Archishman Ghosh

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About

Cybersecurity enthusiast with a strong focus on **reverse engineering** and **binary exploitation**. Actively participate in CTFs with team bi0sblr, enhancing skills in all areas. Interested in **Android app reversing** and **Android security**, and passionate about improving my overall cybersecurity skills in all domains and contributing to the cybersecurity community.

Education

2022 - present	B.Tech in Computer Science at Amrita Vishwa Vidyapeetham, Bangalore	(CGPA: 9.50)
2022	Class 12th - West Bengal Council of Higher Secondary Education (WBCHSE)	(90.20%)
2020	Class 10th -Indian Certificate Of Secondary Education (ICSE)	(98.20%)

Skills

Languages :	Python, Java, x86_64 Assembly, C, C++
Technical :	Code Analysis(Java, C, C++, Python), Static and Dynamic analysis of binaries(APK, ELF, EXE, etc, Native code analysis, Android app reversing(Java, Kotlin, Cordova, React-Native), unity game reversing(android and windows)
Tools :	Frida (Dynamic instrumentation), Jadx, apktool, Linux, GDB, Ghidra, IDA Pro, Git, Z3, pwntools, Wireshark, Burp suite, Autopsy
Soft skills :	Leadership, Teamwork, Adaptability, Problem-Solving, Continuous learner, passionate seeker, Communication, Time Management

Projects

FRIDA Labs - Dynamic Instrumentation

- Completed all FRIDA Labs.
- Gained proficiency in dynamic instrumentation, memory inspection, native code analysis, hooking, and debugging.

Injured Android - A vulnerable Android application in CTF style   Write-up

- Analyzed and reverse-engineered the APK to identify and exploit vulnerabilities.
- Utilized tools like **apktool**, **jadx**, and **Frida** to decompile, inspect and instrument the APK.
- Gained knowledge about the various types of vulnerabilities present in an android app.
- Documented the process, covering static and dynamic analysis, and how to exploit the vulnerabilities.

Frid - Automated AVD and Frida Server Launcher   GitHub

- Developed `frid`, a Python-based CLI tool that automates the launch of Android Virtual Devices (AVDs) and initiates Frida servers, streamlining mobile application security testing workflows.
- Simplified repetitive setup procedures by providing a single-command solution, reducing manual intervention and potential for errors.
- Tailored for Windows environments, ensuring compatibility and ease of use for users operating within this ecosystem.

BuildQBDI - QBDI-Based C++ Build Automation Tool   GitHub

- Developed `buildqbdi`, a Python CLI tool that automates the compilation of C++ files with QBDI integration, streamlining the setup for security analysis tasks.
- Automated the detection and configuration of Visual Studio tools, ensuring seamless compilation without manual setup, improving efficiency for security researchers.
- Simplified the process for Windows users by providing an easy-to-use command-line interface for compiling C++ projects with QBDI dependencies.

TexHive - Git-Integrated, Real-Time Collaborative LaTeX Editor   GitHub

- Built a Python-based LaTeX editor with live collaboration using **FastAPI** and **WebSockets**, ensuring responsive and reliable real-time user experience.
- Developed RESTful and WebSocket APIs to connect the JavaScript frontend with backend services efficiently.
- Containerized backend services using **Docker** and orchestrated them with **Kubernetes** for scalability, fault tolerance, and easier microservice management.

- Implemented CI/CD pipelines and Git integration to streamline deployments and version control.
- Focused on building a secure, modular backend system tailored for student-focused customization and real-time collaboration.

Dynamic Distributed Computing - Python   Github

- Designed a Python-based distributed computing system for efficiently computing large volumes of tasks in parallel with a focus on performance.
- Engineered the system to be **latency-aware**, dynamically allocating computation and process contexts across distributed machines.
- Developed the system based on a robust performance benchmark to achieve high performance and resource efficiency.
- Optimized resource utilization across the distributed environment for improved overall efficiency.

POSITION OF RESPONSIBILITY

Domain Lead | bi0s Bangalore   July 2024 - present

Leader of Reverse Engineering domain and Android Reversing category of team bi0sblr over-viewing the progress of my fellow teammates and mentoring my juniors.

Member | bi0s Bangalore   Nov 2023 - present

Organizing Monthly Cyber Security Meetups in Bangalore known as bi0s meetups - Hosting talks and workshops for enthusiasts and professionals to learn and collaborate. Partnered with Flipkart, CloudSEK and Cred previously.

Executive | Codechef Students Club   Sept 2023 - May 2024

Organized internal elimination round of Smart India Hackathon (SIH) as part of team Codechef managing over 50 teams.

ACHIEVEMENTS

- 5th Place in Hack Havoc CTF Ed 1 - Individual participation with over 200 players participating.
- 7th Place in Shunya CTF Finals Cyber Security competition - MIT ADT University, Pune 2024 with over 200 teams participating.
- Got Academic Excellence Award in 1st and 2nd Year.