



C# Programming for Absolute Beginners

Radek Vystavěl

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To my parents whose loving care allowed me to live an untroubled childhood and to develop my talents in exact sciences. Let this book be a celebration of their efforts, not having been, hopefully, in vain.

Mým rodičům, jejichž láskyplná péče mi umožnila prožít bezstarostné dětství a rozvinout nadání pro exaktní vědy. Ať je tato kniha oslavou jejich úsilí, které, doufám, nepřišlo vniveč.

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About the Author



Radek Vystavěl is a software developer based in Ondřejov, Czech Republic. During his career, he has helped many companies and academic institutions with their demands for tailor-made software. In addition, in the past 15 years, he has taught many courses about programming and databases, both at the college level and through his own events. During this time, he has acquired substantial experience teaching beginners and has decided to share it with a worldwide audience. In his leisure time, he studies physics and its history and draws his inspiration from walking in the woods and meadows.

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CHAPTER 1

Getting Ready

Welcome, dear reader, as you begin your journey to learn programming! Computers, tablets, mobile phones, and many other electronic devices are programmable and will do exactly what a human programmer tells them to do.

Programming is a world based entirely on logic. In this respect, it is quite unique among human activities. If you like logic—for example, you like solving puzzles or you are accustomed to searching for the meaningful order around you—then you will love programming.

C# Language

In this book, you will create some real programs, and for this purpose, you need to learn a programming language, which is what gives the computer its instructions. Programming languages provide the interaction between computers and humans. They are strict enough so that absolutely dumb computers can understand them, and yet they are human enough so that programmers can write code using them.

Over time, many programming languages have been created, and many are in use today. Each language has its virtues and drawbacks.

For this book, I have chosen the C# programming language, which is my number-one language both for professional development and for teaching. It's about 15 years old, which means its creators could avoid the known flaws of older languages when developing it. In addition, it is now a time-proven language, not to be readily replaced by some new fashion.

C# is actually the flagship language of Microsoft. It is quite universal—you can use it to write a variety of programs ranging from traditional console and desktop applications through web sites and services to mobile development, both for business and for entertainment. Originally born on Windows, it has been quickly spreading onto other platforms in recent years—such as Linux and Mac and Android and iOS.

I hope you will have a good time with it and you will find many uses for it in your future professional/hobby life!

Who This Book For

The book is primarily intended for those who have no or only a limited knowledge of programming. To get the most from this book, you should be skillful with computers—you should be able to install a program, know what a file or a folder is, and so on.

However, because of the book's deep coverage of the topics included, you may also benefit from the book if you are an intermediate programmer or someone who has already mastered another programming language and want to start with C#. You will simply proceed faster through the book than absolute beginners.

How the Book Differs from Others

I wrote this book based on my 15 years of experience teaching programming to various groups of students, teachers, hobbyists, and others. For many of them, it was their first encounter with the subject. I watched them closely while working, and over the years I have accumulated a fair amount of information about how people learn, what is easy for them, and what requires more attention.

In this book, you will benefit from this knowledge. The book differs from similar ones mostly in the following aspects:

- The pace of explanations—i.e., the speed of proceeding to new topics—is appropriately slow so that you do not get lost shortly after having started. A common fallacy of expert authors is to consider beginner stuff as trivial. Actually, it *is* trivial—for them. But not for the reader. I have made considerable effort to avoid this and to spend enough time on things considered easy by the initiated.
- I believe that for you to successfully grasp all the new ideas, you need to see them used repeatedly in slightly different situations, and this is what you find here. The examples are written so that you proceed in small steps, reinforcing what you already know and always adding a little bit of new information or perspective.

- The multitude of examples allows me to go quite deep into the subject even while staying at the beginner level. Many starter books show a new notion through one or two textbook examples and move on. This is not so here. The examples chosen stem from real programming. They often represent the core of various situations I have found myself in when developing real-world software. I cover the core topics distilled to an elementary level.
- I have authored several programming books in the Czech language and have found that many readers preferred the coding examples over the explanatory text. This probably reflects our modern times of information overload. That is why I have written this book using a concise, task-oriented approach. You will find a minimum of talking and a maximum of action here. Enjoy it!

How to Work with the Book

Before I start telling you how to prepare your computer, here are some tips on how you might work with the book to get maximum usefulness out of it:

- The book contains many exercises. These are not tasks for practicing what you have already learned. These tasks constitute the main instructions of the book. This means you are not supposed to try to *solve* them after reading what the task is. What you are supposed to do is to read what the task is about, see its illustrative screenshots, and go immediately to study its solution.
- You should not just *read* the solutions. You are strongly encouraged to type them on your computer and get them working. The exercises will have much greater impact on your understanding if you try everything yourself.
- In case you cannot get some exercise working, you can always check the accompanying source codes at <https://github.com/apress/charp-programming-for-absolute-begs>. Also, you might want to visit my website at <http://moderniprogramovani.cz/en/>.
- In each task, try to understand the logic of its solution. Also, it is helpful to try your own modifications of the tasks. Do not be afraid to play with the code. It is not a chemical lab; you will not blow up your house!