First Last

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Education

Jawn University   Expected: May 2024
- BS in Computer Science • Honors Program • President's Scholar: Full-Tuition

Experience

Department of Energy (DOE) Lab Intern   October 2019 - December 2019
- Designed circuitry for a Langmuir probe, a device used to measure plasma properties like density and temperature.

Projects

2-Factor Authentication With a Calculator   (C, HMAC, SHA1, OTP)
- Provided rolling passcodes similar to Google Authenticator and Duo except on a TI-84+ CE graphing calculator.
- Implemented One-Time Password (OTP) algorithms based on RFC 4226 (HOTP) and RFC 6238 (TOTP) specifications based on a custom implementation of the HMAC algorithm (for learning purposes).

Calculator Controlled RC Boat   (C++, TI-BASIC, Arduino)
- Utilized an Arduino and RF wireless modules with a C++ library called ArTICL to interface with a TI-84+ graphing calculator to remotely control a boat.
- Tracked down and fixed a bug in the library that prevented the Arduino from properly interfacing with the specific calculator model.

Water Utilization Dashboard   (React, Flask, 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.
- Won the best project "using IoT devices and technologies" prize by American Water at the Random Hackathon

COVID Data Web Scraper and Discord Bot   (Python, Flask, SQLite, 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.

Skills

Programming Languages/Frameworks: C, C++, Python, Flask, Javascript, x86 ASM
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

Awards/Activities

CTF (Capture the Flag Computer Security Competitions):
- 1st at beanCTF20 (out of 500) ● 2nd at BirdHacks RSM CTF ● 4th at RandoCTF 2020 (out of 1017) ● 4th at AnotherCTF2020 (out of 1047)
- 25th at PicoCTF 2019 (out of 11722) ● 35th at CTF 2019 (out of 483) ● 13th at DefenseCTF 2019 (out of 262)

Member: Jawn Association for Computing Machinery (ACM)
Member: Jawn Hack-a-Hardware / Computer Security Club