

Advanced Network Security – Coursework Overview

Dr Rob Hegarty

Assessment Overview

- 50% Coursework
- 50% Exam
- Coursework
 - Report on practical aspects of ethical hacking
 - Presentation
 - Group work
- Exam
 - Two sections each with 3 questions
 - Answer two questions from each section

Group Work

- Work in pairs or groups of three
- Each group member will submit their own report & presentation
 - **Including their own exploits and mitigations**
- Report will detail the processes employed (some from tutorials, others researched by yourselves) and the findings of your investigation
- Presentation should mirror the report structure, but place more emphasis on the practical research elements and findings (and less emphasis on the tutorials)

Coursework – Report Structure

- Report title and names
- Abstract
- Table of contents
- Introduction
- Report Body
 - Abstract
 - Introduction
 - Deployment
 - Reconnaissance
 - Attack
 - Vulnerability & Mitigation
 - Conclusion
- References

Abstract

- Write this last!
- A short overview of your report, providing a high level overview of key facts, findings etc.

Table of Contents

- Use styles in Word, auto generate the table of contents
- Also include a table of figures, and glossary of terms

Introduction

- Describe what your report aims to convey and how it is structured.
 - Example
 - This report describes the ethical hacking process employed to evaluate the security of a virtual machine
 - Section 1, provides
 - In Section two
-
- Use styles for each section, and the cross reference function in word to keep the cross references you make consistent.

System Deployment

- You will describe the architecture and configuration of the vulnerable system, and the precautions taken to ensure the vulnerable system and attack platform do not cause harm to the wider University infrastructure.

Reconnaissance

- You will carry out reconnaissance against the vulnerable target system, using the tools and techniques available in the attack platform. You will describe on the findings of the reconnaissance phase of the ethical hacking process. Describing any vulnerabilities you encounter, and their implications in a real world environment. You will research academic text, white papers, and news articles to illustrate the implications of the vulnerabilities identified.

Attack Analysis

- You will interpret the results of the reconnaissance stage of the ethical hacking process to identify vulnerabilities in the target platform. You will then formulate an attack plan by selecting appropriate exploits to target the vulnerable system. You will implement your attack plan and documenting success or failure of each exploit.

Vulnerabilities and Mitigation

- You will provide vulnerability & mitigation report for the vulnerable system you analysed. The report will contain an overview of the process you employed to analyse the system, and a description of how each of the vulnerabilities identified may be mitigated. You will refer to academic text and other online sources and evaluate the solutions proposed and their ability to mitigate the vulnerabilities you identified.

Conclusion

- Your conclusion should explain how the attack plan and mitigation strategy relate to academic research in computer network security.

References

Use reference management software (Mendeley) and the Harvard style (e.g. Hegarty, 2019)

- ACM Portal
- IEEEXplore
- Google Scholar
- RFCs
- White Papers
- Newspapers
- Wiki's
- Blog posts
- Opinion pieces

Presentation

- Format should follow that of the report (But not be a copy and paste job!)
- Highlight and discuss key points
- Don't be a slide reader, keep information on your slides to a minimum and talk around the points you make
- Engage in discussion with the group, ask questions to the audience:
 - e.g. what was your experience of.....,
- Discuss the broader implications of computer security:
 - Refer to case studies, or interesting technical news stories

Marking Scheme

- Report – 85%
- Presentation 15%
- Review marking scheme

Submission

- Submit through Moodle submission inbox
- In class presentation during lab session
- Submit your report as one PDF file and one PPT file.
- File name conventions (“your lastname-firstname-studentID.pdf”)