Sutariya Heet Rohitbhai

Enrollment No.: BT23CSE030

B.Tech –Computer Science and Engineering

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⚲ GitHub Profile

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EDUCATION

Degree/Course	Institute /Board	CGPA/Percentage	Year
B.Tech-CSE	Visvesvaraya National Institute of Technology, Nagpur	8.47	2027
CLASS XII (GSEB)	Sardar Patel educational Institute,Bhavanagar	78	2023
CLASS X (GSEB)	Sardar Patel educational Institute,Bhavanagar	93.33	2021

PROJECTS

Scalable Parking Management System –Github link　　　　　　　　　　*Mar. 2025 - Apr 2025*

- **Description**: Architected and developed a comprehensive parking management system in C, centered around a **custom-built, generic B+ Tree data structure** for scalable data handling. The system uses two separate B+ Tree instances to efficiently index, manage, and persist thousands of vehicle (by string key) and parking space (by integer key) records from a file-based storage solution.
- **Tools & Technologies**: C, **B+ Trees (for efficient search & information retrieval)**, File I/O, Data Structures.
- **Outcome**: Achieved **O(log N) time complexity** for real-time vehicle lookups, insertions, and updates, ensuring high performance even with large datasets. The system automates complex business logic, including **billing, dynamic membership upgrades, and preferred parking policies**. It also generates multiple data-driven reports on vehicle and space utilization.

Custom Linux Command Shell –Github link　　　　　　　　　　　　*Jan. 2025 - Feb. 2025*

- **Description:** Developed a robust command-line interpreter in C, simulating core functionalities of a Unix shell. Implemented concurrent and sequential process execution, I/O redirection, and advanced command pipelining.
- **Tools & Technologies:** C, Unix System Calls (fork, exec, wait, chdir), Signal Handling, Process Management, Input Parsing (getline, strsep).
- **Key Features:** fork(), execvp(), waitpid() for process management; pipe() for inter-process communication; dup2() for I/O redirection; signal() for robust error handling (SIGINT, SIGTSTP, SIGCHLD); built-in cd command.
- **Outcome:** Achieved efficient execution of **parallel (&&) and sequential (##) commands**, managed output redirection (>) to files, and facilitated complex command chaining via **pipelines (|).** Demonstrated a deep understanding of operating system internals, concurrent programming, and system-level development.

Low-Level Memory Allocator –Github link　　　　　　　　　　　　*Feb. 2025 - Mar. 2025*

- **Description**:Engineered a custom dynamic memory manager in C to simulate a core operating system service, focusing on performance and memory-access safety.
- **Tools & Technologies**: C, Linked Lists, Heap Metadata Tracking, First-Fit Allocation.
- **Outcome**: Eliminated memory fragmentation through **automatic block coalescing** and prevented data corruption via invalid pointer detection, ensuring high reliability under continuous allocation/deallocation stress.

TECHNICAL SKILLS

- **-Languages:** C/C++
- **-Developer Tools:** Git, GitHub, VS Code,Jira (Basic Familiarity)
- **-Coursework:**Object-Oriented Programming ,Data Structures and Algorithms,Computer Organization, Programming Language Concepts
- **-Areas of Interest:**Algorithm Design & Optimization,web development

POSITIONS OF RESPONSIBILITY

· **Creative Secretary**, CSE 2nd Year Class Council　　　　　　　　　　*Aug 2024 - Apr 2025*

ACHIEVEMENTS

- **·99.39 Percentile in JEE Mains** (Ranked among top **0.6% of ~1 million candidates**)　　*Jan-2023*
- **·99.5 Percentile in GUJCET** (State-Level Engineering Entrance Exam, Top **0.5% of candidates**)　　*Apr-2023*
- **·Perfect Score in Mathematics**: 100/100 in Class 12 Board Exams (GSEB)　　*Mar-2023*