**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**
   1. Basic PowerShell commands, cmdlets, and navigation
   2. User profiling environment variables
   3. File forensics
   4. PowerShell scripting
      1. Shell scripting variables and syntax
      2. 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)**
   1. Layer-Model of Networking
      1. Routing Practices and Standards
   2. Packets
      1. Construction
      2. Transmission
   3. Local Area Network (LAN) structure
   4. Internet Protocol (IP)
   5. Transmission Control Protocol (TCP)
3. **DLL Injection Attacks**
   1. DLL research and creation
   2. Injector creation and execution
   3. Successfully created and ran DLL injectors
4. **Microsoft Detours**
   1. Detours research
   2. Combining of Detours hooking and DLL injection
   3. Succesfully detoured “WriteFile” through DLL injection on Notepad
   4. Researched Detouring “Save As…” functionality in Notepad++ and WinForms for possible future research
5. **WinForms and C++**
   1. Ended term looking into hooking “Save As…” functionality
   2. Researched through creating text editors in WinForms
   3. Basic C++ coding