

INTRODUCTION

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The Visual Basic 4 for Windows 95 Handbook

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The Visual Basic 4 for Windows 95 Handbook

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Acknowledgments

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Introduction

When Visual Basic 1.0 was released, Bill Gates, Chairman and CEO of Microsoft, described it as "awesome." Steve Gibson in *Infoworld* said Visual Basic is a "stunning new miracle" and will "dramatically change the way people feel about and use [Microsoft] Windows." Stewart Alsop was quoted in the *New York Times* as saying Visual Basic is "the perfect programming environment for the 1990s."

So what is all the hype about? Exactly what is Visual Basic and what can it do for you? Well, Bill Gates describes Visual Basic as an "easy yet powerful tool for developing Windows applications in Basic." This may not seem like enough to justify all the hoopla until you realize that Microsoft Windows is used by millions of people, and that developing a Microsoft Windows application formerly required an expert C programmer supplied with about 20 pounds worth of documentation for the needed C compiler and the essential add-ons. As Charles Petzold (author of one of the standard books on Windows programming in C) put it in the *New York Times*: "For those of us who make our living explaining the complexities of Windows programming to programmers, Visual Basic poses a real threat to our livelihood."

Visual Basic 2.0 was faster, more powerful and even easier to use than Visual Basic 1.0. Visual Basic 3 added a simple way to control the most powerful databases available. Visual Basic 4 adds support for 32-bit development and begins the process of turning Visual Basic into a fully object oriented programming language. Moreover, unlike earlier versions of Visual Basic, the newest version allows you to seamlessly add in third part tools to make your development easier. So welcome to the latest and best version of Visual Basic, the programming tool of the 1990s!

About This Book

This tutorial is a comprehensive, hands-on guide to all the ins and outs of Visual Basic 4 programming--one that doesn't assume you've programmed before. (However, people familiar with earlier versions of Visual Basic or another structured programming language will, of course, have an easier time.) You'll start at the beginning and quickly move along the road to mastery. Soon you'll be writing sophisticated Windows programs that take full advantage of Visual Basic's exciting and powerful event-driven nature. Finish this book and you will be in a position to write commercial-quality Visual Basic programs!

I've tried hard to stress the new ways of thinking needed to master Visual Basic programming, so even experts in more traditional programming languages can benefit from this book. I've taken this approach because trying to force Visual Basic into the framework of older programming languages is ultimately self-defeating--you can't take advantage of its power if you continue to think within an older paradigm.

To make this book even more useful there are extensive discussions of important topics left out of most other introductory books. There's a whole chapter on objects, including a non-trivial example of building your own objects with Visual Basic. There's a whole chapter on recursion. There are methods of keeping file information secret and ways to add protection to programs you may want to distribute. It also includes an extensive discussion of sorting and searching techniques and lots of tips and tricks. My goal was to make this book a "one stop resource." I even have an appendix on how to use the Internet to get further information about Visual Basic.

Unlike many of the books out there, I not only want to introduce you to a topic but to take you the one step further that leads you to mastery.

The main body of this book ends with a professional quality checkbook management program. This was chosen because, in my opinion, nothing shows off the power of Visual Basic better than a program like this. This program took less than a week to design and implement. It is easy to imagine an entire finance program capable of generating millions of dollars in sales written in only a few weeks using Visual Basic. (This is not simply my imagining what could happen--substantial parts of Quicken are written in Visual Basic, and UnInstaller, the most successful Windows product to come along in quite a while, was written mostly in Visual Basic.)

Finally, since most users of Visual Basic have (or eventually will have) the higher-end versions ("Visual Basic Professional Edition" or "Visual Basic Enterprise Edition," I cover many of the special features of these higher-end products into the text itself rather than relegating them to an appendix.

How This Book Is Organized

This book can be used in a variety of ways depending on your background and needs. People familiar with structured programming techniques can skim the complete discussions of the programming constructs such as loops and Sub and Function procedures in Visual Basic. These appear in Chapters 5 through 11. Beginners will want to work through this material more carefully.

Here are short descriptions of the chapters:

Chapters 1 and 2 introduce you to Visual Basic and help you become familiar with the Visual Basic environment.

Chapters 3 and 4 start you right off with the notion of a customizable window (called a *form*) that is the heart of every Microsoft Windows (and thus, Visual Basic) application. You'll see how to add the Basic controls--such as command buttons, text boxes, and labels--to your forms.

Chapters 5 through 11 discuss the core programming techniques needed to release Visual Basic's powers. You'll see how to take full advantage of Visual Basic 4's various data types and control structures, as well as its many built-in functions. You also learn how to add your own functions to Visual Basic 4. You'll see how to use Visual Basic's implementation of part of the object oriented programming paradigm--including how to build your own objects with Visual Basic. You'll see how to sort and search through data, use the grid control, and use modular programming techniques to make your programs more flexible, powerful, and easier to debug.

Chapters 12 and 13 show you how to finish building the user interface. They take you through most of the rest of the controls you can add to your forms. You'll see how to add list boxes, radio (option) buttons, check boxes, scroll bars, and all the other controls that Microsoft Windows users expect in their Windows applications--and that make Windows applications so much easier to use than their counterparts running under DOS. We cover both the standard controls and those found in the Professional and Enterprise editions (including the Windows 95 specific controls.) Moreover, we indicate workarounds if you want to use a Professional edition feature and only have the standard edition whenever possible.)

Chapter 14 shows you the powerful debugging tools in Visual Basic 4. You'll learn how to isolate bugs (programming errors) and then eradicate them.

Chapter 15 introduces you to the world of graphics. Since Microsoft Windows is a graphically based environment, the powers of Visual Basic in this arena are pretty spectacular.

Chapter 16 shows you how to analyze the way a user is manipulating his or her mouse.

Chapter 17 shows you how to handle files in Visual Basic, including sophisticated methods for encrypting (that is, keeping the contents of files safe from casual probes). We especially emphasize the changes in file handling techniques between Visual Basic 4 and earlier versions of Visual Basic.

Chapter 18 introduces you to the world of dynamic data exchange (DDE), object linking and embedding (OLE), and OLE automation. DDE lets you automate the transfer of information between Windows applications--and you'll be able to have Visual Basic coordinate the transfers! OLE lets you embed other Windows applications within a Visual Basic application so users can take full advantage of many of their other Windows applications. OLE automation lets you control another Windows application using *its* native language.

Chapter 19 is an extensive treatment of *recursion*. Recursion is one of the most powerful programming tools available, and it's too often slighted in introductory books. In addition to powerful methods for sorting data, this chapter gives you a short introduction to recursive graphics, or *fractals*. Fractals are one of the most powerful tools in graphics--for example, they were used in the Genesis sequence in *Star Trek II: The Wrath of Khan*.

Chapter 20 is an introduction to the Data manager and other data access features added to Visual Basic 4. You'll see how to control the most powerful PC databases with only a few lines of code using the new data control.

Chapter 21 is the checkbook manager. It's a long program, but by this stage nothing in it will be foreign to you.

Appendix A shows you how to use the new Setup Wizard that makes distributing your files a breeze.

Appendix B surveys what resources are available for Visual Basic on the Internet.

Appendix C contains, courtesy of Microsoft, answers to what they regard as the most frequently asked questions about Visual Basic. We added this appendix in the hope that it will save you hours of waiting on the line for Microsoft's support services to help you.

Appendix D opens up to you the exciting world of third-party tools and resources.

Conventions Used in This Book

Keys are set in small capital letters in the text. For example, keys such as CTRL and HOME appear as shown here. Arrow and other direction keys are spelled out and also appear in small capital letters. For example, if you need to press the right arrow key, you'll see, "Press RIGHT ARROW."

When you need to use a combination of keys to activate a menu item, the first two keys will be separated by a plus sign and the entire key combination will appear in small capital letters. For example, "Press CTRL A+B" indicates that you should hold down the key marked "Ctrl" on your keyboard while holding down the "A" and the "B." On the other hand, ALT F, P means press the "Alt" key, then the "F" key, and then the "P" key--you don't have to hold down the "Alt" key.

DOS commands, filenames, and file extensions appear in full capital letters: COMMAND.COM, .TXT, and so on. Microsoft Windows 95 is referred to just as Windows most of the time. Earlier versions of Windows are called Windows 3.X when they need to be referred to. Keywords in Visual Basic appear with the first letter of each word capitalized: for example, Print, DeBug, FontSize, and so on.

The syntax for a command in Visual Basic is set in ordinary type except that items the programmer can change appear in italics. For example, the Name command used to rename a file appears as

Name *OldFileName* As *NewFileName*

Also, programs are set in a monospaced font, as shown here:

```
PRIVATE SUB FORM_CLICK()  
  PRINT "HELLO WORLD!"  
END SUB
```

and lines of code that should appear on one line when you program, but which for typographic reasons need to be on more than one line in this book, will be outdented or an underscore will be used. (Visual Basic 4 added a line continuation character--the underscore--which you can use whenever you are not inside quotes.) Here are some examples:

```
PRINT "THIS LINE IS MUCH TOO LONG TO FIT ON ONE LINE  
BUT IS OUTDENTED TO INDICATE IT SHOULD BE ENTERED ON ONE LINE"
```

```
M$ = "THIS LINE IS ALSO TOO LONG BUT IT HAS AN " + _  
"UNDERSCORE SO IT WILL BE REGARDED AS ONE LINE BY VB"
```

Finally, menu choices are indicated by writing the menu name, followed by a bar (|), followed by the menu item; for example, "choose File|Open" means open the File menu and then choose the Open option.

Disk Order Form

There are a couple hundred pages of code in this book. You may not want to enter it all. The companion disk contains all the code in *The Visual Basic 4 for Windows Handbook* with more than two lines. It also includes the form files for the figures and the more interesting projects. The disk also includes the commented source code for the version of the checkbook manager given in the text, and also one that uses the more object oriented features of Visual Basic. In addition, the disk contains around fifty bonus procedures with full source code. Here's a sample of what the bonus procedures include:

Business procedures for...

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Analyzing a loan or annuity

Determining straight-line, sum-of-digits, or
double-declining balance depreciations

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Sorting, insertion, and searching

Mathematics procedures for...

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