Jacob Shin

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Education

Temple University (BS in Computer Science) Expected to Graduate May 2024

- Honors Program • President's Scholar: Covers Full-Tuition ($20,000/yr) • Temple Science Scholar
- Courses: Introduction to Academic Computer Science, Mathematical Concepts in Computing I Honors

Experience

Princeton Plasma Physics Laboratory (PPPL) Intern (October 2019 - December 2019)

- Learned to design an electronic circuit for a device called a Langmuir probe, an instrument used to measure properties like density and temperature of plasmas

Projects

TI-Authenticator: 2FA With a Calculator (C, HMAC, SHA1, OTP)

- Provides rolling passcodes similar to Google Authenticator except on a graphing calculator
- Implements One-Time Password (OTP) algorithms for the TI-84+ CE graphing calculator based on RFC 4226 (HOTP) and RFC 6238 (TOTP)

MITRE Embedded Security Challenge 2017 (C, AES, AVR)

- Designed a bootloader for "Secure Firmware Distribution for Automotive Control" using an Atmega1284p microcontroller using HMAC verfication and AES-CBC encryption.
- Attacked other bootloaders from other teams by dumping flash via JTAG (after finding out that fuse bits were incorrectly setup) and learned about brownout attacks and side channel attacks

Ret2LibC Buffer Overflow CTF Challenge Writeup

- Wrote a writeup of how I solved the BOF (Buffer Overflow) CTF challenge for the RACTF challenge
- Described the process of reversing using Ghidra (reverse engineering tool), bypassing exploitation mitigation techniques, and leveraging Return Oriented Programming (ROP) to exploit a binary.

Revere Engineering Malware

- Learned reverse engineering techniques for reversing malware using Malware Unicorn's free, online reverse engineering workshops (Triage Analysis, Static Analysis, and Dynamic Analysis)

College Rejection Simulator (HTML, CSS, Javascript, Bootstrap, Netlify)

- Created a college rejection simulator with fake decision letters and college login portals to help high school seniors mentally prepare for their rejection (Received 20,000 views within the first few days of the release)

Skills

Programming Languages: C, C++, Python, Javascript, x86 ASM
Markup/Styling Languages: LaTeX, Markdown, HTML, CSS
Other: Linux, Git/Github, Tmux, (Neo)vim, Ghidra, GDB, Binary Exploitation, Reverse Engineering

Awards/Activities

CTF (Capture the Flag Computer Security Competitions):

- 1st at castorsCTF20 • 2nd at OwlHacks RSM CTF • 4th at MetaCTF 2020 • 4th at RACTF 2020
- 25th at PicoCTF 2019 • 35th at TJCTF 2019 • 13th at MITRECTF 2019

Member: Pwn Intended CTF Team (Top 100 Globally)