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Sri Lanka Institute of Information Technology

Bug Bounty Report - 04

Module: IE2062

Web Security

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B.Sc. (Hons) in Information Technology

Specialized in Cyber Security

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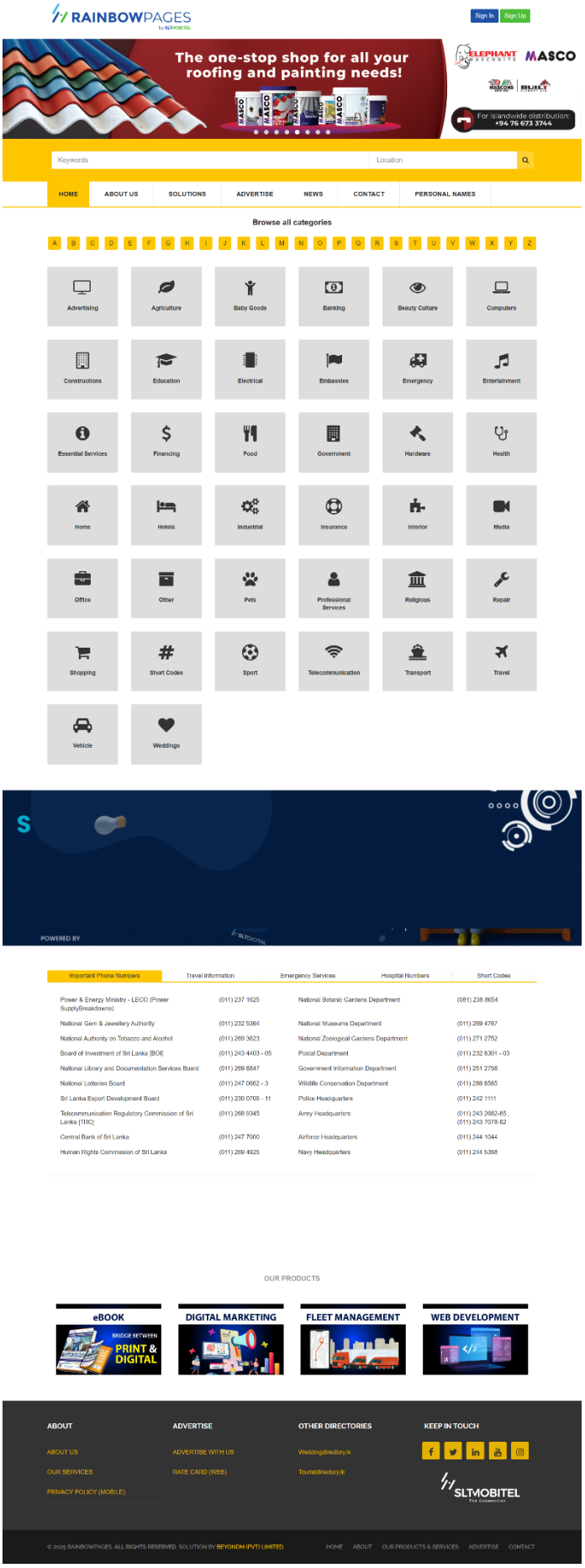
Introduction

This report outlines a vulnerability discovered on a Sri Lankan e-commerce website, https://meatmart.lk. During security testing, a Clickjacking vulnerability was identified on multiple pages of the site. The issue was confirmed through both manual and automated methods, and this report provides technical details, reproduction steps, and mitigation recommendations.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Vulnerability Title

Title – Open Redirect Vulnerability

Risk Level- High

Domain - https://rainbowpages.lk/

Description

An Open Redirect vulnerability occurs when a web application accepts unvalidated input that specifies a URL to which users are redirected. In this case, the vulnerable endpoint /out.php on the domain rainbowpages.lk accepts a user-controlled parameter url and redirects users to that value without proper validation or sanitization.

This vulnerability is dangerous because it allows attackers to craft links that appear to originate from the trusted rainbowpages.lk domain but actually lead to external, potentially malicious websites. This can be exploited for phishing attacks, malware delivery, and social engineering.

This issue falls under the OWASP Top 10 – A01:2021 Broken Access Control and is also related to A10:2021 – Server-Side Request Forgery (SSRF) in broader contexts, but most directly aligns with unvalidated redirects and forwards, which are part of OWASP's broader concern regarding improper input validation and lack of output encoding.

The vulnerability arises due to:

- Lack of input validation: The application does not verify that the url parameter points to a trusted or internal domain.
- Direct use of user input in redirects: The value of url is used directly in a Location header, enabling arbitrary redirection.

If exploited, this can lead users to believe they are visiting a trusted site, thereby increasing the success rate of phishing campaigns or credential harvesting attempts.

Affected Component

URL redirection handlers

Login/logout redirection pages

Endpoint: /out.php

Query Parameter: url

Component Type: Redirection handler

Impact Assessment

Security Risks: Attackers can craft malicious links to redirect users to phishing sites or sites that deliver malware, thereby compromising user data (like credentials, personal info, etc.).

Trust Issues: Users might be tricked into trusting a website that they thought was legitimate.

Reputation Damage: If exploited in a public-facing web application, the company's reputation could suffer due to user trust issues and potential breaches.

Financial Impact: Successful exploitation may lead to phishing attacks, account takeovers, or other financial fraud scenarios.

Steps to Reproduce

Step 01: Set up Burp Suite:

- Open **Burp Suite** and ensure the **Proxy** is enabled.
- Configure your browser to use **Burp Suite** as the proxy. This is typically done by setting your browser's proxy settings to **127.0.0.1** and port **8080**.

Step 02: Intercept the Request:

- Visit the vulnerable web application in your browser (the one that might be susceptible to open redirects).
- Perform the action that triggers the redirect functionality.
- Burp Suite will intercept this HTTP request if the **Intercept** function is turned on under the **Proxy** tab.

Step 03: Capture the Redirect URL in Burp Suite:

- Once you trigger a redirect, Burp Suite will show the HTTP request and response in the **Intercept** tab.
- Look for a parameter that might control the redirect. Common parameters include redirect_url, next, return_to, etc.

Step 04: Modify the URL for Malicious Redirect:

- Right-click on the intercepted HTTP request and click **"Send to Repeater"**. This will allow you to modify the request and send it multiple times.
- In the **Repeater** tab, locate the URL parameter (url=) and modify its value to a malicious site.

Step 05: Send the Request:

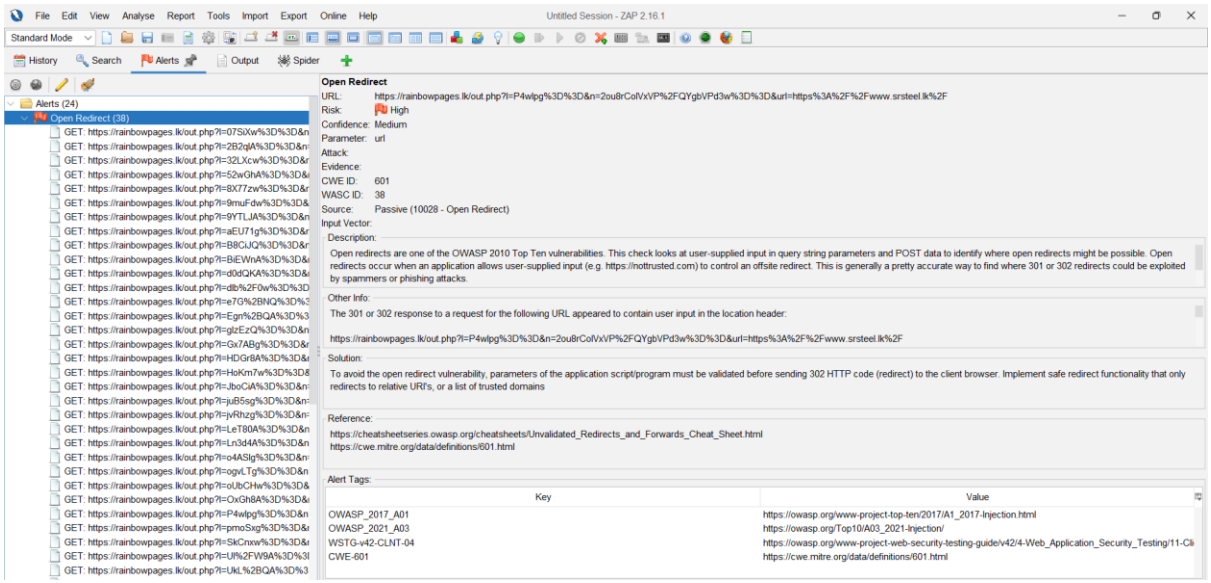
- In the **Repeater** tab, click **"Send"** to send the modified request to the server.
- If the vulnerability exists, the server should redirect you to http://malicious-website.com instead of the original destination.

Step 06: Verify the Redirect:

- Once the request is sent, verify that the browser is redirected to the malicious website.
- If the redirection occurs, the application is vulnerable to **Open Redirect**.

Proof of Concept (Screenshots)

OWSAP ZAP Scan



This screenshot is taken from **OWASP ZAP** and shows a high-risk **Open Redirect vulnerability** detected on the https://rainbowpages.lk/out.php endpoint. The scanner confirms that the url parameter can be manipulated to redirect users to external websites (e.g., https://www.srsteel.lk). The alert description links the issue to the **OWASP Top 10** and includes the evidence of the vulnerable URL, highlighting that no validation is being performed on the redirect target.

Vulnerable URL

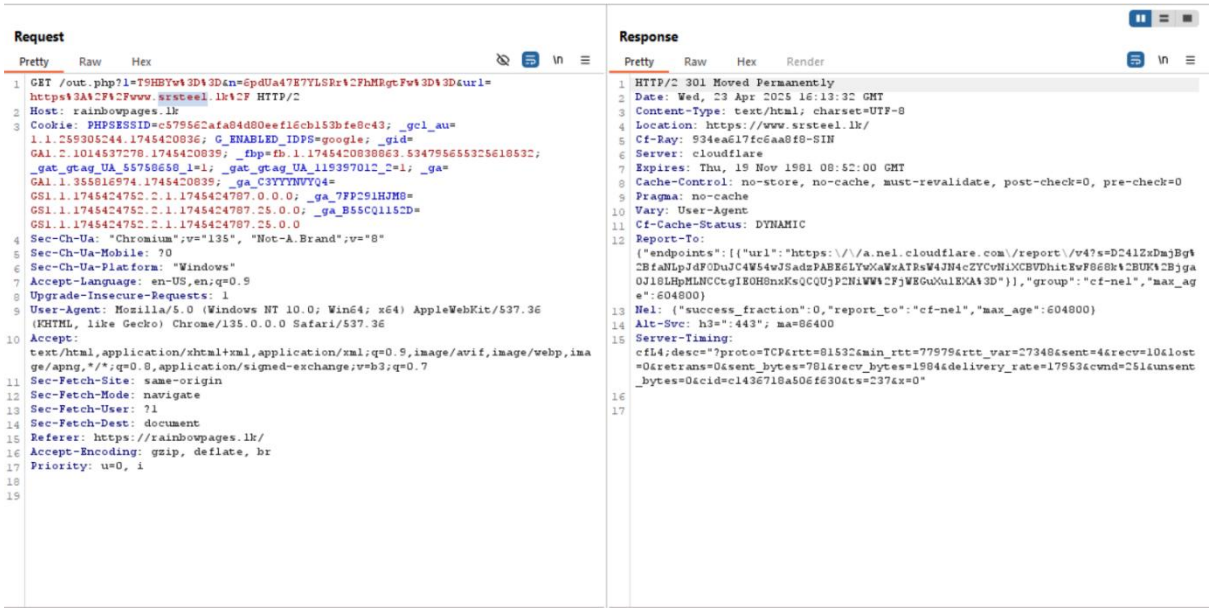
/out.php?l=7N10xA%3D%3D&n=n1CGss7sSbAR%2FpmPLYUJJQ%3D%3D&url=https%3A%2F%2Fwww.srsteel.lk%2F HTTP/2

Decoded - https://rainbowpages.lk/out.php?url=https://www.srsteel.lk

Burp Suite Interception Request and response

The following screenshot from Burp Suite demonstrates the intercepted GET request and corresponding HTTP response for the vulnerable endpoint.

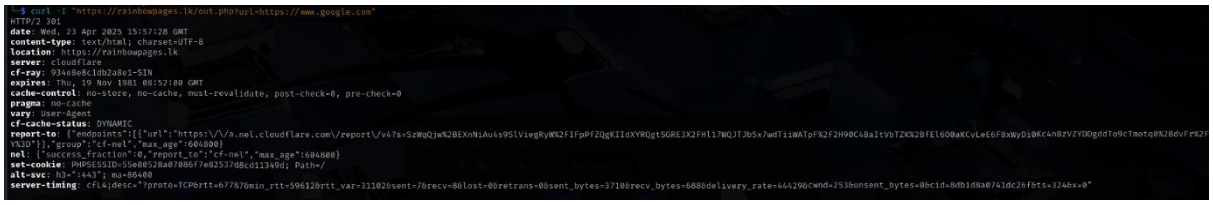
This Burp Suite capture shows the HTTP **request and response** for the vulnerable /out.php endpoint on rainbowpages.lk. The request includes an url parameter pointing to https://www.srsteel.lk, and the server responds with a **301 Moved Permanently** status and a Location header set to the attacker-controlled URL. This confirms that the application blindly redirects users to any external domain without validation—demonstrating a clear case of an **Open Redirect vulnerability**.



Poc (GET request)

curl -I "https://rainbowpages.lk/out.php?url=https://www.google.com"

Response



What This Confirms

- The 302 status code means **Found (Temporary Redirect)**.
- The Location header contains the URL you passed in the url parameter.
- No validation is being done to check whether https://www.google.com/ is a safe or internal URL.

Proposed Mitigation or Fix

URL Validation: Ensure that any URL used for redirection is validated to only redirect users to trusted domains. Implement a whitelist of allowed domains or specific URLs for redirection.

Use Relative Paths for Redirection: Instead of using full URLs for redirection, use relative paths (e.g., /dashboard) which are inherently safer.

Use HTTP Referer Header Checks: For sensitive operations, verify that the redirect originates from a valid source page by checking the Referer header.

Encode and Escape User Inputs: Make sure user inputs are sanitized by encoding or escaping before using them in redirect URLs.

Tokenization: Generate a unique token for each redirect that can be matched with a list of allowed redirections on the server side.

Notify Users: When performing redirection, provide clear notifications to the user about where they are being redirected, especially if the redirect destination is external.

Conclusion

The open redirect vulnerability identified in rainbowpages.lk poses a significant security risk by allowing attackers to redirect users to untrusted, malicious websites. This issue can be exploited for phishing, malware distribution, and other social engineering attacks. Addressing this vulnerability through proper input validation and implementing a whitelist of safe redirect targets is essential to protect users and maintain the integrity and trustworthiness of the platform.