Jacob Shin

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Education

Temple University (College of Science and Technology) Expected to Graduate May 2024

- Bachelor of Science, Computer Science • 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)
- 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)

Skills

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

Awards/Activities

4th Place: RACTF 2020 Computer Security Competition
1st Place: castorsCTF20 Computer Security Competition
25th HS Team: PicoCTF 2019 Computer Security Competition
35th Place: TJCTF 2019 Computer Security Competition
13th Place: MITRE 2019 Cyber Challenge CTF
Member: Pwn Intended CTF Team (Top 100 Globally)
Member: Temple Association for Computing Machinery (ACM)