Ali Raza

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Research Interests

My research interests lie in the intersection of computer security and low-level systems. I am interested in the security vulnerabilities posed by systems, and how they can be exploited. For now, I am working on my FYP thesis that is about reproducing CVE-2019-2215 which is the Use After Free vulnerability in Android Kernel's Binder IPC subsystem.

Education

PUCIT - University of the Punjab　　　　　　　　　　September, 2019 – Present
Bachelor of Science - Computer Science　　　　　　　　　Lahore, Punjab, Pakistan
- Expected graduation: July 2023
- GPA: 3.65/4.0

Punjab Group of Colleges, Okara Campus　　　　　　　　　2017 - 2019
Intermediate of Computer Science with Physics　　　　　　Okara, Punjab, Pakistan

- Graduated with 3rd position in BISE Sahiwal.

Research Experience

Vulnerability Research and Exploit Development for Android Kernel
July, 2022 – Present
PUCIT - University of the Punjab
- Supervisor: Dr. Muhammad Arif Butt
- Formulated the idea and initiated the research project
- Worked on problems related to memory errors in binaries
- Worked on reversing binaries using IDA Freeware
- Worked on chroot jailbreak
- Working on analysing Linux kernel

Professional Experience

Malware Researcher　　　　　　　　　　　　　　　March, 2023 – Present
Ebryx (Pvt.) Ltd.　　　　　　　　　　　　　　　　Lahore, Punjab, Pakistan
- Working on Kernel Vulnerability Research and Exploitation
- Linux Kernel Auditing
- Tools: IDA Pro, Ghidra, GDB, QEMU, etc.

Teaching Assistant (Operating Systems)　　　October, 2022 – February, 2023
PUCIT - University of the Punjab　　　　　　　　　Lahore, Punjab, Pakistan
- Designed material and coursework for the newly introduced lab component of the subject
- Designed exam papers for the lab
- Assisted students in the lab + other TA responsibilities

Programming Tutor　　　　　　　　　　　　　　April, 2022 – Present
Freelance on Fiverr　　　　　　　　　　　　　　　　　　　Fiverr.com
- Teaching low level programming concepts in C
- Teaching object oriented programming in C++

Skills

Programming Languages: C, Python, Java, C#, x86-64 Assembly
Security: Binary Exploitation, Reverse Engineering
Tools: IDA, GDB, GNU/Make
OS: MacOS, Linux

Projects

Unix Shell C, Makefile
https://github.com/alirazamumtaz/unix-shell
- An effort to write the *nix based shell to gain understanding of how shell works and how OS creates and handles processes and allows processes to communicate with each other through it's IPC interface

Exploits Scripts Python, x86 Assembly
https://github.com/alirazamumtaz/exploit-development
- Basic scripts that I have written to solve some exploitation challenges

Hack Assembler C++
https://github.com/alirazamumtaz/hack-assembler
- A 16-bit machine language assembler for the 16-bit Hack Assembly Language. This was done as part of building a complete 16-bit computer during the Computer Organization Assembly Language Course

Courses & MOOCs

Computer Systems Security: pwn.college

- Shellcode Injection
- Sandboxing
- Reverse Engineering
- Memory Errors
- Race Conditions
- Kernel Security
- Program Exploitation

Extracurriculars & Volunteering

Club Leader PUCIT - University of the Punjab
Google Developer Student Clubs   2021 – 2022 & 2022 – Present
- Faculty Contact: Assist. Prof. Abdul Mateen
- Organized tech workshops and seminars
- E.g. CodeFest, Hacktoberfest, etc

Event Organiser PUCIT - University of the Punjab
Event Management Society   2020 – 2021 & 2022 – Present
- Organized inter-college events
- E.g. Job Fair, Trips, etc

Awards & Honors

Board Topper 2019
Intermediate - BISE Sahiwal   Sahiwal, Pakistan
- https://pgc.edu/our-achievers/
- Awarded with a brass medal and a cash prize by the Board of Intermediate and Secondary Education, Sahiwal