

# MAHESH NIBE

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## SUMMARY

Incoming SDE Intern with a strong foundation in **Systems Engineering (C++)** and **Full Stack Architecture (MERN)**. Passionate about building performant systems, evidenced by engineering a custom **Compiler** from scratch and deploying **Dockerized** web services. Proficient in optimizing low-level memory operations and handling database concurrency.

## EDUCATION

<b>Dr. D. Y. Patil College of Engineering</b> <i>Bachelor of Engineering in Information Technology; CGPA: 8.7</i>	Pune, India July 2023 – May 2027
<b>P. V. P. College of Arts Science And Commerce</b> <i>HSC (Maharashtra Board); Percentage: 76.17%</i>	Pravaranagar, India June 2021 – Feb 2023

## TECHNICAL SKILLS

**Programming Languages:** C++, C, JavaScript (Node.js), Java, SQL, HTML5/CSS3  
**Technologies & Frameworks:** Express.js, React.js, MongoDB (Mongoose), REST APIs, Swagger/OpenAPI  
**Database Management:** MySQL, MongoDB (Indexing, Aggregation), 3NF Normalization  
**Systems & Developer Tools:** Docker, Docker Compose, Linux (Bash), Git/GitHub, GCC, Makefiles  
**Core CS Concepts:** Operating Systems, Compiler Design, OOP, Data Structures & Algorithms

## KEY PROJECTS

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|---|---------------------|
| <b>SimpleLang Compiler (8-bit Architecture)</b>   C++, Assembly, System Design  | Jan 2026            |
| <ul style="list-style-type: none"><li>Engineered a custom compiler from scratch to translate high-level code into optimized <b>8-bit Assembly</b>, demonstrating deep understanding of memory management and parsing.</li><li>Implemented a <b>Lexer</b> and <b>Recursive Descent Parser</b> to construct an Abstract Syntax Tree (AST) without external libraries.</li><li>Designed a Code Generator using <b>static memory mapping</b> to manage variable storage on a constrained stack architecture.</li><li>Utilized Object-Oriented Programming to modularize AST node processing, ensuring scalability for future language features.</li><li>Link: <a href="#">GitHub Repository</a></li></ul> |                     |
| <b>ShortURL Microservice</b>   Node.js, Docker, Swagger, MongoDB  | Sept 2025 – Present |
| <ul style="list-style-type: none"><li>Architected a production-ready URL shortener using the <b>MERN Stack</b>, handling high-concurrency requests with sub-millisecond latency.</li><li><b>Containerized</b> the application and database using <b>Docker</b> and Docker Compose to ensure consistent deployment environments.</li><li>Integrated <b>Swagger/OpenAPI</b> to auto-generate interactive API documentation, improving collaboration with frontend teams.</li><li>Implemented <b>Atomic Database Operations</b> with MongoDB indexing to prevent <b>Race Conditions</b> during concurrent alias allocation.</li><li>Link: <a href="#">GitHub Repository</a></li></ul>                    |                     |
| <b>E-Commerce Database System</b>   MySQL, SQL, Database Design   | April 2025          |
| <ul style="list-style-type: none"><li>Designed a relational database schema normalized to <b>Third Normal Form (3NF)</b> to eliminate data redundancy.</li></ul>  |                     |

- Implemented **Stored Procedures** and **Triggers** to automate inventory updates and enforce data integrity constraints.
- Modeled complex entity relationships (E-R Diagrams) for Customers, Orders, and Sellers to optimize query performance.
- Link: [GitHub Repository](#)

## EXTRACURRICULAR & CERTIFICATIONS

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**NPTEL Elite Certification in DBMS:** Achieved top 2% rank nationwide; awarded by IIT Kharagpur (Jan - May 2025).

**MERN Stack Technologies:** Completed comprehensive training covering MongoDB, Express, React, and Node.js with hands-on project implementation.

**Data Structures & Algorithms:** Solved 150+ coding problems across LeetCode and GeeksForGeeks, establishing strong problem-solving logic.

**Core Certifications:** C++ Programming, Database Management Systems, MongoDB Basics.