

Internship Final Report

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University: Amrita Vishwa Vidyapeetham

Major: Computer Science

Internship Duration: August 1st, 2023 - August 31st, 2023

Company: ShadowFox

Domain: Cyber Security

Mentor: Mr. Surendharan

Assistant Mentor: Mr. Pranshu

Coordinator: Mr. Aakash

Objectives

My primary objectives for this internship were to:

1. Develop a deep understanding of cybersecurity principles and practices.
2. Gain hands-on experience in identifying, analyzing, and mitigating security threats.
3. Enhance my skills in using cybersecurity tools and techniques in real-world scenarios.

Tasks and Responsibilities

During my internship, I was involved in the following key tasks:

- **Vulnerability Assessment:** Conducted a thorough scan of a target website to identify open ports and potential vulnerabilities.
- **Penetration Testing:** Performed brute-force attacks and directory enumeration on the website to uncover hidden directories and files.
- **Traffic Analysis:** Intercepted network traffic using Wireshark during a simulated login attempt, successfully capturing and analyzing transmitted credentials.
- **Decryption and Cryptanalysis:** Decrypted password-protected files using cryptographic tools and analyzed encoded hash values to recover plaintext passwords.
- **Reverse Engineering:** Used PE Explorer to analyze an executable file, identifying the entry point and other critical information.
- **Network Security:** Executed a de-authentication attack on a controlled network environment, capturing the handshake and subsequently cracking the Wi-Fi password using a custom wordlist.
- **Payload Creation:** Developed and deployed a Metasploit payload to establish a reverse shell connection on a virtual machine.

Learning Outcomes

- **Technical Proficiency:** I gained practical experience in various cybersecurity tools and techniques, including vulnerability scanning, penetration testing, and cryptographic analysis.
- **Understanding of Cybersecurity Lifecycle:** I developed a comprehensive understanding of the steps involved in securing systems, from initial vulnerability assessment to implementing mitigations.
- **Problem-Solving Skills:** Tackling complex security challenges enhanced my analytical thinking and my ability to devise effective solutions under pressure.
- **Professional Development:** My experience improved my ability to work in a team, communicate technical information clearly, and manage time efficiently in a fast-paced environment.

Challenges and Solutions

- **Adapting to Complex Tools:** Initially, mastering advanced cybersecurity tools like Metasploit and Wireshark was challenging. I overcame this by dedicating time to study tutorials and practicing in a simulated environment, which significantly improved my proficiency.
- **Handling Advanced Security Scenarios:** The complexity of real-world security threats required a deep understanding of underlying principles. I tackled this by engaging in continuous learning and seeking guidance from my coordinator and team members.

Conclusion

My internship at ShadowFox was an enriching experience that significantly expanded my knowledge and skills in cybersecurity. The practical exposure to real-world security challenges and the application of advanced tools have solidified my interest in pursuing a career in cybersecurity. This experience has been instrumental in preparing me for the complexities of the cybersecurity field.

Acknowledgments

I express my sincere gratitude to ShadowFox, especially my mentor, Mr. Surendharan, and assistant mentor Mr. Pranshu, for their guidance and support throughout my internship. I also thank Amrita Vishwa Vidyapeetham for providing this internship opportunity, which has been crucial in my personal and professional development.

This report encapsulates the essence of my internship experience, highlighting the integration of academic knowledge with practical skills in a professional setting. It reflects my journey of learning, growth, and development in the field of cybersecurity.