Adwaith Gautham

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Blog: www.pwnthebox.net | CTF-team: ReasonablySuspiciousActivity

Education

National Institute of Technology Karnataka — Mangalore, India
Bachelor of Technology in Computer Science and Engineering; GPA: 7.43/10.00(6 semesters) — *Expected May 2020*

Relevant Coursework: C Programming, Operating Systems, Computer Organization and Architecture, Computer Networks, Number Theory and Cryptography, Data Structures and Algorithms, Design and Analysis of Algorithms, Systems Programming, Compiler Design, Information Security, Object Oriented Programming, Database Management Systems, Software Engineering, Computer Graphics

Interests

- Operating Systems, Computer Networks and Network Programming, Reverse Engineering and Binary Analysis, Security Vulnerabilities and Exploit Development, Distributed Systems

Skills

- **Programming Languages**: C, C++, x86/x64 Assembly, mips Assembly, Python, bash
- **Tools and Software**: gdb, radare2, strace, ltrace, Wireshark, tcpdump, nmap and common command-line utilities

Experience

Cisco Systems — Bangalore, India
Software Engineering Intern — *May 2019 - Present*

- **High Fidelity Data Collection and Control Plane Telemetry**:
  - Enhanced Cisco's Packet Processing Framework in such a way that counters related to it could be extracted and used for monitoring purposes.
  - Designed and implemented a fast, efficient Zero-copy message passing API using Shared Memory to share large amounts of data among processes.
  - Learning: In-depth understanding of Router Architecture, Advanced C programming concepts, explored technologies like Data Serialization(Protocol Buffers, Flat Buffers, XDR), Asynchronous Communication Libraries(ZeroMQ, nanomsg), Fast Packet Processing Frameworks(VPP).

Projects

- **ROP Compiler**: Tool which automates the process of ROP(Return Oriented Programming) Gadget chaining
  - Learning: Buffer Overflow Vulnerability, OS Security, Automating Exploit Development
- **parsemyelf**: ELF parser written in C++
  - Learning: Understand the *NIX Executable and Linkable Format(ELF) in detail.
- **packcap**: Simple packet capture tool written in C
  - Learning: Understand internals of a packet sniffer and various protocol headers.
- **Blockchain-Free Cryptocurrency**: Simple packet capture tool written in C
  - Learning: Understand Blockchain internals in detail.
- **Mini C Compiler**: A Compiler for a subset of the C programming language
  - Learning: Implemented Lexer and Parser using Flex and Bison. Wrote Semantic Analyser and Intermediate Code Generator from scratch.
- **Implementation of PI AQM in Linux Kernel**:
  - Learning: Active Queue Management, Kernel Programming

Blog

- **pwnthebox.net**: A Systems and Security Blog
  - Reverse Engineering and Binary Exploitation Series: A series of articles on OS Security Vulnerabilities, Exploit Dev, Exploit Mitigation
  - Packet Overflow! : A series of articles to understand Computer Networks better.

More About Me

- Head of Systems and Security Research Group, Computer Society, IEEE-NITK, 2019 - present
- Co-head of Systems and Security Research Group, Computer Society, IEEE-NITK, 2018 - 19
- Conducted ECTF 2018 - A CTF for our college students as a part of Engineer, our annual technical fest
- I love playing CTFs(Capture The Flag Contests)
- I like conducting talks and workshops on topics I find interesting.