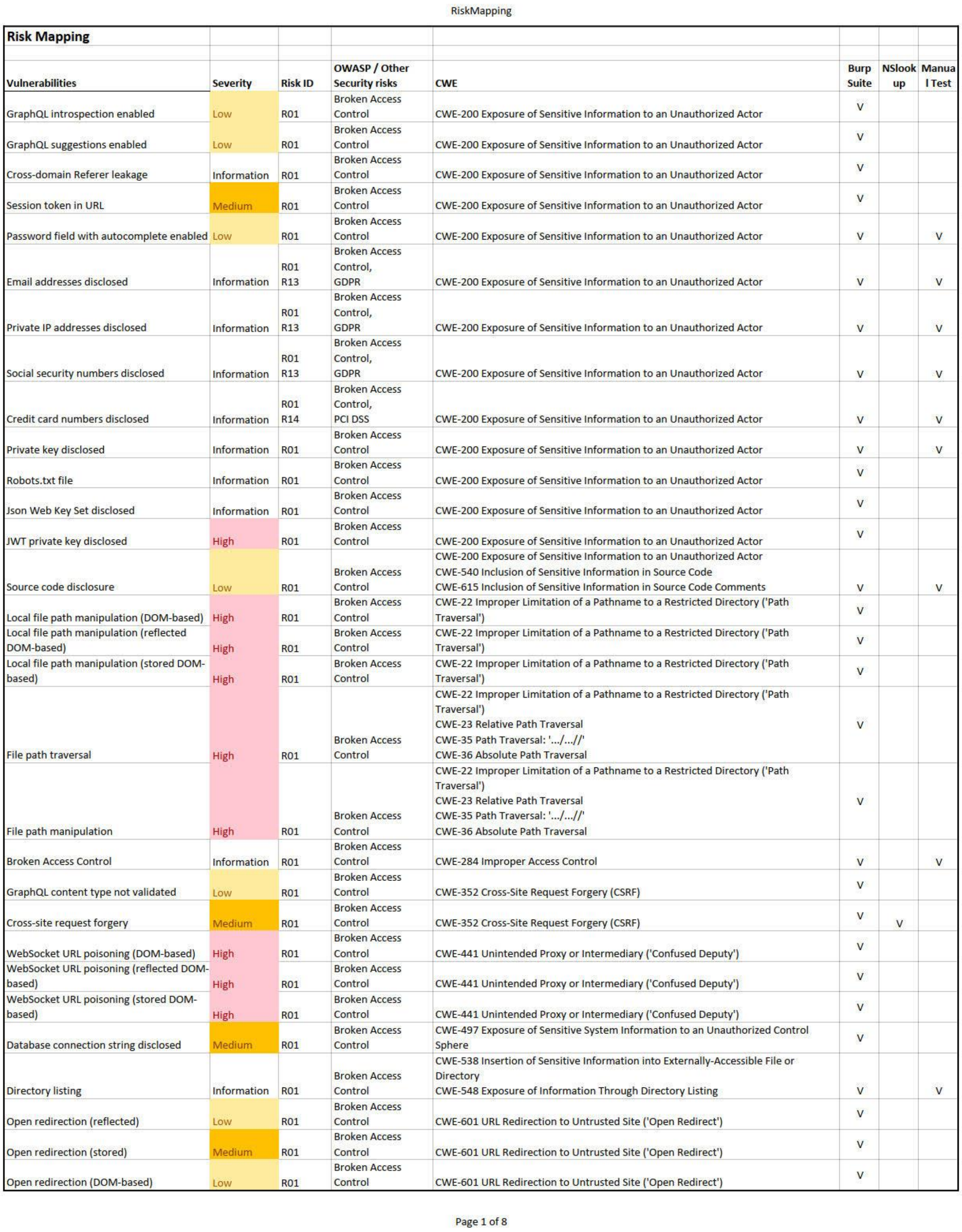
Appendix I Risk Mapping



RiskMapping

Risk Mapping

Vulnerabilities	Severity	Risk ID	OWASP / Other Security risks	CWE	Burp Suite	NSlookup	Manual Test
GraphQL introspection enabled	Low	R01	Broken Access Control	CWE-200 Exposure of Sensitive Information to an Unauthorized Actor	V		
GraphQL suggestions enabled	Low	R01	Broken Access Control	CWE-200 Exposure of Sensitive Information to an Unauthorized Actor	V		
Cross-domain Referer leakage	Information	R01	Broken Access Control	CWE-200 Exposure of Sensitive Information to an Unauthorized Actor	V		
Session token in URL	Medium	R01	Broken Access Control	CWE-200 Exposure of Sensitive Information to an Unauthorized Actor	V		
Password field with autocomplete enabled	Low	R01	Broken Access Control	CWE-200 Exposure of Sensitive Information to an Unauthorized Actor	V		V
Email addresses disclosed	Information	R01 R13	Broken Access Control, GDPR	CWE-200 Exposure of Sensitive Information to an Unauthorized Actor	V		V
Private IP addresses disclosed	Information	R01 R13	Broken Access Control, GDPR	CWE-200 Exposure of Sensitive Information to an Unauthorized Actor	V		V
Social security numbers disclosed	Information	R01 R13	Broken Access Control, GDPR	CWE-200 Exposure of Sensitive Information to an Unauthorized Actor	V		V
Credit card numbers disclosed	Information	R01 R14	Broken Access Control, PCI DSS	CWE-200 Exposure of Sensitive Information to an Unauthorized Actor	V		V
Private key disclosed	Information	R01	Broken Access Control	CWE-200 Exposure of Sensitive Information to an Unauthorized Actor	V		V
Robots.txt file	Information	R01	Broken Access Control	CWE-200 Exposure of Sensitive Information to an Unauthorized Actor	V		
Json Web Key Set disclosed	Information	R01	Broken Access Control	CWE-200 Exposure of Sensitive Information to an Unauthorized Actor	V		
JWT private key disclosed	High	R01	Broken Access Control	CWE-200 Exposure of Sensitive Information to an Unauthorized Actor	V		
Source code disclosure	Low	R01	Broken Access Control	CWE-200 Exposure of Sensitive Information to an Unauthorized Actor CWE-540 Inclusion of Sensitive Information in Source Code CWE-615 Inclusion of Sensitive Information in Source Code Comments	V		V
Local file path manipulation (DOM-based)	High	R01	Broken Access Control	CWE-22 Improper Limitation of a Pathname to a Restricted Directory ('Path Traversal')	V		
Local file path manipulation (reflected DOM-based)	High	R01	Broken Access Control	CWE-22 Improper Limitation of a Pathname to a Restricted Directory ('Path Traversal')	V		
Local file path manipulation (stored DOM-based)	High	R01	Broken Access Control	CWE-22 Improper Limitation of a Pathname to a Restricted Directory ('Path Traversal')	V		
File path traversal	High	R01	Broken Access Control	CWE-22 Improper Limitation of a Pathname to a Restricted Directory ('Path Traversal') CWE-23 Relative Path Traversal CWE-35 Path Traversal: '.../...//' CWE-36 Absolute Path Traversal	V		
File path manipulation	High	R01	Broken Access Control	CWE-22 Improper Limitation of a Pathname to a Restricted Directory ('Path Traversal') CWE-23 Relative Path Traversal CWE-35 Path Traversal: '.../...//' CWE-36 Absolute Path Traversal	V		
Broken Access Control	Information	R01	Broken Access Control	CWE-284 Improper Access Control	V		V
GraphQL content type not validated	Low	R01	Broken Access Control	CWE-352 Cross-Site Request Forgery (CSRF)	V		
Cross-site request forgery	Medium	R01	Broken Access Control	CWE-352 Cross-Site Request Forgery (CSRF)	V	V	
WebSocket URL poisoning (DOM-based)	High	R01	Broken Access Control	CWE-441 Unintended Proxy or Intermediary ('Confused Deputy')	V		
WebSocket URL poisoning (reflected DOM-based)	High	R01	Broken Access Control	CWE-441 Unintended Proxy or Intermediary ('Confused Deputy')	V		
WebSocket URL poisoning (stored DOM-based)	High	R01	Broken Access Control	CWE-441 Unintended Proxy or Intermediary ('Confused Deputy')	V		
Database connection string disclosed	Medium	R01	Broken Access Control	CWE-497 Exposure of Sensitive System Information to an Unauthorized Control Sphere	V		
Directory listing	Information	R01	Broken Access Control	CWE-538 Insertion of Sensitive Information into Externally-Accessible File or Directory CWE-548 Exposure of Information Through Directory Listing	V		V
Open redirection (reflected)	Low	R01	Broken Access Control	CWE-601 URL Redirection to Untrusted Site ('Open Redirect')	V		
Open redirection (stored)	Medium	R01	Broken Access Control	CWE-601 URL Redirection to Untrusted Site ('Open Redirect')	V		
Open redirection (DOM-based)	Low	R01	Broken Access Control	CWE-601 URL Redirection to Untrusted Site ('Open Redirect')	V		

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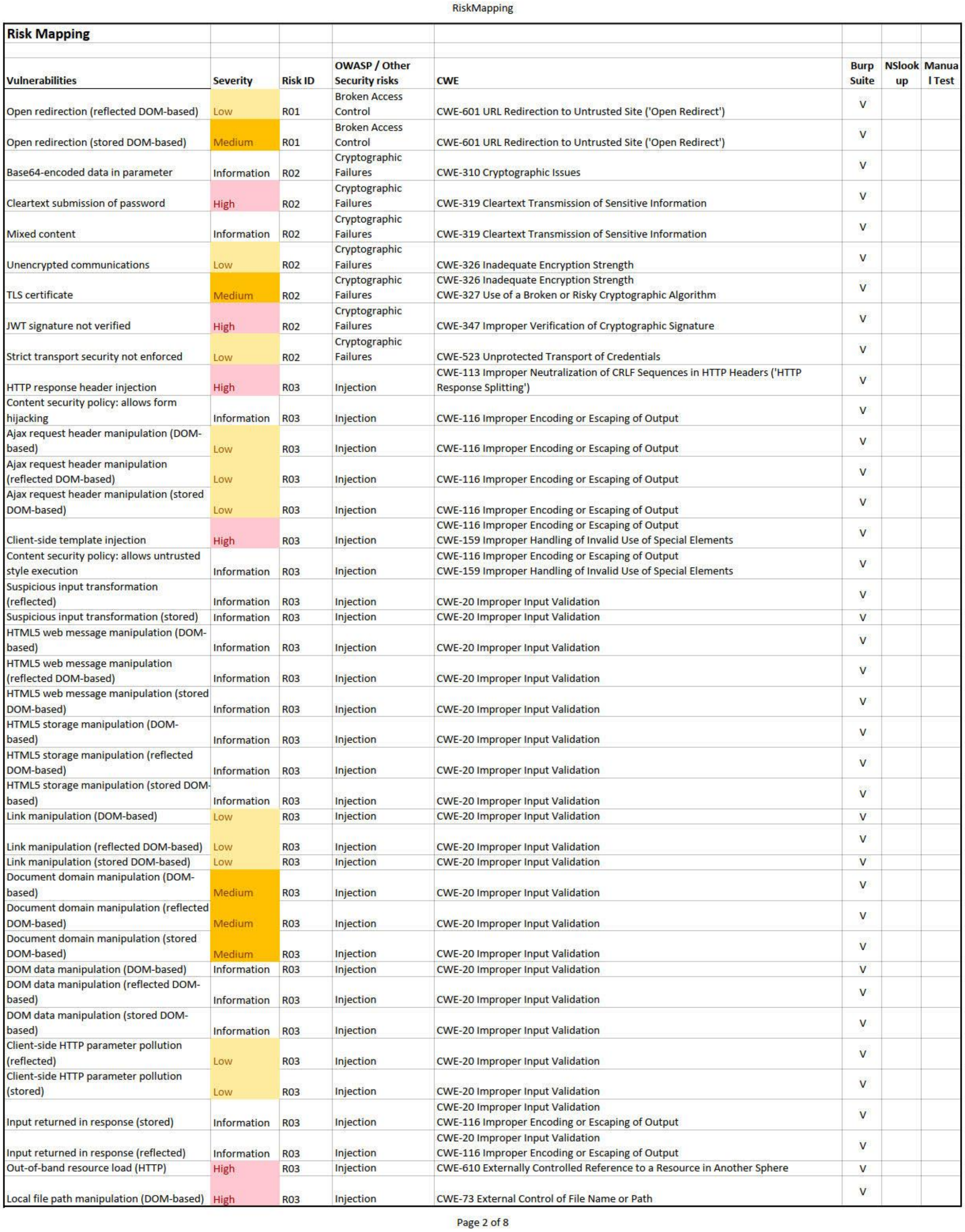

RiskMapping

Risk Mapping							
Vulnerabilities	**Severity**	**Risk ID**	**OWASP / Other Security risks**	**CWE**	**Burp Suite**	**NSlookup**	**Manual Test**
Open redirection (reflected DOM-based)	Low	R01	Broken Access Control	CWE-601 URL Redirection to Untrusted Site ('Open Redirect')	V		
Open redirection (stored DOM-based)	Medium	R01	Broken Access Control	CWE-601 URL Redirection to Untrusted Site ('Open Redirect')	V		
Base64-encoded data in parameter	Information	R02	Cryptographic Failures	CWE-310 Cryptographic Issues	V		
Cleartext submission of password	High	R02	Cryptographic Failures	CWE-319 Cleartext Transmission of Sensitive Information	V		
Mixed content	Information	R02	Cryptographic Failures	CWE-319 Cleartext Transmission of Sensitive Information	V		
Unencrypted communications	Low	R02	Cryptographic Failures	CWE-326 Inadequate Encryption Strength	V		
TLS certificate	Medium	R02	Cryptographic Failures	CWE-326 Inadequate Encryption Strength CWE-327 Use of a Broken or Risky Cryptographic Algorithm	V		
JWT signature not verified	High	R02	Cryptographic Failures	CWE-347 Improper Verification of Cryptographic Signature	V		
Strict transport security not enforced	Low	R02	Cryptographic Failures	CWE-523 Unprotected Transport of Credentials	V		
HTTP response header injection	High	R03	Injection	CWE-113 Improper Neutralization of CRLF Sequences in HTTP Headers ('HTTP Response Splitting')	V		
Content security policy: allows form hijacking	Information	R03	Injection	CWE-116 Improper Encoding or Escaping of Output	V		
Ajax request header manipulation (DOM-based)	Low	R03	Injection	CWE-116 Improper Encoding or Escaping of Output	V		
Ajax request header manipulation (reflected DOM-based)	Low	R03	Injection	CWE-116 Improper Encoding or Escaping of Output	V		
Ajax request header manipulation (stored DOM-based)	Low	R03	Injection	CWE-116 Improper Encoding or Escaping of Output	V		
Client-side template injection	High	R03	Injection	CWE-116 Improper Encoding or Escaping of Output CWE-159 Improper Handling of Invalid Use of Special Elements	V		
Content security policy: allows untrusted style execution	Information	R03	Injection	CWE-116 Improper Encoding or Escaping of Output CWE-159 Improper Handling of Invalid Use of Special Elements	V		
Suspicious input transformation (reflected)	Information	R03	Injection	CWE-20 Improper Input Validation	V		
Suspicious input transformation (stored)	Information	R03	Injection	CWE-20 Improper Input Validation	V		
HTML5 web message manipulation (DOM-based)	Information	R03	Injection	CWE-20 Improper Input Validation	V		
HTML5 web message manipulation (reflected DOM-based)	Information	R03	Injection	CWE-20 Improper Input Validation	V		
HTML5 web message manipulation (stored DOM-based)	Information	R03	Injection	CWE-20 Improper Input Validation	V		
HTML5 storage manipulation (DOM-based)	Information	R03	Injection	CWE-20 Improper Input Validation	V		
HTML5 storage manipulation (reflected DOM-based)	Information	R03	Injection	CWE-20 Improper Input Validation	V		
HTML5 storage manipulation (stored DOM-based)	Information	R03	Injection	CWE-20 Improper Input Validation	V		
Link manipulation (DOM-based)	Low	R03	Injection	CWE-20 Improper Input Validation	V		
Link manipulation (reflected DOM-based)	Low	R03	Injection	CWE-20 Improper Input Validation	V		
Link manipulation (stored DOM-based)	Low	R03	Injection	CWE-20 Improper Input Validation	V		
Document domain manipulation (DOM-based)	Medium	R03	Injection	CWE-20 Improper Input Validation	V		
Document domain manipulation (reflected DOM-based)	Medium	R03	Injection	CWE-20 Improper Input Validation	V		
Document domain manipulation (stored DOM-based)	Medium	R03	Injection	CWE-20 Improper Input Validation	V		
DOM data manipulation (DOM-based)	Information	R03	Injection	CWE-20 Improper Input Validation	V		
DOM data manipulation (reflected DOM-based)	Information	R03	Injection	CWE-20 Improper Input Validation	V		
DOM data manipulation (stored DOM-based)	Information	R03	Injection	CWE-20 Improper Input Validation	V		
Client-side HTTP parameter pollution (reflected)	Low	R03	Injection	CWE-20 Improper Input Validation	V		
Client-side HTTP parameter pollution (stored)	Low	R03	Injection	CWE-20 Improper Input Validation	V		
Input returned in response (stored)	Information	R03	Injection	CWE-20 Improper Input Validation CWE-116 Improper Encoding or Escaping of Output	V		
Input returned in response (reflected)	Information	R03	Injection	CWE-20 Improper Input Validation CWE-116 Improper Encoding or Escaping of Output	V		
Out-of-band resource load (HTTP)	High	R03	Injection	CWE-610 Externally Controlled Reference to a Resource in Another Sphere	V		
Local file path manipulation (DOM-based)	High	R03	Injection	CWE-73 External Control of File Name or Path	V		

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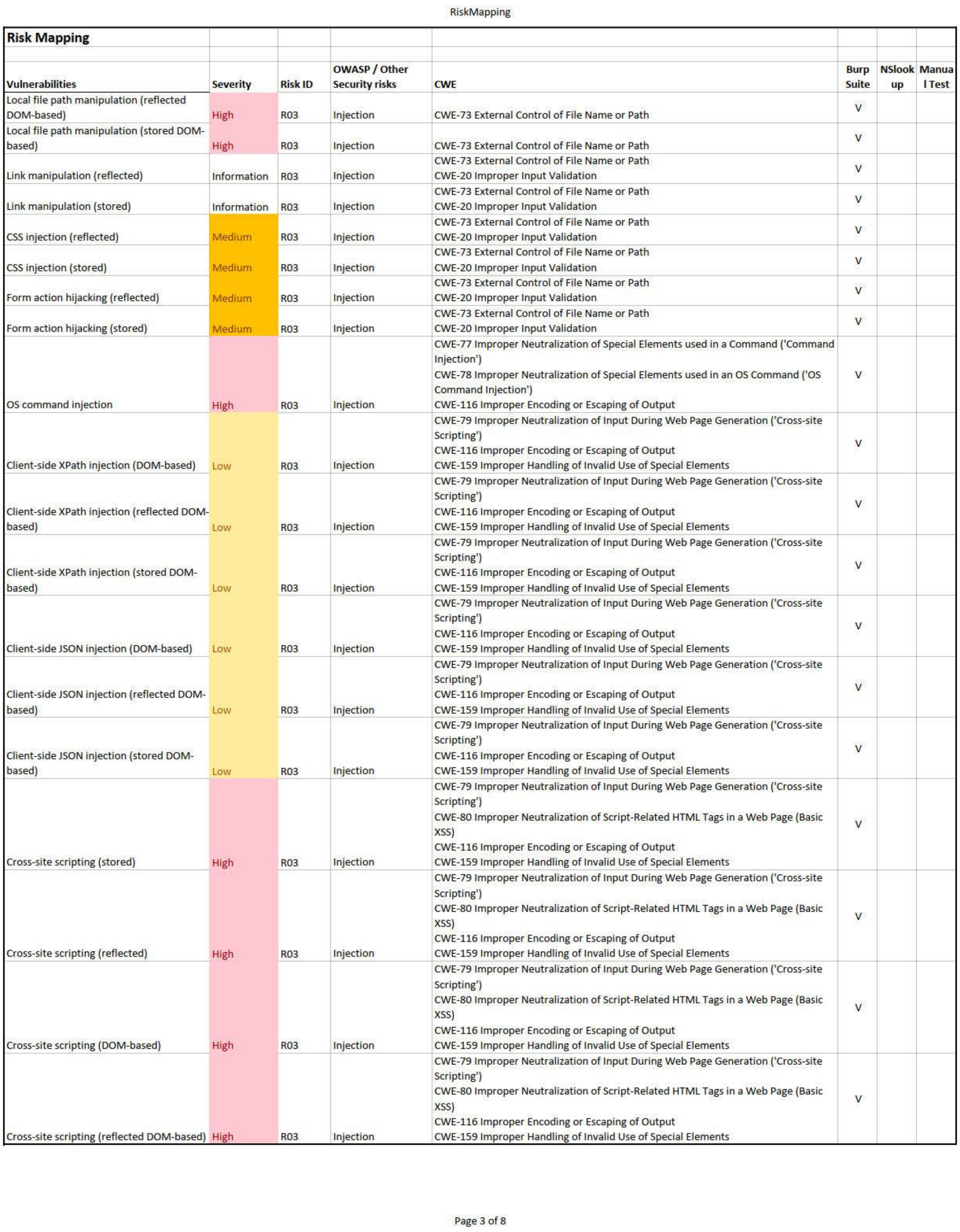

RiskMapping

Risk Mapping

Vulnerabilities	Severity	Risk ID	OWASP / Other Security risks	CWE	Burp Suite	NSlookup	Manual Test
Local file path manipulation (reflected DOM-based)	High	R03	Injection	CWE-73 External Control of File Name or Path	V		
Local file path manipulation (stored DOM-based)	High	R03	Injection	CWE-73 External Control of File Name or Path	V		
Link manipulation (reflected)	Information	R03	Injection	CWE-73 External Control of File Name or Path CWE-20 Improper Input Validation	V		
Link manipulation (stored)	Information	R03	Injection	CWE-73 External Control of File Name or Path CWE-20 Improper Input Validation	V		
CSS injection (reflected)	Medium	R03	Injection	CWE-73 External Control of File Name or Path CWE-20 Improper Input Validation	V		
CSS injection (stored)	Medium	R03	Injection	CWE-73 External Control of File Name or Path CWE-20 Improper Input Validation	V		
Form action hijacking (reflected)	Medium	R03	Injection	CWE-73 External Control of File Name or Path CWE-20 Improper Input Validation	V		
Form action hijacking (stored)	Medium	R03	Injection	CWE-73 External Control of File Name or Path CWE-20 Improper Input Validation	V		
OS command injection	High	R03	Injection	CWE-77 Improper Neutralization of Special Elements used in a Command ('Command Injection') CWE-78 Improper Neutralization of Special Elements used in an OS Command ('OS Command Injection') CWE-116 Improper Encoding or Escaping of Output	V		
Client-side XPath injection (DOM-based)	Low	R03	Injection	CWE-79 Improper Neutralization of Input During Web Page Generation ('Cross-site Scripting') CWE-116 Improper Encoding or Escaping of Output CWE-159 Improper Handling of Invalid Use of Special Elements	V		
Client-side XPath injection (reflected DOM-based)	Low	R03	Injection	CWE-79 Improper Neutralization of Input During Web Page Generation ('Cross-site Scripting') CWE-116 Improper Encoding or Escaping of Output CWE-159 Improper Handling of Invalid Use of Special Elements	V		
Client-side XPath injection (stored DOM-based)	Low	R03	Injection	CWE-79 Improper Neutralization of Input During Web Page Generation ('Cross-site Scripting') CWE-116 Improper Encoding or Escaping of Output CWE-159 Improper Handling of Invalid Use of Special Elements	V		
Client-side JSON injection (DOM-based)	Low	R03	Injection	CWE-79 Improper Neutralization of Input During Web Page Generation ('Cross-site Scripting') CWE-116 Improper Encoding or Escaping of Output CWE-159 Improper Handling of Invalid Use of Special Elements	V		
Client-side JSON injection (reflected DOM-based)	Low	R03	Injection	CWE-79 Improper Neutralization of Input During Web Page Generation ('Cross-site Scripting') CWE-116 Improper Encoding or Escaping of Output CWE-159 Improper Handling of Invalid Use of Special Elements	V		
Client-side JSON injection (stored DOM-based)	Low	R03	Injection	CWE-79 Improper Neutralization of Input During Web Page Generation ('Cross-site Scripting') CWE-116 Improper Encoding or Escaping of Output CWE-159 Improper Handling of Invalid Use of Special Elements	V		
Cross-site scripting (stored)	High	R03	Injection	CWE-79 Improper Neutralization of Input During Web Page Generation ('Cross-site Scripting') CWE-80 Improper Neutralization of Script-Related HTML Tags in a Web Page (Basic XSS) CWE-116 Improper Encoding or Escaping of Output CWE-159 Improper Handling of Invalid Use of Special Elements	V		
Cross-site scripting (reflected)	High	R03	Injection	CWE-79 Improper Neutralization of Input During Web Page Generation ('Cross-site Scripting') CWE-80 Improper Neutralization of Script-Related HTML Tags in a Web Page (Basic XSS) CWE-116 Improper Encoding or Escaping of Output CWE-159 Improper Handling of Invalid Use of Special Elements	V		
Cross-site scripting (DOM-based)	High	R03	Injection	CWE-79 Improper Neutralization of Input During Web Page Generation ('Cross-site Scripting') CWE-80 Improper Neutralization of Script-Related HTML Tags in a Web Page (Basic XSS) CWE-116 Improper Encoding or Escaping of Output CWE-159 Improper Handling of Invalid Use of Special Elements	V		
Cross-site scripting (reflected DOM-based)	High	R03	Injection	CWE-79 Improper Neutralization of Input During Web Page Generation ('Cross-site Scripting') CWE-80 Improper Neutralization of Script-Related HTML Tags in a Web Page (Basic XSS) CWE-116 Improper Encoding or Escaping of Output CWE-159 Improper Handling of Invalid Use of Special Elements	V		

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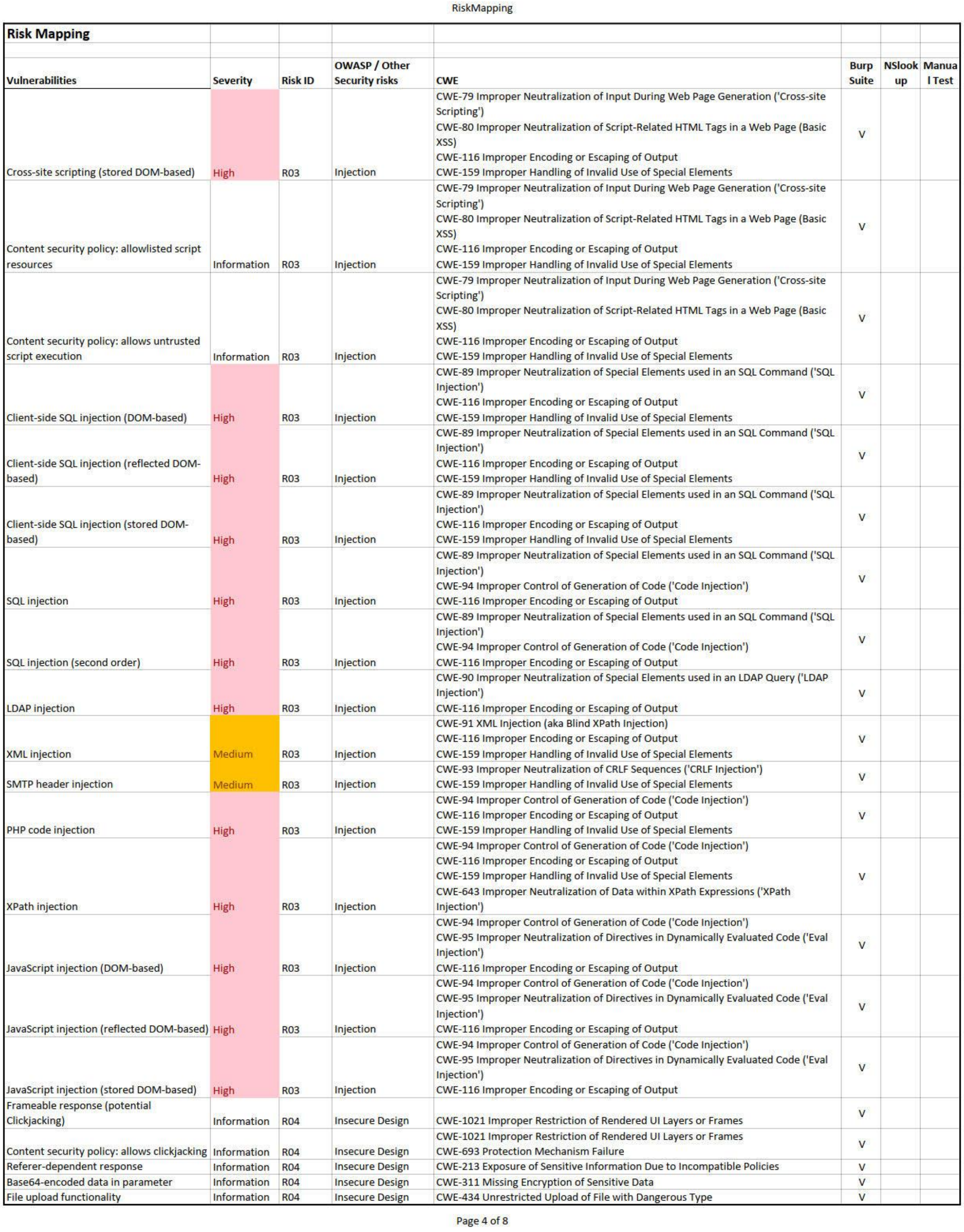

RiskMapping

Risk Mapping

Vulnerabilities	Severity	Risk ID	OWASP / Other Security risks	CWE	Burp Suite	NSlookup	Manual Test
Cross-site scripting (stored DOM-based)	High	R03	Injection	CWE-79 Improper Neutralization of Input During Web Page Generation ('Cross-site Scripting') CWE-80 Improper Neutralization of Script-Related HTML Tags in a Web Page (Basic XSS) CWE-116 Improper Encoding or Escaping of Output CWE-159 Improper Handling of Invalid Use of Special Elements	V		
Content security policy: allowlisted script resources	Information	R03	Injection	CWE-79 Improper Neutralization of Input During Web Page Generation ('Cross-site Scripting') CWE-80 Improper Neutralization of Script-Related HTML Tags in a Web Page (Basic XSS) CWE-116 Improper Encoding or Escaping of Output CWE-159 Improper Handling of Invalid Use of Special Elements	V		
Content security policy: allows untrusted script execution	Information	R03	Injection	CWE-79 Improper Neutralization of Input During Web Page Generation ('Cross-site Scripting') CWE-80 Improper Neutralization of Script-Related HTML Tags in a Web Page (Basic XSS) CWE-116 Improper Encoding or Escaping of Output CWE-159 Improper Handling of Invalid Use of Special Elements	V		
Client-side SQL injection (DOM-based)	High	R03	Injection	CWE-89 Improper Neutralization of Special Elements used in an SQL Command ('SQL Injection') CWE-116 Improper Encoding or Escaping of Output CWE-159 Improper Handling of Invalid Use of Special Elements	V		
Client-side SQL injection (reflected DOM-based)	High	R03	Injection	CWE-89 Improper Neutralization of Special Elements used in an SQL Command ('SQL Injection') CWE-116 Improper Encoding or Escaping of Output CWE-159 Improper Handling of Invalid Use of Special Elements	V		
Client-side SQL injection (stored DOM-based)	High	R03	Injection	CWE-89 Improper Neutralization of Special Elements used in an SQL Command ('SQL Injection') CWE-116 Improper Encoding or Escaping of Output CWE-159 Improper Handling of Invalid Use of Special Elements	V		
SQL injection	High	R03	Injection	CWE-89 Improper Neutralization of Special Elements used in an SQL Command ('SQL Injection') CWE-94 Improper Control of Generation of Code ('Code Injection') CWE-116 Improper Encoding or Escaping of Output	V		
SQL injection (second order)	High	R03	Injection	CWE-89 Improper Neutralization of Special Elements used in an SQL Command ('SQL Injection') CWE-94 Improper Control of Generation of Code ('Code Injection') CWE-116 Improper Encoding or Escaping of Output	V		
LDAP injection	High	R03	Injection	CWE-90 Improper Neutralization of Special Elements used in an LDAP Query ('LDAP Injection') CWE-116 Improper Encoding or Escaping of Output	V		
XML injection	Medium	R03	Injection	CWE-91 XML Injection (aka Blind XPath Injection) CWE-116 Improper Encoding or Escaping of Output CWE-159 Improper Handling of Invalid Use of Special Elements	V		
SMTP header injection	Medium	R03	Injection	CWE-93 Improper Neutralization of CRLF Sequences ('CRLF Injection') CWE-159 Improper Handling of Invalid Use of Special Elements	V		
PHP code injection	High	R03	Injection	CWE-94 Improper Control of Generation of Code ('Code Injection') CWE-116 Improper Encoding or Escaping of Output CWE-159 Improper Handling of Invalid Use of Special Elements	V		
XPath injection	High	R03	Injection	CWE-94 Improper Control of Generation of Code ('Code Injection') CWE-116 Improper Encoding or Escaping of Output CWE-159 Improper Handling of Invalid Use of Special Elements CWE-643 Improper Neutralization of Data within XPath Expressions ('XPath Injection')	V		
JavaScript injection (DOM-based)	High	R03	Injection	CWE-94 Improper Control of Generation of Code ('Code Injection') CWE-95 Improper Neutralization of Directives in Dynamically Evaluated Code ('Eval Injection') CWE-116 Improper Encoding or Escaping of Output	V		
JavaScript injection (reflected DOM-based)	High	R03	Injection	CWE-94 Improper Control of Generation of Code ('Code Injection') CWE-95 Improper Neutralization of Directives in Dynamically Evaluated Code ('Eval Injection') CWE-116 Improper Encoding or Escaping of Output	V		
JavaScript injection (stored DOM-based)	High	R03	Injection	CWE-94 Improper Control of Generation of Code ('Code Injection') CWE-95 Improper Neutralization of Directives in Dynamically Evaluated Code ('Eval Injection') CWE-116 Improper Encoding or Escaping of Output	V		
Frameable response (potential Clickjacking)	Information	R04	Insecure Design	CWE-1021 Improper Restriction of Rendered UI Layers or Frames	V		
Content security policy: allows clickjacking	Information	R04	Insecure Design	CWE-1021 Improper Restriction of Rendered UI Layers or Frames CWE-693 Protection Mechanism Failure	V		
Referer-dependent response	Information	R04	Insecure Design	CWE-213 Exposure of Sensitive Information Due to Incompatible Policies	V		
Base64-encoded data in parameter	Information	R04	Insecure Design	CWE-311 Missing Encryption of Sensitive Data	V		
File upload functionality	Information	R04	Insecure Design	CWE-434 Unrestricted Upload of File with Dangerous Type	V		

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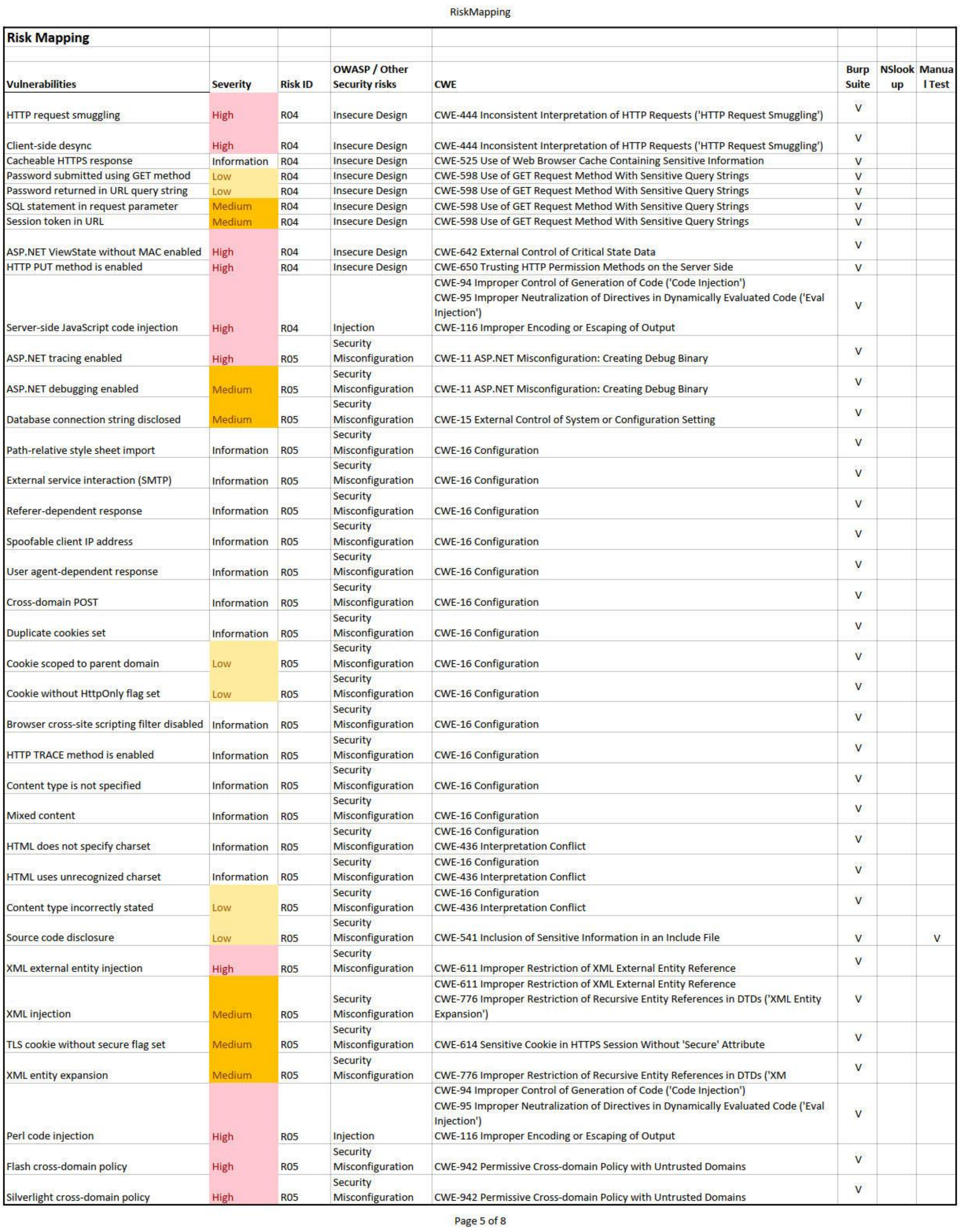

RiskMapping

Risk Mapping

Vulnerabilities	Severity	Risk ID	OWASP / Other Security risks	CWE	Burp Suite	NSlookup	Manual Test
HTTP request smuggling	High	R04	Insecure Design	CWE-444 Inconsistent Interpretation of HTTP Requests ('HTTP Request Smuggling')	V		
Client-side desync	High	R04	Insecure Design	CWE-444 Inconsistent Interpretation of HTTP Requests ('HTTP Request Smuggling')	V		
Cacheable HTTPS response	Information	R04	Insecure Design	CWE-525 Use of Web Browser Cache Containing Sensitive Information	V		
Password submitted using GET method	Low	R04	Insecure Design	CWE-598 Use of GET Request Method With Sensitive Query Strings	V		
Password returned in URL query string	Low	R04	Insecure Design	CWE-598 Use of GET Request Method With Sensitive Query Strings	V		
SQL statement in request parameter	Medium	R04	Insecure Design	CWE-598 Use of GET Request Method With Sensitive Query Strings	V		
Session token in URL	Medium	R04	Insecure Design	CWE-598 Use of GET Request Method With Sensitive Query Strings	V		
ASP.NET ViewState without MAC enabled	High	R04	Insecure Design	CWE-642 External Control of Critical State Data	V		
HTTP PUT method is enabled	High	R04	Insecure Design	CWE-650 Trusting HTTP Permission Methods on the Server Side	V		
Server-side JavaScript code injection	High	R04	Injection	CWE-94 Improper Control of Generation of Code ('Code Injection') CWE-95 Improper Neutralization of Directives in Dynamically Evaluated Code ('Eval Injection') CWE-116 Improper Encoding or Escaping of Output	V		
ASP.NET tracing enabled	High	R05	Security Misconfiguration	CWE-11 ASP.NET Misconfiguration: Creating Debug Binary	V		
ASP.NET debugging enabled	Medium	R05	Security Misconfiguration	CWE-11 ASP.NET Misconfiguration: Creating Debug Binary	V		
Database connection string disclosed	Medium	R05	Security Misconfiguration	CWE-15 External Control of System or Configuration Setting	V		
Path-relative style sheet import	Information	R05	Security Misconfiguration	CWE-16 Configuration	V		
External service interaction (SMTP)	Information	R05	Security Misconfiguration	CWE-16 Configuration	V		
Referer-dependent response	Information	R05	Security Misconfiguration	CWE-16 Configuration	V		
Spoofable client IP address	Information	R05	Security Misconfiguration	CWE-16 Configuration	V		
User agent-dependent response	Information	R05	Security Misconfiguration	CWE-16 Configuration	V		
Cross-domain POST	Information	R05	Security Misconfiguration	CWE-16 Configuration	V		
Duplicate cookies set	Information	R05	Security Misconfiguration	CWE-16 Configuration	V		
Cookie scoped to parent domain	Low	R05	Security Misconfiguration	CWE-16 Configuration	V		
Cookie without HttpOnly flag set	Low	R05	Security Misconfiguration	CWE-16 Configuration	V		
Browser cross-site scripting filter disabled	Information	R05	Security Misconfiguration	CWE-16 Configuration	V		
HTTP TRACE method is enabled	Information	R05	Security Misconfiguration	CWE-16 Configuration	V		
Content type is not specified	Information	R05	Security Misconfiguration	CWE-16 Configuration	V		
Mixed content	Information	R05	Security Misconfiguration	CWE-16 Configuration	V		
HTML does not specify charset	Information	R05	Security Misconfiguration	CWE-16 Configuration CWE-436 Interpretation Conflict	V		
HTML uses unrecognized charset	Information	R05	Security Misconfiguration	CWE-16 Configuration CWE-436 Interpretation Conflict	V		
Content type incorrectly stated	Low	R05	Security Misconfiguration	CWE-16 Configuration CWE-436 Interpretation Conflict	V		
Source code disclosure	Low	R05	Security Misconfiguration	CWE-541 Inclusion of Sensitive Information in an Include File	V		V
XML external entity injection	High	R05	Security Misconfiguration	CWE-611 Improper Restriction of XML External Entity Reference	V		
XML injection	Medium	R05	Security Misconfiguration	CWE-611 Improper Restriction of XML External Entity Reference CWE-776 Improper Restriction of Recursive Entity References in DTDs ('XML Entity Expansion')	V		
TLS cookie without secure flag set	Medium	R05	Security Misconfiguration	CWE-614 Sensitive Cookie in HTTPS Session Without 'Secure' Attribute	V		
XML entity expansion	Medium	R05	Security Misconfiguration	CWE-776 Improper Restriction of Recursive Entity References in DTDs ('XM	V		
Perl code injection	High	R05	Injection	CWE-94 Improper Control of Generation of Code ('Code Injection') CWE-95 Improper Neutralization of Directives in Dynamically Evaluated Code ('Eval Injection') CWE-116 Improper Encoding or Escaping of Output	V		
Flash cross-domain policy	High	R05	Security Misconfiguration	CWE-942 Permissive Cross-domain Policy with Untrusted Domains	V		
Silverlight cross-domain policy	High	R05	Security Misconfiguration	CWE-942 Permissive Cross-domain Policy with Untrusted Domains	V		

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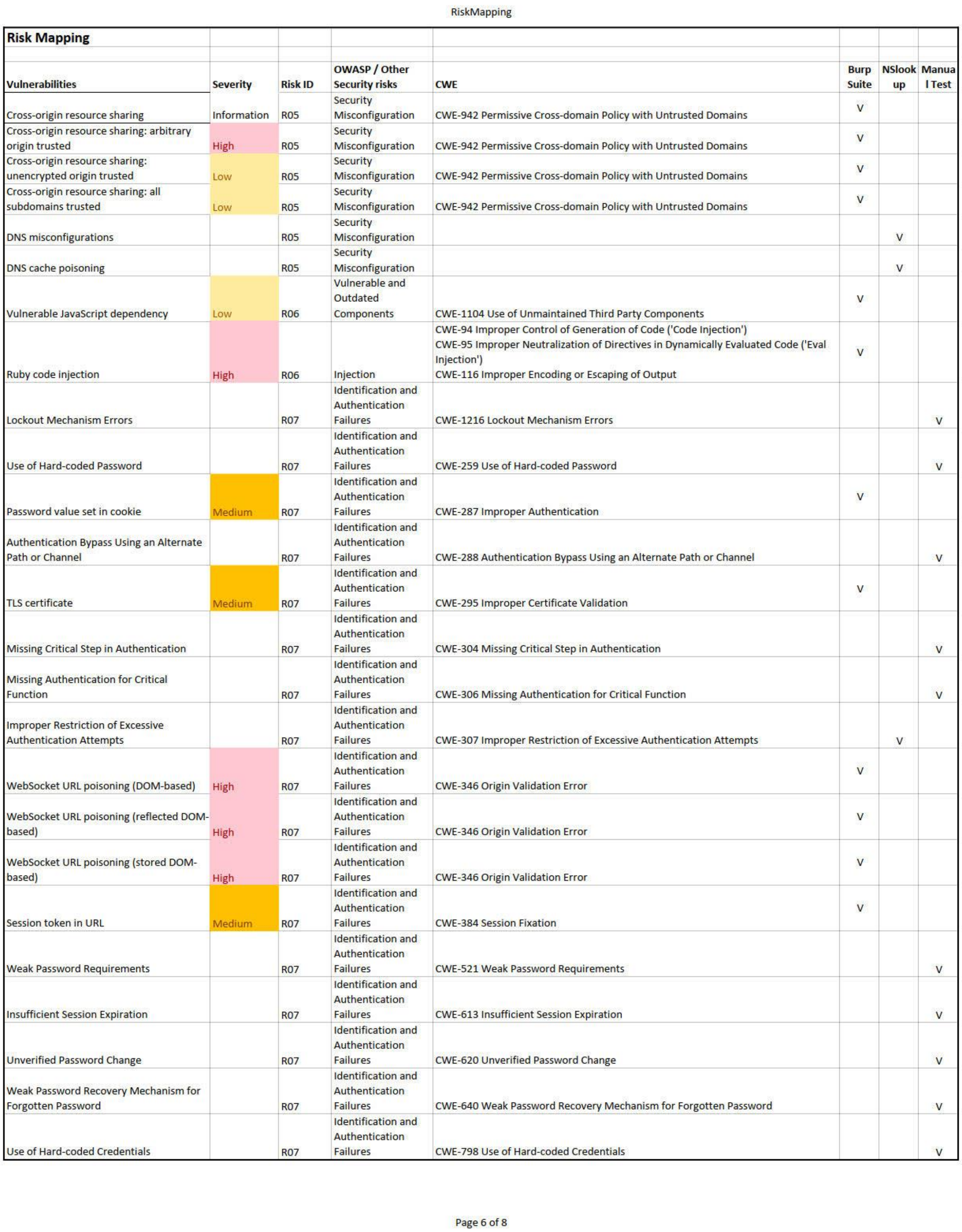
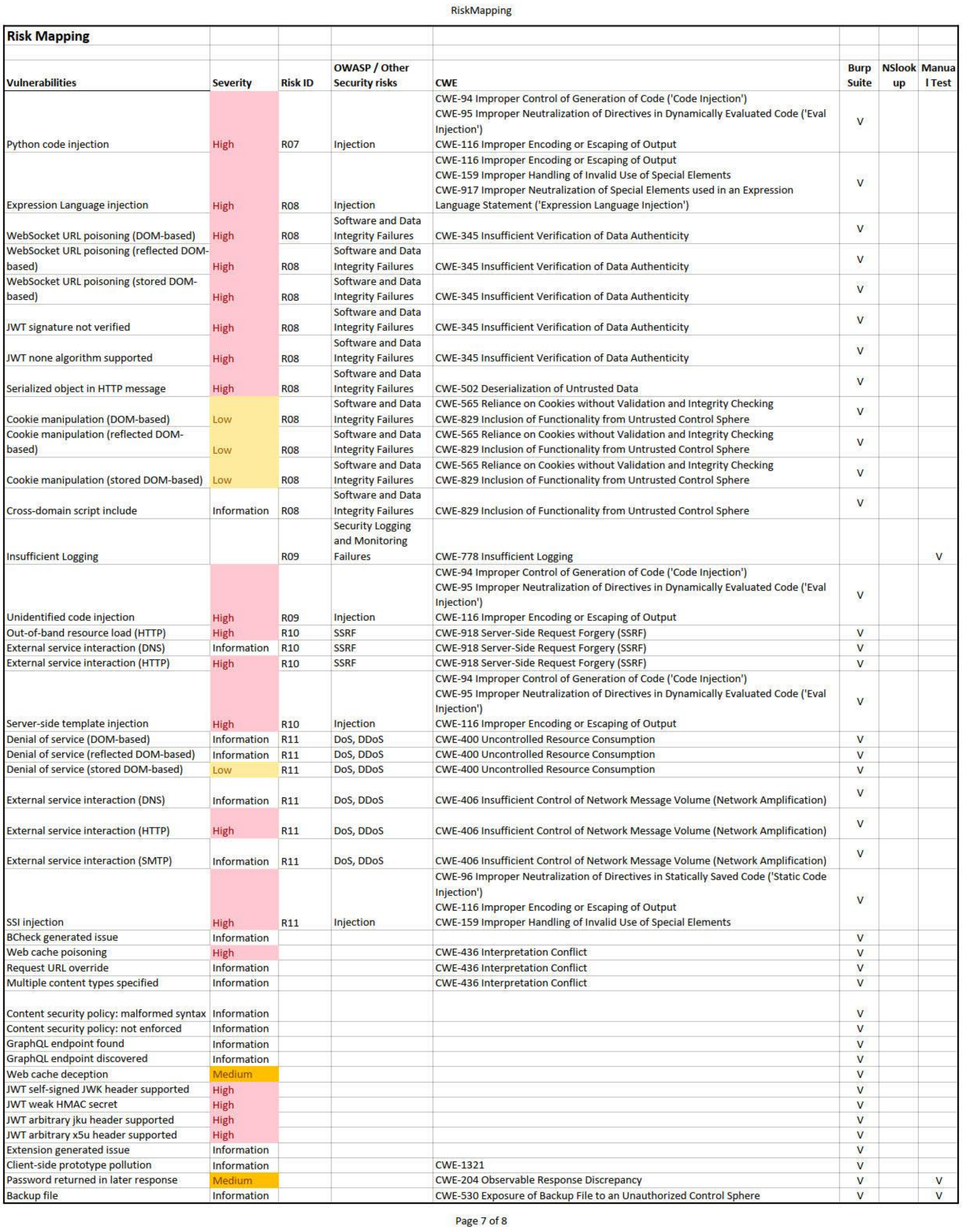


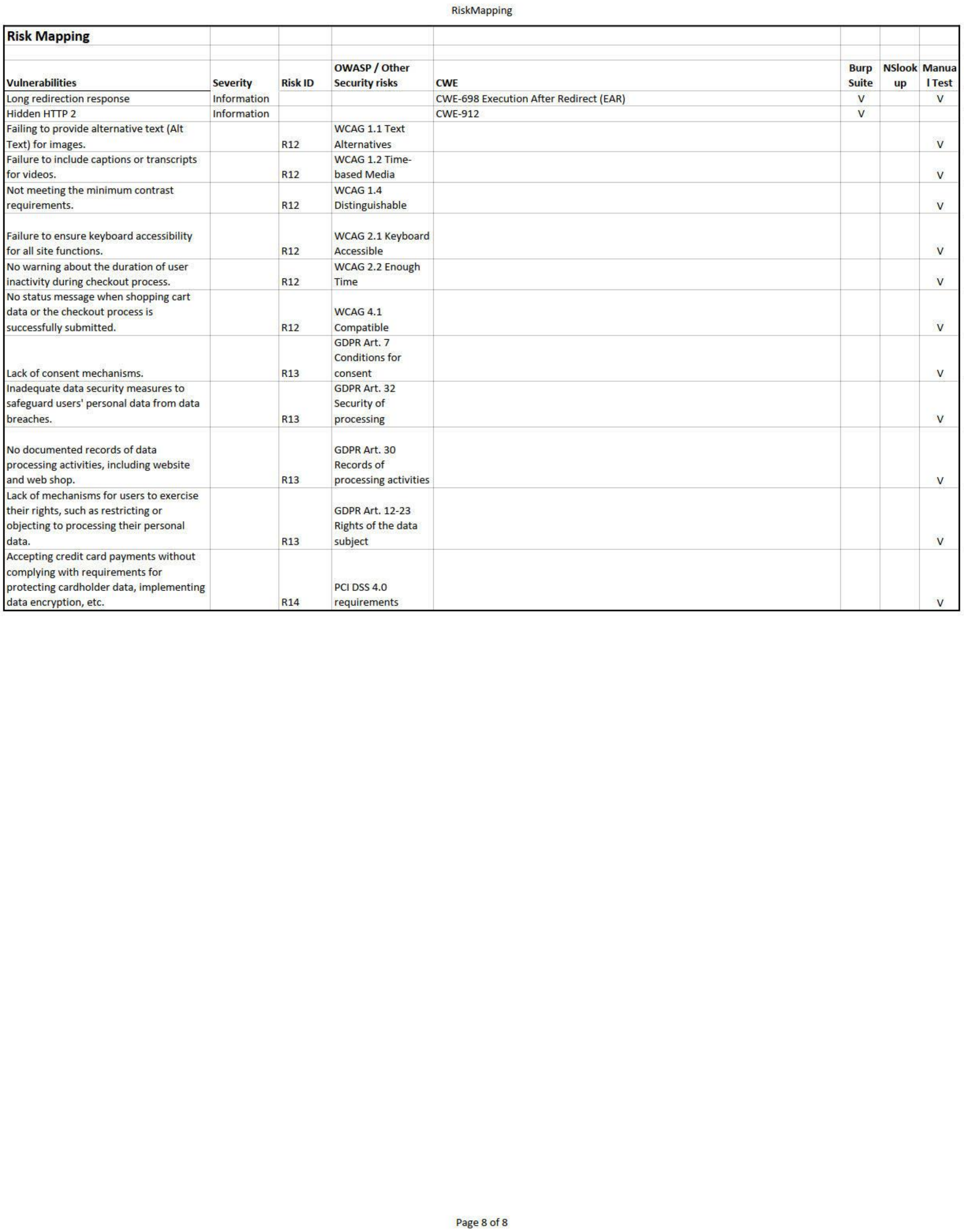
Risk Mapping

Vulnerabilities	Severity	Risk ID	OWASP / Other Security risks	CWE	Burp Suite	NSlookup	Manual Test
Cross-origin resource sharing	Information	R05	Security Misconfiguration	CWE-942 Permissive Cross-domain Policy with Untrusted Domains	V		
Cross-origin resource sharing: arbitrary origin trusted	High	R05	Security Misconfiguration	CWE-942 Permissive Cross-domain Policy with Untrusted Domains	V		
Cross-origin resource sharing: unencrypted origin trusted	Low	R05	Security Misconfiguration	CWE-942 Permissive Cross-domain Policy with Untrusted Domains	V		
Cross-origin resource sharing: all subdomains trusted	Low	R05	Security Misconfiguration	CWE-942 Permissive Cross-domain Policy with Untrusted Domains	V		
DNS misconfigurations		R05	Security Misconfiguration			V	
DNS cache poisoning		R05	Security Misconfiguration			V	
Vulnerable JavaScript dependency	Low	R06	Vulnerable and Outdated Components	CWE-1104 Use of Unmaintained Third Party Components	V		
Ruby code injection	High	R06	Injection	CWE-94 Improper Control of Generation of Code ('Code Injection') CWE-95 Improper Neutralization of Directives in Dynamically Evaluated Code ('Eval Injection') CWE-116 Improper Encoding or Escaping of Output	V		
Lockout Mechanism Errors		R07	Identification and Authentication Failures	CWE-1216 Lockout Mechanism Errors			V
Use of Hard-coded Password		R07	Identification and Authentication Failures	CWE-259 Use of Hard-coded Password			V
Password value set in cookie	Medium	R07	Identification and Authentication Failures	CWE-287 Improper Authentication	V		
Authentication Bypass Using an Alternate Path or Channel		R07	Identification and Authentication Failures	CWE-288 Authentication Bypass Using an Alternate Path or Channel			V
TLS certificate	Medium	R07	Identification and Authentication Failures	CWE-295 Improper Certificate Validation	V		
Missing Critical Step in Authentication		R07	Identification and Authentication Failures	CWE-304 Missing Critical Step in Authentication			V
Missing Authentication for Critical Function		R07	Identification and Authentication Failures	CWE-306 Missing Authentication for Critical Function			V
Improper Restriction of Excessive Authentication Attempts		R07	Identification and Authentication Failures	CWE-307 Improper Restriction of Excessive Authentication Attempts		V	
WebSocket URL poisoning (DOM-based)	High	R07	Identification and Authentication Failures	CWE-346 Origin Validation Error	V		
WebSocket URL poisoning (reflected DOM-based)	High	R07	Identification and Authentication Failures	CWE-346 Origin Validation Error	V		
WebSocket URL poisoning (stored DOM-based)	High	R07	Identification and Authentication Failures	CWE-346 Origin Validation Error	V		
Session token in URL	Medium	R07	Identification and Authentication Failures	CWE-384 Session Fixation	V		
Weak Password Requirements		R07	Identification and Authentication Failures	CWE-521 Weak Password Requirements			V
Insufficient Session Expiration		R07	Identification and Authentication Failures	CWE-613 Insufficient Session Expiration			V
Unverified Password Change		R07	Identification and Authentication Failures	CWE-620 Unverified Password Change			V
Weak Password Recovery Mechanism for Forgotten Password		R07	Identification and Authentication Failures	CWE-640 Weak Password Recovery Mechanism for Forgotten Password			V
Use of Hard-coded Credentials		R07	Identification and Authentication Failures	CWE-798 Use of Hard-coded Credentials			V



Risk Mapping

Vulnerabilities	Severity	Risk ID	OWASP / Other Security risks	CWE	Burp Suite	NSlookup	Manual Test
Python code injection	High	R07	Injection	CWE-94 Improper Control of Generation of Code ('Code Injection') CWE-95 Improper Neutralization of Directives in Dynamically Evaluated Code ('Eval Injection') CWE-116 Improper Encoding or Escaping of Output	V		
Expression Language injection	High	R08	Injection	CWE-116 Improper Encoding or Escaping of Output CWE-159 Improper Handling of Invalid Use of Special Elements CWE-917 Improper Neutralization of Special Elements used in an Expression Language Statement ('Expression Language Injection')	V		
WebSocket URL poisoning (DOM-based)	High	R08	Software and Data Integrity Failures	CWE-345 Insufficient Verification of Data Authenticity	V		
WebSocket URL poisoning (reflected DOM-based)	High	R08	Software and Data Integrity Failures	CWE-345 Insufficient Verification of Data Authenticity	V		
WebSocket URL poisoning (stored DOM-based)	High	R08	Software and Data Integrity Failures	CWE-345 Insufficient Verification of Data Authenticity	V		
JWT signature not verified	High	R08	Software and Data Integrity Failures	CWE-345 Insufficient Verification of Data Authenticity	V		
JWT none algorithm supported	High	R08	Software and Data Integrity Failures	CWE-345 Insufficient Verification of Data Authenticity	V		
Serialized object in HTTP message	High	R08	Software and Data Integrity Failures	CWE-502 Deserialization of Untrusted Data	V		
Cookie manipulation (DOM-based)	Low	R08	Software and Data Integrity Failures	CWE-565 Reliance on Cookies without Validation and Integrity Checking CWE-829 Inclusion of Functionality from Untrusted Control Sphere	V		
Cookie manipulation (reflected DOM-based)	Low	R08	Software and Data Integrity Failures	CWE-565 Reliance on Cookies without Validation and Integrity Checking CWE-829 Inclusion of Functionality from Untrusted Control Sphere	V		
Cookie manipulation (stored DOM-based)	Low	R08	Software and Data Integrity Failures	CWE-565 Reliance on Cookies without Validation and Integrity Checking CWE-829 Inclusion of Functionality from Untrusted Control Sphere	V		
Cross-domain script include	Information	R08	Software and Data Integrity Failures	CWE-829 Inclusion of Functionality from Untrusted Control Sphere	V		
Insufficient Logging		R09	Security Logging and Monitoring Failures	CWE-778 Insufficient Logging			V
Unidentified code injection	High	R09	Injection	CWE-94 Improper Control of Generation of Code ('Code Injection') CWE-95 Improper Neutralization of Directives in Dynamically Evaluated Code ('Eval Injection') CWE-116 Improper Encoding or Escaping of Output	V		
Out-of-band resource load (HTTP)	High	R10	SSRF	CWE-918 Server-Side Request Forgery (SSRF)	V		
External service interaction (DNS)	Information	R10	SSRF	CWE-918 Server-Side Request Forgery (SSRF)	V		
External service interaction (HTTP)	High	R10	SSRF	CWE-918 Server-Side Request Forgery (SSRF)	V		
Server-side template injection	High	R10	Injection	CWE-94 Improper Control of Generation of Code ('Code Injection') CWE-95 Improper Neutralization of Directives in Dynamically Evaluated Code ('Eval Injection') CWE-116 Improper Encoding or Escaping of Output	V		
Denial of service (DOM-based)	Information	R11	DoS, DDoS	CWE-400 Uncontrolled Resource Consumption	V		
Denial of service (reflected DOM-based)	Information	R11	DoS, DDoS	CWE-400 Uncontrolled Resource Consumption	V		
Denial of service (stored DOM-based)	Low	R11	DoS, DDoS	CWE-400 Uncontrolled Resource Consumption	V		
External service interaction (DNS)	Information	R11	DoS, DDoS	CWE-406 Insufficient Control of Network Message Volume (Network Amplification)	V		
External service interaction (HTTP)	High	R11	DoS, DDoS	CWE-406 Insufficient Control of Network Message Volume (Network Amplification)	V		
External service interaction (SMTP)	Information	R11	DoS, DDoS	CWE-406 Insufficient Control of Network Message Volume (Network Amplification)	V		
SSI injection	High	R11	Injection	CWE-96 Improper Neutralization of Directives in Statically Saved Code ('Static Code Injection') CWE-116 Improper Encoding or Escaping of Output CWE-159 Improper Handling of Invalid Use of Special Elements	V		
BCheck generated issue	Information				V		
Web cache poisoning	High			CWE-436 Interpretation Conflict	V		
Request URL override	Information			CWE-436 Interpretation Conflict	V		
Multiple content types specified	Information			CWE-436 Interpretation Conflict	V		
Content security policy: malformed syntax	Information				V		
Content security policy: not enforced	Information				V		
GraphQL endpoint found	Information				V		
GraphQL endpoint discovered	Information				V		
Web cache deception	Medium				V		
JWT self-signed JWK header supported	High				V		
JWT weak HMAC secret	High				V		
JWT arbitrary jku header supported	High				V		
JWT arbitrary x5u header supported	High				V		
Extension generated issue	Information				V		
Client-side prototype pollution	Information			CWE-1321	V		
Password returned in later response	Medium			CWE-204 Observable Response Discrepancy	V		V
Backup file	Information			CWE-530 Exposure of Backup File to an Unauthorized Control Sphere	V		V



RiskMapping

Risk Mapping

Vulnerabilities	Severity	Risk ID	OWASP / Other Security risks	CWE	Burp Suite	NSlookup	Manual Test
Long redirection response	Information			CWE-698 Execution After Redirect (EAR)	V		V
Hidden HTTP 2	Information			CWE-912	V		
Failing to provide alternative text (Alt Text) for images.		R12	WCAG 1.1 Text Alternatives				V
Failure to include captions or transcripts for videos.		R12	WCAG 1.2 Time-based Media				V
Not meeting the minimum contrast requirements.		R12	WCAG 1.4 Distinguishable				V
Failure to ensure keyboard accessibility for all site functions.		R12	WCAG 2.1 Keyboard Accessible				V
No warning about the duration of user inactivity during checkout process.		R12	WCAG 2.2 Enough Time				V
No status message when shopping cart data or the checkout process is successfully submitted.		R12	WCAG 4.1 Compatible				V
Lack of consent mechanisms.		R13	GDPR Art. 7 Conditions for consent				V
Inadequate data security measures to safeguard users' personal data from data breaches.		R13	GDPR Art. 32 Security of processing				V
No documented records of data processing activities, including website and web shop.		R13	GDPR Art. 30 Records of processing activities				V
Lack of mechanisms for users to exercise their rights, such as restricting or objecting to processing their personal data.		R13	GDPR Art. 12-23 Rights of the data subject				V
Accepting credit card payments without complying with requirements for protecting cardholder data, implementing data encryption, etc.		R14	PCI DSS 4.0 requirements				V

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