

PRANESH M

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CAREER OBJECTIVE To work in an organization that allows me to enhance my skills and knowledge in embedded systems while contributing to the organization's growth through innovative and efficient solutions.

WORK EXPERIENCE Currently undergoing technical training program – **Emertxe Certified Embedded Professional (ECEP)** at Emertxe Information Technologies (<http://www.emertxe.com>) Bangalore

TECHNICAL SKILLS

- Programming Languages:
 - Shell Scripting
 - Advanced C programming
 - OOP using C++
 - Data structures in C
- Embedded platforms:
 - Linux (Ubuntu)
 - PIC18F4520 board
- Development environment and tools:
 - Dev environment: Vim, Makefiles, MPLAB
 - Compilers: GCC, XC8

COURSE WORK

- Microprocessor
- Digital Electronics
- Digital Signal Processing

EDUCATION

- B.E (ECE), Kongu Engineering College, KEC, 7.36 (CGPA), 2021-2025
- Class – XII, Cheran Matric Higher Secondary School, 79.14%, 2021
- Class – X, Cheran Matric Higher Secondary School, 73%, 2019

PROJECTS AT EMERTXE

Project number:1

Title	Inverted Search
Project brief	Inverted Search is a C-based project that creates an inverted index from multiple text files. It maps each word to the Hash table and files, along with the count of the word and file, enabling fast and efficient word searching across files.
Technologies used	Advanced C - File Handling, Hash Tables, Linked Lists, and Dynamic Memory Allocation, Command line arguments
Key challenges & Learnings	<ul style="list-style-type: none"> ✓ Handling file parsing and word extraction efficiently while managing case sensitivity and duplicates. ✓ Implementing hash tables and linked lists for optimized data storage and quick search operations. ✓ Faced segmentation faults while handling main and sub-node addresses and resolved them by understanding the correct usage of NULL, thereby enhancing knowledge of data structures, modular design, problem-solving, and memory management in C.

Project number:2

Title	Arbitrary Precision Calculator
Project brief	Arbitrary Precision Calculator is a C-based project that performs mathematical operations on very large numbers beyond the standard data type limits. It uses arrays or linked lists to represent numbers and supports operations like addition, subtraction, multiplication, and division with high accuracy.
Technologies used	Advanced C – Pointers, Linked Lists, Structure, Dynamic Memory Allocation, Command line arguments
Key challenges & Learnings	<ul style="list-style-type: none"> ✓ Developed custom logic to perform arithmetic operations on large numbers without relying on built-in data types. ✓ Learned to manage memory efficiently and represent data effectively using linked lists. ✓ Gained a strong understanding of number handling, algorithm optimization, and precision control in C programming.

Project Number:3

Title	Image Steganography using LSB
Project brief	The objective of the project was to securely embed a secret text file within a BMP image. The process involved encoding the length of the secret text followed by embedding the text data into the least significant bits (LSB) of the image bytes. During decoding, the length was first extracted, and the hidden text was then retrieved bit by bit, ultimately reconstructing the original secret message.
Technologies used	Advanced C – File operations, Pointers, Bitwise operations, Functions, Makefiles, Command line arguments
Key challenges & Learnings	<ul style="list-style-type: none"> ✓ Gained understanding of image pixels and BMP file headers through detailed literature study. ✓ Implemented data embedding and extraction techniques ensuring that the original image properties remained unchanged.

- ✓ Faced issues in bitwise operations during LSB implementation by mistakenly altering the MSB instead of the LSB, which helped in gaining a better understanding of bit manipulation and binary data handling in image processing.

Project number:4

Title	Address Book
Project brief	The Address Book project is a C-based application that stores and manages contact information such as name, phone number, and email. It allows users to add, search, edit, delete, and display contacts with proper input validation and modularized design for efficient data handling.
Technologies used	Advanced C – Pointers, Structures, File Handling, Command line arguments
Key challenges & Learnings	<ul style="list-style-type: none"> ✓ Faced challenges in implementing input validation to maintain data integrity for names, phone numbers, and emails, improving understanding of error handling. ✓ Encountered difficulties in managing file handling and ensuring proper data storage and retrieval, which strengthened skills in data persistence. ✓ Learned the importance of modular programming and code reusability for building a well-structured and easily maintainable project.

ACADEMIC PROJECTS

Title	IoT-based Fire Alarming System using GSM Module
Project brief	The IoT-based Fire Alarm System that integrates GSM communication with sensor-based fire detection. The system enhances conventional fire alarms by sending SMS and call alerts to predefined contacts when a fire is detected, ensuring immediate notification even when users are away from the site.
Technologies used	Embedded Systems, IoT, GSM, Sensor Technology, Arduino IDE
Key challenges & Learnings	<ul style="list-style-type: none"> ✓ Calibrating the MQ-2 and LM35 sensors with Arduino was tricky at first, but it helped us understand sensor behaviour and fine-tune readings. ✓ Faced GSM module issues due to power and command errors, which we fixed by studying the datasheet and ensuring a stable power supply. ✓ The system worked differently in real-time compared to simulation, teaching us to adjust thresholds and improve our code for reliable results.