

CS 4999 Independent Study with Craig Shue – A Term 2021

Keith DeSantis - Computer Science Major Class of 2023

Summary of Learning Outcomes

Worcester Polytechnic Institute

Areas of study:

1. Windows PowerShell Navigation and Scripting

- a. Basic PowerShell commands, cmdlets, and navigation
- b. User profiling environment variables
- c. File forensics
- d. PowerShell scripting
 - i. Shell scripting variables and syntax
 - ii. Proof-of-Skill project: searchByFileName.ps1
 1. Created a .ps1 script that searches a given directory recursively for all files with a name containing a given substring. Also adding functionality to filter by file extension.

2. Computer Networking (through textbook reading and discussion)

- a. Layer-Model of Networking
 - i. Routing Practices and Standards
- b. Packets
 - i. Construction
 - ii. Transmission
- c. Local Area Network (LAN) structure
- d. Internet Protocol (IP)
- e. Transmission Control Protocol (TCP)

3. DLL Injection Attacks

- a. DLL research and creation
- b. Injector creation and execution
- c. Successfully created and ran DLL injectors

4. Microsoft Detours

- a. Detours research
- b. Combining of Detours hooking and DLL injection
- c. Successfully detoured “WriteFile” through DLL injection on Notepad
- d. Researched Detouring “Save As...” functionality in Notepad++ and WinForms for possible future research

5. WinForms and C++

- a. Ended term looking into hooking “Save As...” functionality
- b. Researched through creating text editors in WinForms
- c. Basic C++ coding