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Research Interests

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 <ul style="list-style-type: none">Graduated with CGPA 3.65/4.0	October, 2019 – July, 2023 Lahore, Punjab, Pakistan
Punjab Group of Colleges, Okara Campus Intermediate of Computer Science with Physics <ul style="list-style-type: none">Graduated with 3rd position in BISE Sahiwal.	August, 2017 - September, 2019 Okara, Punjab, Pakistan

Research Experience

0day Day in zlog (Famous pure C logging library) - CVE-2024-22857

November, 2023 – March, 2024

Ebryx (Pvt.) Ltd.

- Collaborator: [Faran Abdullah](#)
- Found Vulnerability in zlog providing arbitrary code execution
- Reported to MITRE
- CVE number - [CVE-2024-22857](#)
- Detailed blog post include Poc : www.ebryx.com/blogs

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

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

Google Developer Student Clubs (g.dev/alirazamumtaz)

- Faculty Contact: Assist. Prof. Abdul Mateen
- Organized tech workshops and seminars

PUCIT - University of the Punjab
2021 – 2022 & 2022 – 2023

President

PUCon'23 (pucon.vercel.app)

- Faculty Contact: Assist. Prof. Abdul Mateen
- Organized programming competitions and CTFs

PUCIT - University of the Punjab
2023

Awards & Honors

Board Topper

Intermediate - BISE Sahiwal

- (<https://pgc.edu/our-achievers>)

- Awarded with a brass medal and a cash prize by the Board of Intermediate and Secondary Education, Sahiwal

2019

Sahiwal, Pakistan