

Preface to the Fourth Edition

C is a powerful, flexible, portable and elegantly structured programming language. Since C combines the features of high-level language with the elements of the assembler, it is suitable for both systems and applications programming. It is undoubtedly the most widely used general-purpose language today.

Since its standardization in 1989, C has undergone a series of changes and improvements in order to enhance the usefulness of the language. The version that incorporates the new features is now referred to as C99. The fourth edition of ANSI C has been thoroughly revised and enlarged not only to incorporate the numerous suggestions received both from teachers and students across the country but also to highlight the enhancements and new features added by C99.

Organization of the book

The book starts with an overview of C, which talks about the history of C, basic structure of C programs and their execution. The second chapter discusses how to declare the constants, variables and data types. The third chapter describes the built-in operators and how to build expressions using them. The fourth chapter details the input and output operations. Decision making and branching is discussed in the fifth chapter, which talks about the if-else, switch and goto statements. Further, decision making and looping is discussed in Chapter six, which covers while, do and for loops. Arrays and ordered arrangement of data elements are important to any programming language and have been covered in chapters seven and eight. Strings are also covered in Chapter eight. Chapters nine and ten are on functions, structures and unions. Pointers, perhaps the most difficult part of C to understand, is covered in Chapter eleven in the most user-friendly manner. Chapters twelve and thirteen are on file management and dynamic memory allocation respectively. Chapter fourteen deals with the preprocessor, and finally Chapter 15 is on developing a C program, which provides an insight on how to proceed with development of a program. The above organization would help the students in understanding C better if followed appropriately.

New to the edition

The content has been revised keeping the updates which have taken place in the field of C programming and the present day syllabus needs. As always, the concept of 'learning by example' has been stressed throughout the book. Each major feature of the language is treated in depth followed by a complete program example to illustrate its use. The sample programs are meant to be both simple and educational. Two new projects are added at the end of the book for students to go through and try on their own.

Each chapter includes a section at the beginning to introduce the topic in a proper perspective. It also provides a quick look into the features that are discussed in the chapter. Wherever necessary, pictorial descriptions of concepts are included to improve clarity and to facilitate better understanding. Language tips and other special considerations are highlighted as notes wherever essential. In order to make the book more user-friendly, we have incorporated the following key features.

- **Codes with comments** are provided throughout the book to illustrate how the various features of the language are put together to accomplish specified tasks.
- **Supplementary information and notes** that complement but stand apart from the general text have been included in boxes.
- **Guidelines** for developing efficient C programs are given in the last chapter, together with a **list of some common mistakes** that a less experienced C programmer could make.
- **Case studies** at the end of the chapters illustrate common ways C features are put together and also show real-life applications.
- The **Just Remember** section at the end of the chapters lists out helpful hints and possible problem areas.
- Numerous chapter-end **questions** and **exercises** provide ample opportunities to the readers to review the concepts learned and to practice their applications.
- **Programming projects** discussed in the appendix give insight on how to integrate the various features of C when handling large programs.

Supplementary Material

With this revision we have tried to enhance the online learning center too. The supplementary material would include the following:

For the Instructor

- Solutions to the debugging exercises

For the Student

- Exclusive project for implementation with code, step-by-step description and user manual
- Code for the two projects (*given in the book*)
- Two mini projects
- Reading material on C

This book is designed for all those who wish to be C programmers, regardless of their past knowledge and experience in programming. It explains in a simple and easy-to-understand style the what, why and how of programming with ANSI C.

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