

## Introduction to the English edition

This book introduces the reader to the world of computer programming. We recommend it to all those who want to learn in this area and would like to acquire skills in creating programs beyond their simple use.

The book is not based on the presentation of a single programming language. Programming is discussed as far as possible independently of the programming languages. However, the use of a modern visual development system is assumed. In accordance with this, objects and object-oriented discussion will be in focus.

The learning of programming may not fully disregard a specific programming language. If necessary, the Visual Basic is provided, but the specific references to the language are isolated from the rest of the text.

The free development system of Visual Basic programs, the Visual Studio Express for Windows Desktop<sup>1</sup>, is available for download from the Microsoft Visual Studio website ([www.visualstudio.com/downloads/](http://www.visualstudio.com/downloads/)).

The book consists of four chapters. The programming model is built up gradually in the successive chapters. The definitions evolve and become more and more complete. All of the concepts are not defined at once with full details, because they would be very complicated; difficult-to-understand definitions will be given at a certain level.

The first chapter contains the fundamentals of programming. It presents the objects of Graphical User Interface, and discusses the concept of different types of variables and expressions. It acquaints the reader with the most important instructions, branches and loops.

The second chapter deals with elementary algorithms, in addition to the knowledge relating to certain types, including the arrays.

The third chapter is built around file handling. The concept of complex data structures will be extended, and the use of the multi-dimensional arrays, structures (records) and sets will be presented. An overview of the most important complex algorithms expands our problem-solving knowledge. We also learn to create our own functions and procedures.

The last chapter summarizes program design and programming steps, as well as presents the error handling and troubleshooting methods. It provides an outlook into the area of computer graphics and programming of Microsoft Office applications.

The chapters consist of lessons. The lessons are divided into short sections. The modular structure makes the curriculum easy to understand and learn. In each section, computer exercises demonstrate the application of the learnt material. **Solving exercises is essential for understanding the teaching material.** The solutions are available for download from the website ([www.zmgzeg.sulinet.hu/programozas](http://www.zmgzeg.sulinet.hu/programozas)).

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<sup>1</sup>The Microsoft recommends the Visual Studio Community version for learning.

The lessons are complemented by a number of tasks. In terms of variety, and regarding the amount of tasks, this book stands out among programming books published so far. In every chapter, after a few lessons, additional practice exercises can be found.

The icons used in the lessons and their meanings:



Exercise to be solved at the computer



A Visual Basic note



The small print sections in the text contain additional information.

The Visual Basic programming summary (*Programming Guide*) and its reference (*Reference*) are available on the website of the Microsoft Developer Network ([msdn.microsoft.com](http://msdn.microsoft.com)). On the same site additional documentation (such as *Getting Started*) and guides can also be found.

The files mentioned in the exercises and tasks of the book can also be downloaded from the book's website. The source files are UTF-8 encoded text files. The source files are deliberately designed to include a lot of data, although the programs were of course first tested with small amounts of data. However, we can also ourselves create such test cases.

Some of the tasks that can be found after the lessons were based on the examples of various mathematical exemplars. We would like to extend our thanks to their authors. We are also grateful to Ferenc Devecz for his valuable comments. His contribution has greatly aided us in clarifying some of the more difficult concepts of informatics and developing a modern way of teaching programming. The authors would also like to thank the reading editor of both the English and Hungarian versions, Bertalan Tóth. Without his dedicated work, we could not have succeeded with the English edition of this book. Thanks to the native speaking lecturers Niamh Potter and Charles Barlow who have carefully read the text, adjusted the shortcomings of the translation and improved the style. We are especially grateful to Ms. Katalin Fried the maker-up of the book, who not only done a careful job of preparing the manuscript for the press, but has also corrected the remaining grammatical mistakes.