



# Jay's Bank Ethical Hacking 3<sup>rd</sup> Lab Work

Business Confidential

*Date: June 1<sup>st</sup>, 2024*  
*Project: DC-001*

*Version 1.0*

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## Confidentiality Statement

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SafeGuard Solutions may share this document with auditors under non-disclosure agreements to demonstrate penetration test requirement compliance.

## Disclaimer

A penetration test is considered a snapshot in time. The findings and recommendations reflect the information gathered during the assessment and not any changes or modifications made outside of that period.

Time-limited engagements do not allow for a full evaluation of all security controls. SafeGuard Solutions prioritized the assessment to identify the weakest security controls an attacker would exploit. SafeGuard Solutions recommends conducting similar assessments on an annual basis by internal or third-party assessors to ensure the continued success of the controls.

## Contact Information

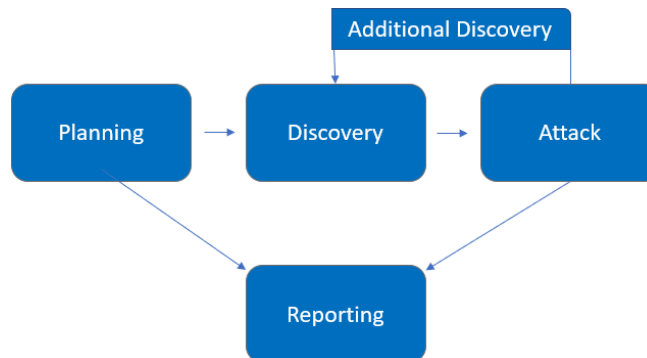
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## Assessment Overview

From May 28<sup>th</sup>, 2024 to June 1<sup>st</sup>, 2024, SafeGuard Solutions engaged Jay's Bank to evaluate the security posture of its application infrastructure compared to current industry best practices that included an internal network penetration test. All testing performed is based on the NIST SP 800-115 *Technical Guide to Information Security Testing and Assessment*, OWASP Testing Guide (v4), and customized testing frameworks.

Phases of penetration testing activities include the following:

- Planning – Customer goals are gathered and rules of engagement obtained.
- Discovery – Perform scanning and enumeration to identify potential vulnerabilities, weak areas, and exploits.
- Attack – Confirm potential vulnerabilities through exploitation and perform additional discovery upon new access.
- Reporting – Document all found vulnerabilities and exploits, failed attempts, and company strengths and weaknesses.



## Assessment Components

### Internal Penetration Test

An internal penetration test emulates the role of an attacker from inside the network. An engineer will scan the network to identify potential host vulnerabilities and perform common and advanced internal network attacks. The engineer will seek to gain access to hosts through lateral movement, compromise domain user and admin accounts, and exfiltrate sensitive data.

## Finding Severity Ratings

The following table defines levels of severity and corresponding CVSS score range that are used throughout the document to assess vulnerability and risk impact.

Severity	CVSS V3 Score Range	Definition
Critical	9.0-10.0	Exploitation is straightforward and usually results in system-level compromise. It is advised to form a plan of action and patch immediately.
High	7.0-8.9	Exploitation is more difficult but could cause elevated privileges and potentially a loss of data or downtime. It is advised to form a plan of action and patch as soon as possible.
Moderate	4.0-6.9	Vulnerabilities exist but are not exploitable or require extra steps such as social engineering. It is advised to form a plan of action and patch after high-priority issues have been resolved.
Low	0.1-3.9	Vulnerabilities are non-exploitable but would reduce an organization's attack surface. It is advised to form a plan of action and patch during the next maintenance window.
Informational	N/A	No vulnerability exists. Additional information is provided regarding items noticed during testing, strong controls, and additional documentation.

## Risk Factors

Risk is measured by two factors: Likelihood and Impact:

### Likelihood

Likelihood measures the potential of a vulnerability being exploited. Ratings are given based on the difficulty of the attack, the available tools, attacker skill level, and client environment.

### Impact

Impact measures the potential vulnerability's effect on operations, including confidentiality, integrity, and availability of client systems and/or data, reputational harm, and financial loss.

# Scope

Assessment	Details
Internal Penetration Test (Bank Mockup Application)	<ul style="list-style-type: none"><li>• 167.172.75.216</li></ul>

## Scope Exclusions

Per client request, SafeGuard Solutions did not perform any of the following attacks during testing:

- RCE and Privilege Escalation.
- Phishing/Social Engineering.
- Attacks that may damage data or application infrastructure.

All other attacks not specified above were permitted by SafeGuard Solutions.

## Client Allowances

Jay's Bank provided SafeGuard Solutions the following allowances:

- Internal access to the network via dropbox and port allowances.
- Application vulnerabilities such as SQL Injections, XSS, and authentication issues.

## **Executive Summary**

SafeGuard Solutions evaluated Jay's Bank application internal security posture through penetration testing from May 28<sup>th</sup>, 2024 to June 1<sup>st</sup>, 2024. The following sections provide a high-level overview of vulnerabilities discovered, successful and unsuccessful attempts, and strengths and weaknesses.

### **Scoping and Time Limitations**

Scoping during the engagement did not permit denial of service or social engineering across all testing components.

Time limitations were in place for testing. Internal network penetration testing was permitted for five (5) business days.

### **Testing Summary**

The application assessment evaluated Jay's Bank internal application security posture. From an internal perspective, the SafeGuard Solutions team performed vulnerability scanning against the IP address provided by Jay's Bank to evaluate the overall patching health of the network. Beyond vulnerability scanning, the SafeGuard Solutions' team evaluated other potential risks.

SafeGuard Solutions team discovered that there are vulnerabilities inside the IP address 167.172.75.216. These vulnerabilities are then exploited using methods such as SQL injection, manual scripting, man in the middle intercepts.

Ultimately, these vulnerabilities have not been exploited and examined properly since the team did not succeed in proving the authenticity of risks that could be caused by the vulnerabilities found in scans



## Tester Notes and Recommendations

Testing results of the Jay's Bank network are indicative of an organization undergoing its first penetration test, which is the case here. Many of the findings discovered are caused by missing security headers. These security headers allow hackers and other unethical parties to exploit cross-site scripting (XSS).

During testing in the IP address 10.15.42.7, there was also possible exploitation method in the SSH Server found in CVE-2023-48795. This exposes the website to the vulnerability of Terrapin attacks.

## Vulnerability Summary & Report Card

The following tables illustrate the vulnerabilities found by impact and recommended remediations:

### Internal Penetration Test Findings

1	1	0	0	0
Critical	High	Moderate	Low	Informational

Finding	Severity	Recommendation
<u>Internal Penetration Test</u>		
Finding EPT-001: Form Submission Intercept	Critical	Sanitize the user input before storing or displaying it.
Finding IPT-001: Cross-site Scripting	High	Implement appropriate technical and organisational measures

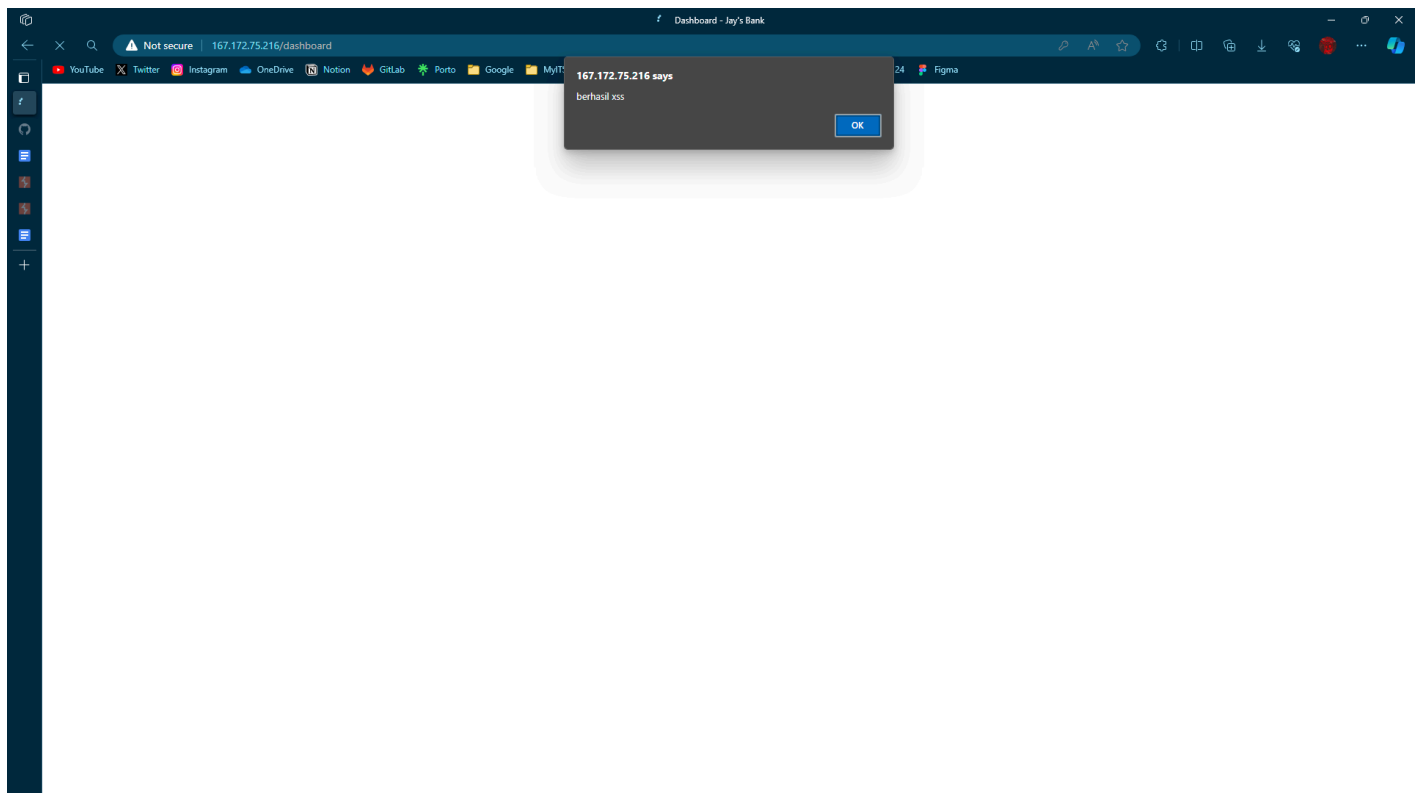
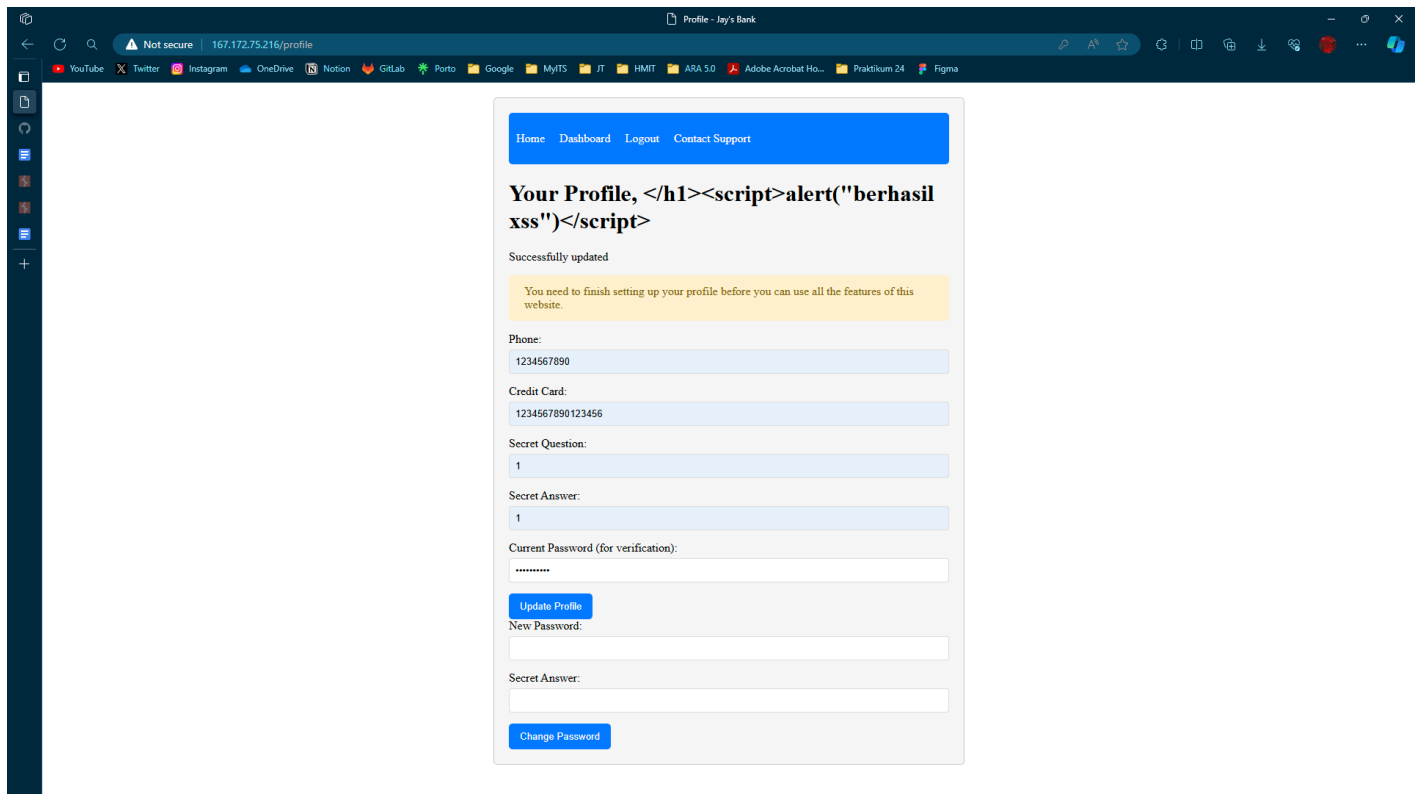
# Technical Findings

## Internal Penetration Test Findings

Finding IPT-001: Cross-site Scripting (Critical)

Description:	By using an input form, we can input a script to the server and successfully run it.
Risk:	Likelihood: High – This attack is effective in web application environments.  Impact: Unknown
System:	Website Application
Tools Used:	XSS
References:	

## Evidence



## External Penetration Test Findings

## Finding EPT-001: Form Submission Intercept (High)

Description:	By using intercept feature on burp suite, we have found that form inputs can be altered before it is sent to server.
Risk:	<p>Likelihood: High – This attack is effective in web application environments.</p> <p>Impact: Changed user password</p>
System:	Website Application
Tools Used:	Burp Suite
References:	

## Evidence

[illegible]

