This book


is the most recent book of the collection of these authors on the Fortran language:


All the books in this collection have a high prestige and quality and are excellent references to Fortran. They are not books to learn how to program in Fortran from a pedagogical point of view but to consult in its totality the rules of the language in a clear and complete way.

The authors indicate in the preface that the basic language of the book is Fortran 2008 standard to which they dedicate chapters 2 to 19. Fortran 2018’s contributions are described in subsequent chapters. In this sense, the criteria for the elaboration of this book differs from those used in the predecessors of the collection. Thus, in the 2011 edition, the Fortran 95 language was described in the first chapters, followed by extensions of Fortran 2003 and in subsequent chapters the additions of Fortran 2008. The present edition does not indicate in the chapters dedicated to Fortran 2008 in which version of the language the various functionalities are introduced and thus, the historical vision of the evolution of the Fortran language is lost.

At the time of release of this book the Fortran 95 language is fully implemented in the current compilers; however, Fortran 2003 and Fortran2008 are not fully implemented in some compilers, let alone Fortran 2018. Therefore, it is important for the reader to know which version of the compiler he or she can use because certain features described may not be available in your compiler, in which case an earlier version of this magnificent collection may
be more useful. For example, access to environment variables is Fortran 2003, the use of CYCLE and EXIT in an IF or SELECT CASE construction is introduced in Fortran 2008, certain intrinsic procedures have been appearing in different language versions...Even so, this book is interesting to know characteristics of the language that will appear in the various compilers.

The book has a very complete index, a very clear and precise style and an accurate use of bold typeface that facilitates the understanding of fundamental concepts. The exercises proposed in each chapter are interesting but they are not suitable for trying to learn language from them.

Chapter 1 presents a brief but very precise history of the language. Chapters 2 and 3 explain the types of variables, expressions, and assignments. Chapter 4 is devoted to control constructions. Some explanatory diagrams of the different constructions are missing. Chapter 5 describes the use of the various procedures and program units and various ways of passing arguments to the procedures. Chapter 6 shows the dynamic assignment to entities. Chapter 7 describes the use of arrays in language and their relationship to procedures and dynamic memory allocation. The close relationship between the use of arrays and procedures means that in Chapter 7 there are numerous references to Chapter 5. The different forms of entity specification are detailed in Chapter 8. Chapter 9 shows a precise description but without examples of the different procedures, functions, subroutines and intrinsic modules of the language without indicating, as is the general criterion throughout the book, in which version of the language they have appeared. Chapters 10, 11 and 12 deal with data transfer, editing descriptors and operations in external files. Chapter 13 describes advanced features on parameterization of derived types and chapter 14 deals with pointers procedures; these two short chapters are a continuation of chapters 8 and 5 respectively. The possibilities of object-oriented programming are presented in chapter 15. The use of sub-modules for decomposition of large modules is described in chapter 16 and the use of coarrays in parallel programming in chapter 17. Chapter 18 shows the handling of exceptions in calculations with real data according to the IEEE standard. The interoperability between Fortran and C is detailed in chapter 19.

The following chapters present Fortran 2018 improvements in the use of coarrays (chapter 20), interoperability between Fortran and C (chapter 21), intrinsic modules for handling real data (chapter 22) and other minors improvements relating to procedures and data input-output (chapter 23).

Appendices A and B list the language characteristics considered outdated, obsolete or deleted. Appendix C shows an example of the use of manipulation of dynamic data structures. Finally, the book ends with the solution of some proposed exercises and the cross-references section. It does not have a bibliography of books and other Fortran references, which is a frequent fact
in other Fortran texts. It would be desirable to indicate in some way in which language version the main features have been introduced.

In short, it is an excellent authoritative and complete reference book on the modern Fortran language, where all its possibilities are collected and any detail of the language can be clearly consulted. However, it is not a book to learn Fortran from the beginning.