

ALI RAZA

Vulnerability Researcher

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Lahore, Punjab - 53000, Pakistan

PROFESSIONAL EXPERIENCE

• Ebryx (Pvt.) Ltd.

Vulnerability Researcher

Mar 2023 - Current

Lahore, Pakistan

- Crafting prompts for LLMs to assist in vulnerability research and exploit development
- Hardened python interpreter against memory corruption vulnerabilities using CodeQL static analysis
- Designed kernel-level technique using Linux netfilters to detect path traversal attacks on a Linux system
- Designed userland agent using JVMTI to detect Java deserialization attacks on a Linux system
- Designed kernel-level technique using LKMs to detect ASLR brute force attacks on a Linux system
- Discovered a 0-day vulnerability (CVE-2024-22857) in the open-source logging library zlog using AFL++ fuzzing
- Performed fuzzing on Linux kernel-specific syscalls using syzkaller, focusing on black-box security research
- Conducted n-day research on Linux Kernel Exploitation, improving security assessments and attack strategies
- Formalized a Linux kernel exploitation attack matrix, uncovering exploitable kernel objects and refining pre/post-exploitation techniques

• University of the Punjab

Teaching Assistant

Oct 2022 - Feb 2023

Lahore, 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

RESEARCH EXPERIENCE

• n-day ("Call of Death" in Shannon Baseband) - CVE-2020-25279

- Looked into Samsung's Exynos modem chip that uses Shannon RTOS
- Used IDA Python and Ghidra scripts combined to load the firmware file for reversing
- Analysed the PAL memory allocation mechanism in Shannon
- Found the vulnerable code for the CVE mentioned above statically
- Used FirmWire to emulate the firmware
- Tools used: FirmWire, IDA Pro 9-beta, Ghidra

• 0-day in Zlog: CVE-2024-22857

- Conducted fuzzing of zlog, leading to the discovery of a critical 0-day vulnerability (CVE-2024-22857)
- Successfully identified and reported the vulnerability, which allowed arbitrary code execution
- Developed proof-of-concept (PoC) exploit to demonstrate the feasibility of the attack and assisted in proposing mitigations
- Collaborated with the vendor to ensure a timely patch and public disclosure of the vulnerability
- Tools used: AFL++, elixir, gdb, git

• n-day (Dirty Pipe) - CVE-2022-0847

- Explored different data-only attacks in Linux kernel
- Looked into the in-memory buffer management inside kernel
- Following the source of pipe IPC in Linux kernel using elixir.bootlin, wrote a PoC for the CVE-2022-0847

◦ Tools used: Elixir Bootlin, GDB with bata24/gef, QEMU

• **Vulnerability Research & Exploit Development for Android Kernel** [🌐]

- Final Year Project (FYP) during Bachelor
- Supervised by Dr. Muhammad Arif Butt ([arif.phd](#))
- Started binary exploitation from Linux user-land and completed with kernel-land exploitation
- Conducted n-day research on CVE-2019-2215

SKILLS

- **Programming:** ANSI C, Assembly x86-64/ARM, Bash, Python
- **Research:** Linux Kernel, Mobile Baseband, Android Kernel, Linux Runtime, Python Interpreter, Java Runtime, JVMTi
- **Tools:** QEMU, VMWare Workstation, IDA Pro ([ost2 certified](#)), Ghidra, GDB with gef, AFL++, elixir, CodeQL, Kali Toolchain, FlareVM Toolchain
- **Operating System:** Linux (Ubuntu), Android
- **Open Source Contributions:** zlog(vulnerability patch), Elixir Core Reference, Havoc (C2) Framework, pwncollege, Hacktoberfest contributor

EDUCATION

• **PUCIT, University of the Punjab**

Bachelor of Computer Science

Oct 2019 - July 2023

Lahore, Pakistan

◦ Projects:

- * Vulnerability Research & Exploit Development for Android Kernel [🌐]
- * UNIX Shell in C [🌐]
- * Hack Assembler in C++ [🌐]
- * Exploit Scripts in C/Python [🌐]

◦ GPA: 3.58/4.00

◦ Campus Lead by Google Developer Student Clubs [🌐]

◦ President of PUCon23 (National Tech Event by University of the Punjab) [🌐]

• **Punjab Group of Colleges**

Intermediate of Computer Science (ICS)

Aug 2017 - Oct 2019

Okara, Pakistan

◦ Grade: 90.54%

◦ Board Topper [🌐]