

Ali Raza

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Research Interests

I am interested in finding security vulnerabilities posed by Operating Systems and how they can be exploited. As a Malware Researcher at Ebryx, I focus on Linux Kernel Exploitation, specializing in n-day research. I aim to transition towards zero-day discovery and proficiently craft Proof of Concepts (PoC) and exploits for the Linux Kernel.

Education

PUCIT - University of the Punjab
Bachelor of Science - Computer Science
• GPA: 3.65/4.0

September, 2019 – July, 2023
Lahore, Punjab, Pakistan

Punjab Group of Colleges, Okara Campus
Intermediate of Computer Science with Physics

August 2017 - 2019
Okara, Punjab, Pakistan

- Graduated with 3rd position in BISE Sahiwal.

Research Experience

0day Day in zlog - CVE-2021-41073

November, 2023 – Present

Ebryx (Pvt.) Ltd.

- Collaborator: Faran Abdullah
- Found bug in zlog
- Wrote PoC
- Submitted to MITRE
- Reserved CVE number - CVE-2024-22857
- Submitted to zlog maintainers and waiting to be published

Vulnerability Research and Exploit Development for Android Kernel

July, 2022 – July, 2023

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
- Worked on analyzing Linux kernel
- Worked on analysing msg_msg as exploit primitive
- Done with analysis of CVE-2019-2215

Professional Experience

Malware Researcher

March, 2023 – Present

Ebryx (Pvt.) Ltd.

Lahore, Punjab, Pakistan

- Working on Kernel nday research
- Tools: elixir by bootlin, build root, GDB, QEMU, etc.
- Recognitions: Annual Best Performance Award 2023

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

Profile

- Teaching low-level programming concepts in C
- Teaching object-oriented programming in C++

Skills

Programming Languages: Assembly, C

Security: Binary Exploitation, Reverse Engineering, n-day Research, PoC writing

Tools: elixir by bootlin, IDA Pro, 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 an understanding of how the shell works and how OS creates and handles processes and allows processes to communicate with each other through its 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. It 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 – 2023

- 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 – 2023

- 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