Maulik Barot

Vadodara barot_mh@cs.iitr.ac.in +91 8511913781 v1bh475u.github.io maulik-barot
maulik-barot

Objective

Passionate about low-level and system programming with expertise in Linux internals and modern C++. I enjoy building debuggers, emulators, and reverse engineering tools, and occasionally share insights through technical blogs.

Education

Indian Institute Of Technology, Roorkee *Aug 2023 – Present*
Bachelor of Technology in *Computer Science and Engineering*

- CGPA: 8.75/10.0
- **Coursework:** Programming and Data Structures, Design and Analysis of Algorithm, Computer Architecture and Organization, Numerical Methods, Probability and Statistics, Multivariable Calculus and Vector Algebra

Parth School of Science and Technology *Mar 2022 – Mar 2023*
Class 12

- Grades: 99.88 percentile
- **Coursework:** Physics, Chemistry, Mathematics, Computer Science, English

Experience

Software Developer *Roorkee, Uttarakhand*
SDSLabs *Feb 2024 - Present*

- Participated in multiple hackathons and game jams as a part of the SDSLabs team.
- Conducted lectures on VPN technology attended by more than 200 students
- Conducted Syntax Error 11 hackathon with more than 1500 participants.

CTF Player and Reverse Engineer *Roorkee, Uttarakhand*
InfoSecIITR *June 2024 - Present*

- Active participation in CTFs
- Participated and won many CTFs
- Conducted BackdooCTF 2024
- Conducted winterhack CTF 2025
- Conducted lectures and CTFs to promote information security culture in campus

Achievements

Flare On 11: Completed all 10 challenges and achieved 151st place out of 4157 players globally Flare-On 11

CSAW Finals 2024: Secured 1st position in India and 7th globally as part of InfoSecIITR

CSAW Quals 2024: Participated in CSAW Quals as part of InfoSecIITR and secured 1st position in India and 13th position globally

BCA CTF 5.0: Secured 7th rank globally as part of InfoSecIITR

AmateursCTF 2024: Stood 9th Globally with InfoSecIITR

BYUCTF 2024: Participated and achieved 5th rank globally as part of InfoSecIITR

JerseyCTF IV: Participated and secured 1st position globally as part of InfoSecIITR

n00bCTF 2024: Secured 4th position solo in the CTF organized by InfoSecIITR for the 1st yearites

BackdoorCTF 2023: Participated as part of Th3_0rd3r_of_Wh!t3_l0tu5 and secured 4th position in the campus

JEE Advanced: AIR 625

JEE Main: AIR 913 out of 11.5 lakh candidates

Projects

Debugger *Debugger*

- Designed and implemented a custom debugger for Linux binaries from scratch in modern C++, leveraging the ptrace system call for process control and debugging, similar to its use in GNU Debugger. The project includes a structured design with proper namespace management to ensure maintainability and scalability.
- Tools Used: C++, Linux ManPages

Fix8 *Fix8*

- Collaborated with teammates on a course project to design a Turing-complete 8-bit Instruction Set Architecture (ISA) with fixed 8-bit instruction lengths. Implemented support for conditional logic, loops, and basic arithmetic operations, employing clever techniques to maximize functionality within strict length constraints. Developed an assembler and emulator to enable accurate translation and execution of instructions.
- Tools Used: C++

Cell-Automaton *Cell-Automaton-Physics*

- Wrote a Physics engine based on Conway's Game of Life with simple interaction logic between particles of different elements for internal hackathon of SDSLabs
- Tools Used: Python

Beast *Beast*

- Resolved configuration issues in Beast, the backend of SDSLabs' custom CTF hosting and deployment platform. Focused on automating challenge configuration file generation, simplifying challenge creation, and enabling dynamic flag generation to streamline the platform's functionality.
- Tools Used: Golang, HTML, SQLite, Docker

Chromatica *Chromatica*

- Wrote recursive algorithms to implement a very peculiar game mechanic made for a game jam. Also wrote game logic in GDScript. Can be played here
- Tools Used: Godot, GDScript

gbemu *gbemu*

- Contributed to modularizing the Audio Processing Unit (APU) in SDSLabs' custom-built Game Boy emulator, developed using Object-Oriented C++. Implemented callback functions to enhance performance and maintainability.
- Tools Used: C++, Pan Docs

MVC-LMS *MVC*

- Written in Go, it uses the Go html template engine to render pages with MariaDB/MySQL as the database. It is a full fledged Library manager with features including JSON Web Tokens, secure routes, password hashing. Is completely Dockerized with Docker Compose along with config files for Apache to virtually host on your computer.
- Tools Used: Golang, Apache, MySQL, Docker, JavaScript, HTML, CSS.

Technologies

Languages: C++, C, x86-64 Assembly, JavaScript, Go, Python, GDScript, Bash, HTML, CSS

Technologies: Godot, MySQL, Git, Bash, Postman, IDA-64, x64dbg/x86dbg, WinDbg, gdb, WindowsAPIs, dnspy, ILSpy, Powershell