

Internship Final Report

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University: National School Of Applied Science of Oujda in Morocco

Major: Information Security and Cyber Security

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

Company: ShadowFox

Domain: Cyber Security

Mentor: Mr. Surendharan

Assistant Mentor: Mr. Vishal Kumar

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:** The entire depth scanning of the target website <http://testphp.vulnweb.com/> was done in search of open ports and to project an estimate of vulnerabilities.
- **Penetration Testing:** Brute-force attacks and directory enumeration were carried out on the website in order to disclose hidden directories and files; these could be further exploited.
- **Traffic Analysis:** Ran Wireshark and intercepted the traffic between a client and <http://testphp.vulnweb.com/>, when logging in. Captured and decoded the transmitted credentials.
- **Decryption and Cryptanalysis:** Decrypted the password-protected files using Veracrypt and analyzed hashed password values provided in an encoded.txt file to recover plaintext passwords.

- **Reverse Engineering:** PE Explorer was employed on an executable file to analyze its entry point address. Created a payload in Metasploit for reverse shell connection in Windows 10 virtual machine and gained access to the target system.
- **Payload Creation:** Developed and deployed a Metasploit payload to establish a reverse shell connection on a virtual machine.
- **Platform-based Penetration Testing:** Completed the TryHackMe "Basic Pentesting" and "King of the Hill" challenges, achieving root access, answering all platform questions, and documenting the entire penetration testing process, including attack strategies and remediation recommendations.

Learning Outcomes

- **Technical Proficiency:** This put forward to me the practical side of a various set of tools and techniques under cybersecurity that deeply include vulnerability scanning, penetration testing, cryptographic analysis, and network traffic interception, among others. It would absolutely help enhance my technical skills in cybersecurity to a large extent.
- **Understanding of Cybersecurity Lifecycle:** I got to understand the cybersecurity life cycle under which amongst performing initial vulnerability assessments, perpetration, and preventive and mitigating models securing systems.
- **Problem-Solving Skills:** Being forced to deal with complex security problems enhanced my analytic thinking and developed problem-solving skills toward learning ways to come up with great solutions under pressure in real-life situations.
- **Professional Development:** Interning at this organization improved my ability to work in teams, time management, clear and concise communication of technical information, through a fast-paced work environment, and also contributed to the professional development of an individual..

Challenges and Solutions

- **Adapting to Complex Tools:** Advanced tools of cybersecurity such as Metasploit and Wireshark were expectedly difficult to master at the beginning due to their complexity. This was overcome by spending considerable amounts of time going through tutorials, studying the documentation, and practice in simulated environments that helped build proficiency and confidence in using those tools efficiently.
- **Handling Advanced Security Scenarios:** Actual security threats in the world demanded sophistication, practical skills, and a deep understanding of principles related to cyber security. I have been able to attain this with continued learning.

- Conclusion

My internship at ShadowFox has been a very enriching and life-transforming experience. I came out with a huge extension of the core knowledge and skills that I held in cybersecurity. The practical exposure to the real world's security challenges and the hands-on application of advanced tools like Metasploit and Wireshark cemented my interest in pursuing a career in cybersecurity. This experience has been critical in the preparation of complexities within the field of cybersecurity, equipping me with the technical proficiency, problem-solving abilities, and professional development that enables one to thrive in this dynamic, ever-changing industry.

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.