

Preface

This book is written for students following a first programming course. Such students may be at a university or college, or they may be following a course of their own. Those who wish to add another programming language to their repertoire will find this book useful.

The book can be used to support a sixteen week course of introductory lectures and practicals. A major project could take another sixteen weeks.

The teaching style is based on the premise that many programming students learn best by example. So, a tutorial approach is used. Small, simple programs are used to introduce elements of the language and the fundamental programming concepts. Graded exercises are used to help reinforce understanding and to develop problem solving skills. Everything the student needs to complete a substantial programming project is included: arrays, files, printer output, documentation and writing a project report. A problem with the tutorial approach is that not every feature of the language or libraries is discussed. However, the student on an introductory course does not need to know everything about the language in order to become a respectable programmer.

Why choose C as an introductory programming language? It is smaller (and simpler?) than more recent languages such as ASP.NET, Java and C#. It enables students to learn how to program without the distraction of complex programming environments, challenging paradigms and large languages. It is supported by an extensive standard library of routines. It supports sound program construction practice such as separate compilation of units, functional programming and abstract data types. Students can concentrate on the fundamentals, and leave the design and implementation of graphical user interfaces to another course. C forms the basis of many current languages. And C compilers are free.

In this version a few corrections and improvements have been made to the original text. The *main* function declarations now reflect current practice. The use of functions has been removed from chapter one. *int* rather than *unsigned* is used wherever reasonable. The chapter on structures has been shortened. The chapter on screens has been removed because programming a DOS interface is no longer relevant and programming a windows interface is a book in its own right. An appendix on installing and using the GNU C compiler has been included. tm Jan 2008

Acknowledgements

The C language was devised by Dennis Ritchie and described in KERNIGHAN BW and RITCHIE DM *The C Programming Language* Prentice Hall 1978, 1988. The language and its libraries were standardised by the American National Standards Institute (ANSI) and by the International Standards Organisation (ISO).