Jacob Shin

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Education

Temple University Philadelphia, PA Aug 2020 - May 2024

- Bachelor of Science in Computer Science • GPA: 3.93

Skills

Programming Languages/Frameworks: C, C++, Python, Flask, Javascript, x86 ASM, Java, Selenium
Markup Languages: LaTeX, Markdown, HTML, CSS
Other: Linux, Bash, Git/Github, Tmux, Vim (Neovim), Arduino, REST APIs, GDB (GNU Debugger), Binary Exploitation, Basic Reverse Engineering

Experience

Princeton Plasma Physics Lab Intern Princeton, NJ Oct 2019 - Dec 2019

- Designed circuitry for a Langmuir probe, a device used to measure plasma properties like density and temperature

Projects

Calculator Controlled RC Boat (C++, TI-BASIC, Arduino)

- Utilized an Arduino and RF wireless modules to create the first ever calculator controlled, remotely controlled boat by interfacing a TI-84+ graphing calculator with a C++ library called ArTICL
- Enabled the library to support the TI-84+ calculator model by tracking down and fixing a bug in the implementation of the TI-Link protocol

Water Utilization Dashboard (React, C++, Flask, SQLite, Websockets, Material-UI, ESP8266 WiFi Module)

- Developed a water usage tracking platform using vibration sensors to determine when water was being used and a wifi module to communicate with a Flask backend server via Websockets and a custom built REST API.
- Awarded the best project ”using IoT devices and technologies” prize by American Water at the Philly Codefest Hackathon out of 248 participants

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

- Produced the first calculator app to provide rolling passcodes similar to Google Authenticator and Duo on a TI-84+ CE graphing calculator to enhanced login security via 2-Factor Authentication
- Implemented the two types of One-Time Password (OTP) algorithms from scratch based on the RFC 4226 and RFC 6238 specifications based on a custom implementation of the HMAC algorithm (for learning purposes)

Web Scraper and Discord Bot (Python, Flask, SQLite, Postgresql, Rust, Highcharts.js, Heroku)

- Scraped the number of covid cases from the university website and displayed detailed cases vs. time graphs and bar charts with breakdowns of employees and on/off campus students via Flask and Highcharts
- Wrote a bot in Rust to interface to provide close to real time COVID data to various university Discord servers

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

- Helped over 30,000 high schoolers in 25 countries prepare for college rejection letters with an interactive simulation

Awards/Activities

CTF (Capture the Flag Computer Security Competitions):

- 1st at castorsCTF20 (out of 500) • 2nd at OwlHacks RSM CTF • 4th at MetaCTF 2020 (out of 1017) • 4th at RACTF 2020 (out of 1047)
- 25th at PicoCTF 2019 (out of 11722) • 35th at TJCTF 2019 (out of 483) • 13th at MITRECTF 2019 (out of 262)

Member: Temple Association for Computing Machinery (ACM) Aug 2020 - Present
Member: Temple Hack-a-Hardware / Computer Security Club Oct 2020 - Present