

C Programming: Data Structures, Functions and Practical Applications

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Abstract

C programming provides a strong foundation for understanding programming logic and data organization. Data structures and functions are among the most important concepts that enable programmers to develop efficient, modular, and reusable programs. This paper examines the role of functions and fundamental data structures in C programming, including arrays, strings, structures, pointers, stacks, queues, and linked lists. It discusses how functions help divide complex programs into smaller and manageable modules, while data structures provide effective methods for storing and processing information. The paper also considers practical applications of C programming in software development, system programming, embedded applications, and algorithm implementation. The study emphasizes that knowledge of data structures and functions improves programming efficiency and problem-solving abilities. It concludes that C remains an effective language for developing a strong understanding of fundamental programming techniques and computational thinking.

Keywords: C Programming, Data Structures, Functions, Arrays, Pointers, Linked Lists, Algorithms, Programming Applications

