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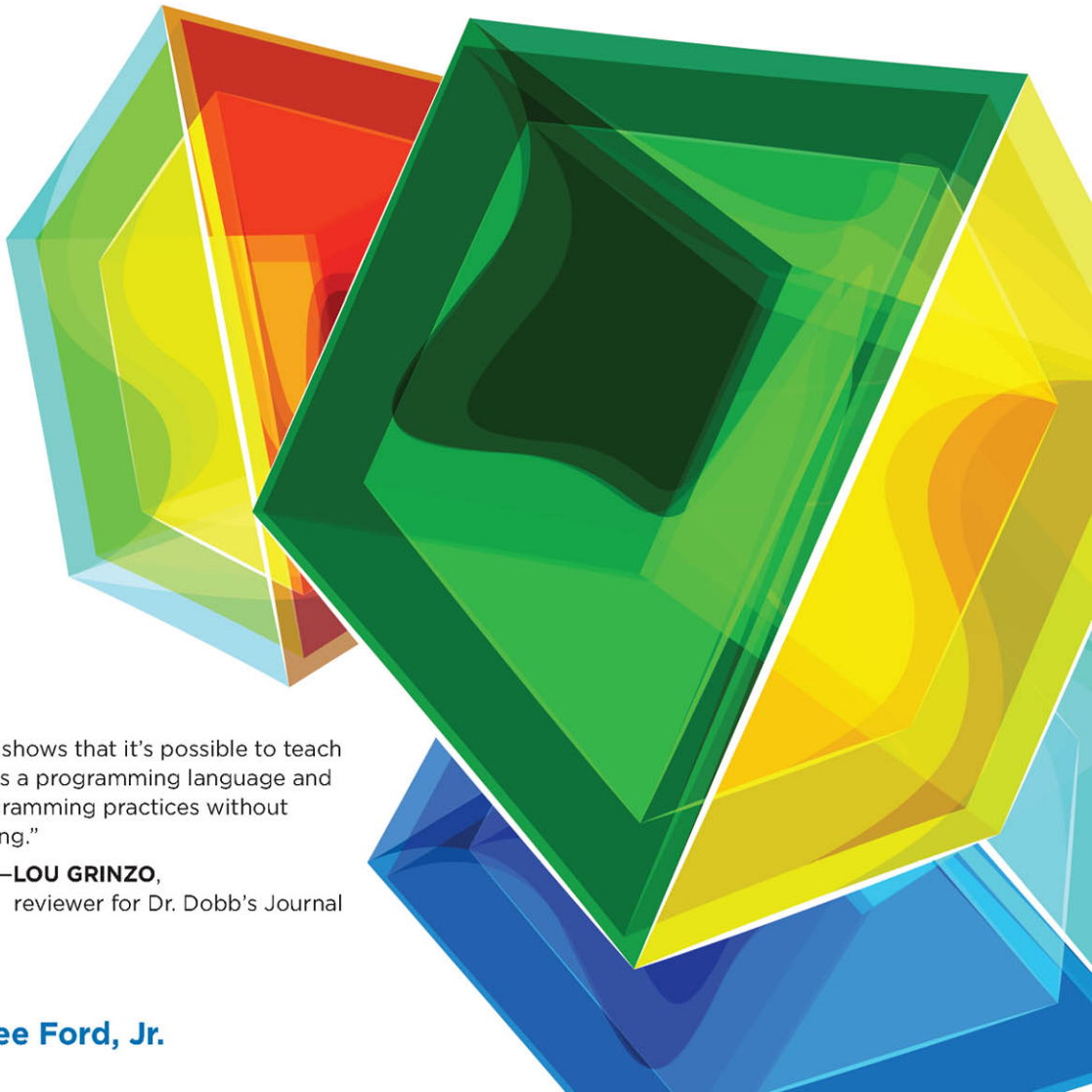


Microsoft®

# WSH and VBScript Programming

for the Absolute Beginner

Fourth Edition



"This series shows that it's possible to teach newcomers a programming language and good programming practices without being boring."

—**LOU GRINZO**,  
reviewer for Dr. Dobb's Journal

**Jerry Lee Ford, Jr.**

# Microsoft® WSH and VBScript Programming for the Absolute Beginner, Fourth Edition

Jerry Lee Ford, Jr.

Cengage Learning PTR



Professional • Technical • Reference

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Australia, Brazil, Japan, Korea, Mexico, Singapore, Spain, United Kingdom, United States

**Microsoft® WSH and VBScript Programming  
for the Absolute Beginner, Fourth Edition**  
Jerry Lee Ford, Jr.

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*To my father;  
to my children, Alexander, William, and Molly;  
and to my beautiful wife, Mary.*

---

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# About the Author

**Jerry Lee Ford, Jr.** is an author, educator, and IT professional with more than 24 years of experience in information technology, including roles as an automation analyst, technical manager, technical support analyst, automation engineer, and security analyst. He is the author of 38 books and co-author of two additional books. His published works include *Microsoft Windows PowerShell Programming for the Absolute Beginner*; *Microsoft Visual Basic 2008 Express Programming for the Absolute Beginner*; *HTML, XHTML, and CSS for the Absolute Beginner*; *XNA 3.1 Game Development for Teens*; and *VBScript Professional Projects*. Jerry has a master's degree in business administration from Virginia Commonwealth University in Richmond, Virginia, and has more than five years of experience as an adjunct instructor teaching networking courses in information technology.

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# Table of Contents

Introduction.....	xv
-------------------	----

## Part I

<b>Introducing the WSH and VBScript</b>	<b>1</b>
---	----------

---

<b>Chapter 1 Getting Started with the WSH and VBScript</b>	<b>3</b>
--	----------

Project Preview: The Knock Knock Game.....	3
--	---

What Is the WSH? .....	4
------------------------	---

WSH Scripting Engines .....	5
-----------------------------	---

Selecting a WSH Script Execution Host.....	6
--	---

Introducing the WSH Core Object Model.....	6
--	---

How Does the WSH Compare to Windows Shell Scripting?.....	7
---	---

WSH Versus Windows PowerShell .....	8
-------------------------------------	---

Understanding How the Windows Shell Works .....	9
---	---

How Does It All Work? .....	15
-----------------------------	----

Operating System Compatibility .....	15
--------------------------------------	----

How Do You Install It?.....	16
-----------------------------	----

How Does It Work with VBScript?.....	17
--------------------------------------	----

What Other Scripting Languages Does the WSH Support?.....	20
---	----

Introducing VBScript .....	21
----------------------------	----

VBScript Capabilities.....	22
----------------------------	----

VBScript's Roots.....	22
-----------------------	----

VBScript's Cousins: Visual Basic and VBA .....	23
--	----

Back to the Knock Knock Game.....	25
-----------------------------------	----

Designing the Game.....	25
-------------------------	----

The Final Result .....	29
------------------------	----

Summary .....	29
---------------	----

<b>Chapter 2 An Introduction to the Windows Script Host</b>	<b>31</b>
Project Preview: The Rock, Paper, and Scissors Game . . . . .	31
Examining Scripting Environments. . . . .	32
An Examination of WSH Components. . . . .	33
A Quick Introduction to the WSH Core Object Model . . . . .	34
Working with the WScript Object . . . . .	35
Configuring WSH Execution Hosts . . . . .	35
Configuring WScript.exe and CScript.exe Command-Line Execution. . . . .	36
Configuring WScript.exe Desktop Execution . . . . .	37
Overriding Command-Line Host Execution Settings . . . . .	38
Customizing WScript.exe Settings for Individual Desktop Scripts . . . . .	39
Enabling and Disabling the Windows Script Host . . . . .	41
Back to the Rock, Paper, and Scissors Game . . . . .	43
Designing the Game. . . . .	43
The Final Result . . . . .	46
Summary . . . . .	47

## Part II

### Learning VBScript and WSH Scripting **49**

---

<b>Chapter 3 VBScript Basics</b>	<b>51</b>
Project Preview: The Math Game . . . . .	51
VBScript Statements . . . . .	53
VBScript Syntax Rules. . . . .	54
Reserved Characters. . . . .	56
Adding Comments. . . . .	57
Mastering the VBScript Object Model. . . . .	58
Working with VBScript Run-Time Objects. . . . .	59
Properties . . . . .	61
Methods . . . . .	62
Using VBScript Run-Time Objects in Your Scripts . . . . .	64
Examining Built-in VBScript Functions . . . . .	66
Demo: The Square-Root Calculator. . . . .	66
Demo: A New and Improved Square-Root Calculator . . . . .	67
Displaying Script Output . . . . .	68
The WScript Object's Echo() Method . . . . .	69
The WshShell Object's Popup() Method . . . . .	69
The VBScript InputBox() Function . . . . .	71
The VBScript MsgBox() Function . . . . .	72

Back to the Math Game . . . . .	74
A Quick Overview of the WshShell Object's SendKeys() Method . . . . .	74
Designing the Game . . . . .	77
The Final Result . . . . .	81
Summary . . . . .	81
<b>Chapter 4 Constants, Variables, Arrays, and Dictionaries</b>	<b>83</b>
Project Preview: The Story of Captain Adventure . . . . .	83
Understanding How Scripts View Data . . . . .	84
Working with Data That Never Changes . . . . .	85
Assigning Data to Constants . . . . .	86
VBScript Run-Time Constants . . . . .	88
Storing Data That Changes During Script Execution . . . . .	91
VBScript Data Types . . . . .	91
Defining Variables . . . . .	93
Variable Naming Rules . . . . .	95
Variable Scope . . . . .	96
Modifying Variable Values with Expressions . . . . .	96
Using the WSH to Work with Environment Variables . . . . .	100
Working with Collections of Related Data . . . . .	103
Single-Dimension Arrays . . . . .	103
Multiple-Dimension Arrays . . . . .	105
Processing Array Contents . . . . .	105
Getting a Handle on the Size of Your Arrays . . . . .	108
Resizing Arrays . . . . .	109
Building Dynamic Arrays . . . . .	111
Erasing Arrays . . . . .	112
Storing Data in Dictionaries . . . . .	113
Keys and Values . . . . .	113
Adding Dictionary Items . . . . .	113
Retrieving Dictionary Items . . . . .	114
Deleting Dictionary Items . . . . .	114
Processing Data Passed to a Script at Run-Time . . . . .	114
Passing Arguments to Scripts . . . . .	114
Designing Scripts That Accept Argument Input . . . . .	115
Back to the Story of Captain Adventure . . . . .	117
Designing the Game . . . . .	117
The Final Result . . . . .	120
Summary . . . . .	121



<b>Chapter 5 Conditional Logic</b>	<b>123</b>
Project Preview: The Planet Trivia Quiz Game	123
Examining Program Data	124
The If Statement	125
The Select Case Statement	133
Performing More Complex Tests with VBScript Operators	135
Back to the Planet Trivia Quiz Game	136
Game Development	137
The Fully Assembled Script	142
Summary	142
<b>Chapter 6 Processing Collections of Data</b>	<b>143</b>
Project Preview: The Guess a Number Game	143
Adding Looping Logic to Scripts	144
The For...Next Statement	145
The For Each...Next Statement	147
The Do...While Statement	149
The Do...Until Statement	152
The While...Wend Statement	153
Back to the Guess a Number Game	154
Designing the Game	154
The Final Result	157
Creating Shortcuts for Your Game	158
A Complete Shortcut Script	163
Summary	164
<b>Chapter 7 Using Procedures to Organize Scripts</b>	<b>165</b>
Project Preview: The BlackJack Lite Game	165
Improving Script Design with Procedures	167
Introducing Subroutines	167
Creating Custom Functions	168
Improving Script Manageability	169
Writing Reusable Code	170
The Guess a Number Game Revisited	170
Working with Built-in VBScript Functions	174
Limiting Variable Scope with Procedures	174
Back to the BlackJack Lite Game	176
Designing the Game	176
The Final Result	184
Summary	184

## Part III

### Advanced Topics 185

---

<b>Chapter 8 Storing and Retrieving Data</b>	<b>187</b>
Project Preview: The Lucky Lottery Number Picker .....	187
Working with the Windows File System .....	189
Opening and Closing Files .....	191
Writing to Files .....	194
Writing Characters .....	194
Writing Lines .....	195
Adding Blank Lines .....	195
Reading from Files .....	196
Skipping Lines .....	198
Reading Files Character by Character .....	198
Reading a File All at Once .....	199
Managing Files and Folders .....	199
Copying, Moving, and Deleting Files .....	200
Copying One or More Files .....	201
Moving One or More Files .....	201
Deleting One or More Files .....	202
Creating a New Folder .....	202
Copying Folders .....	202
Moving Folders .....	203
Deleting Folders .....	203
Storing Script Configuration Settings in External Files .....	204
INI File Structure .....	204
A Working Example .....	205
Back to the Lucky Lottery Number Picker .....	207
Designing the Game .....	208
The Final Result .....	216
Summary .....	217
 <b>Chapter 9 Handling Script Errors</b>	 <b>219</b>
Project Preview: The Hangman Game .....	219
Understanding VBScript Errors .....	221
Understanding Error Messages .....	221
Preventing Logical Errors .....	222
Dealing with Errors .....	223
Letting Errors Happen .....	223

Ignoring Errors . . . . .	224
Creating Error Handlers . . . . .	225
Reporting Errors . . . . .	227
Creating a Custom Log File . . . . .	228
Recording an Error Message in the Application Event Log . . . . .	229
Back to the Hangman Game . . . . .	230
Designing the Game . . . . .	230
The Final Result . . . . .	242
Summary . . . . .	243
<b>Chapter 10 Using the Windows Registry to Configure Script Settings</b>	<b>245</b>
Project Preview: Part 2 of the Hangman Game . . . . .	245
Introducing the Windows Registry . . . . .	247
How Is the Registry Organized? . . . . .	248
Understanding How Data Is Stored in the Registry . . . . .	249
Accessing Registry Keys and Values . . . . .	250
Creating a Key and Value to Store Script Settings . . . . .	251
Creating or Modifying Registry Keys and Values . . . . .	252
Accessing Information Stored in the Registry . . . . .	252
Deleting Keys and Values . . . . .	252
Retrieving System Information Stored in the Registry . . . . .	253
Back to Part 2 of the Hangman Game . . . . .	254
Creating the Setup Script . . . . .	255
Updating the Hangman Game . . . . .	257
Summary . . . . .	262
<b>Chapter 11 Working with Built-in VBScript Objects</b>	<b>265</b>
Project Preview: The Tic Tac Toe Game . . . . .	265
Leveraging VBScript's Built-in Collection of Objects . . . . .	267
Built-in Object Properties . . . . .	268
Built-in Object Methods . . . . .	268
Creating Custom Objects . . . . .	269
Defining a Custom Object . . . . .	270
Defining Object Properties and Methods . . . . .	270
Creating Event Procedures . . . . .	271
Working with the Err Object . . . . .	274
Working with Regular Expressions . . . . .	275
Replacing Matching Patterns . . . . .	276
Testing for Matching Patterns . . . . .	279

Creating Matches Collections . . . . .	279
Back to the Tic Tac Toe Game. . . . .	280
Designing the Game . . . . .	281
The Final Result . . . . .	293
Summary . . . . .	294
<b>Chapter 12 Combining Different Scripting Languages</b>	<b>295</b>
Project Preview: The VBScript Game Console . . . . .	295
Introducing Windows Script Files . . . . .	297
Examining WSH-Supported XML Tags. . . . .	297
Using the <?job ?> Tag . . . . .	298
Using the <?xml ?> Tag . . . . .	299
The <comment> and </comment> Tags . . . . .	299
The <job> and </job> Tags . . . . .	300
The <package> and </package> Tags . . . . .	301
The <resource> and </resource> Tags . . . . .	302
The <script> and </script> Tags . . . . .	302
Executing Your Windows Script Files. . . . .	303
Back to the VBScript Game Console . . . . .	304
Designing the Game Console . . . . .	304
Using XML to Outline the Script's Structure . . . . .	304
Writing the First JScript. . . . .	305
Developing the VBScript Game Console. . . . .	307
Writing the Second JScript . . . . .	315
The Final Result . . . . .	315
Summary . . . . .	316
<b>Chapter 13 Working with the Windows Management Instrumentation</b>	<b>317</b>
Introducing the Windows Management Instrumentation. . . . .	317
WMI Infrastructure Overview . . . . .	319
Identifying WMI Consumers . . . . .	320
Examining the WMI Infrastructure . . . . .	320
Identifying Managed Resources . . . . .	323
Scripting the WMI. . . . .	323
Developing WMI Scripts. . . . .	323
Executing WMI Queries . . . . .	327
Using the WMI to Manipulate Managed Resources . . . . .	334
Locating CIM Information . . . . .	336
Summary . . . . .	336

<b>Chapter 14 Adding a GUI to Your Scripts</b>	<b>339</b>
Project Preview: The HTA Rock, Paper, Scissors Game . . . . .	339
Introducing HTML Applications (HTAs) . . . . .	340
How Do HTAs Compare to HTML Pages? . . . . .	341
Creating and Executing an HTA. . . . .	342
Constructing an HTA . . . . .	343
Introducing the <HTA:APPLICATION> Tag. . . . .	343
The <script> </script> Tags. . . . .	347
The <body> </body>Tags . . . . .	348
The <style> </style> Tags. . . . .	349
Adding Interface Elements . . . . .	352
Creating Interface Controls Using the <input> Tag. . . . .	352
Adding a Button Control Using the <button> Tag. . . . .	360
Adding a Multi-Line Text Control Using the <textarea> Tag . . . . .	360
Working with List Controls. . . . .	361
Integrating WSH into Your HTAs . . . . .	366
Starting Other Applications . . . . .	366
Using WMI to Capture Process Information . . . . .	367
Other HTA Examples. . . . .	370
Back to the Rock, Paper, Scissors Game. . . . .	370
Game Development . . . . .	371
The Fully Assembled Script. . . . .	375
Summary . . . . .	375

## Part IV

### Appendices

**377**

<b>Appendix A WSH Administrative Scripting</b>	<b>379</b>
Desktop Administration . . . . .	380
Configuring the Desktop Background. . . . .	380
Configuring the Screensaver . . . . .	381
Network Administration. . . . .	383
Mapping Network Drives . . . . .	383
Disconnecting Mapped Drives . . . . .	385
Printer Administration . . . . .	386
Connecting to a Network Printer . . . . .	386
Disconnecting from a Network Printer . . . . .	387

Computer Administration .....	389
Managing Services .....	389
User Account Administration .....	391
Disk Management .....	392
Integrating VBScript with Other Applications .....	394
Automating the Generation of Microsoft Word Reports .....	394
Automating the Execution of Third-Party Applications .....	397
HTML Applications .....	399
Wrapping a GUI Around a WSH ping Script .....	399
Automating Windows Shutdown .....	402
<b>Appendix B Introducing Remote WSH</b> .....	<b>405</b>
Introducing Remote WSH .....	405
Understanding Remote WSH's Supporting Architecture .....	406
Executing Remote WSH Methods .....	407
Responding to WSH Remote Events .....	407
Accessing WSH Remote Properties .....	408
Working with Remote WSH: A Demonstration .....	409
<b>Appendix C The WSH Core Object Model</b> .....	<b>411</b>
WSH Objects and Their Properties and Methods .....	412
Examining Object Properties .....	414
Working with Object Properties .....	416
Examining Object Methods .....	417
Working with Object Methods .....	419
<b>Appendix D Built-in VBScript Functions</b> .....	<b>421</b>
<b>Appendix E What's on the Companion Website?</b> .....	<b>427</b>
Script Examples .....	427
<b>Index</b> .....	<b>433</b>

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# Introduction

Welcome to the fourth edition of *Microsoft WSH and VBScript Programming for the Absolute Beginner*. Visual Basic Scripting language (VBScript) is a member of the Visual Basic family of programming languages. Other members of this family include Visual Basic and Visual Basic for Applications (VBA). Visual Basic is a very powerful and complex programming language used by programming professionals all over the world. VBA is a programming language based on Visual Basic that is designed to provide a programming environment for Microsoft Office applications such as Excel and Access.

Like VBA, VBScript represents a subset of the Visual Basic programming language. VBScripts can be run on any computer running Windows 95 or later as long as the Windows Script Host (WSH) is installed. The WSH represents one of several environments in which VBScripts can be run. Other environments in which VBScripts can run include HTML pages processed by Internet Explorer-compatible Web browsers and within Microsoft Outlook or Active Server Pages (ASP). Of all the environments in which VBScripts can run, the WSH is the most commonly used. However, by learning to write VBScripts using the WSH, you are also learning much of the prerequisite knowledge required to write VBScripts that will run in each of these other environments.

The WSH provides VBScripts with the capability to execute on Windows computers and to directly access and manipulate Windows resources such as the Windows desktop, file system, Registry, printers, network resources, and so on. You can think of the relationship between VBScript and the WSH as follows: VBScript provides the capability to create scripts and apply logic to perform specific tasks that manipulate Windows resources, which are made available to the script via the WSH.

## Why VBScript?

VBScript is an excellent first programming language to learn. Its simplicity makes learning basic programming concepts easy. Yet VBScript is a powerful scripting language from which you can learn even the most complex programming concepts such as how to perform object-based programming. Unlike Visual Basic, VBA, and many other programming languages, there is no complex development environment to learn. In fact, you can create all your VBScripts using a simple text editor such as Windows Notepad.

VBScript provides a foundation that will later make learning Visual Basic and VBA a lot easier. VBScript is a great language for developing small but powerful scripts that perform all sorts of tasks. In fact, you'll find that many VBScripts are not very big at all when compared to programs written using more traditional programming languages. As you read through this book, I think you will be amazed at just what you can do with only a handful of lines of VBScript code. This makes VBScript the perfect language for rapid development, meaning that you can often write a VBScript to perform a task in a fraction of the time that it might take to write a program that performs the same task using a different programming language. Best of all, VBScript is free.



## Who Should Read This Book?

This book is designed to teach you how to begin developing VBScripts using the WSH. It does not assume that you have a programming background. However, a basic understanding of computers and Microsoft Windows is assumed.

If you are a first timer looking for a friendly language with which to begin a programming career or a more experienced programmer who is looking for a book that provides you with a quick WSH and VBScript learning curve, then give this book a try.

This book's games-based teaching approach makes it very different from other books. This approach is not only more fun, but is also an extremely helpful technique for learning a new programming language.

## What You Need to Begin

To follow along and complete all the exercises that you'll find in this book, you'll need a number of things:

- A computer running Windows.
- The current version of the WSH, which is version 5.8. If your computer is running Windows 7, Windows 8, or Windows 8.1, then you already have the version of WSH that you need. If you are using Windows XP with Service Pack 3 or Windows Vista, you can download and install WSH 5.7 from [www.microsoft.com/downloads/](http://www.microsoft.com/downloads/).
- A text editor that supports the creation of plain-text files to create and work with your VBScripts. For this book, you can use the Windows Notepad application. Alternatively, you may prefer to download and install a VBScript-compatible script editor. Specialized VBScript editors provide numerous advanced features not provided by Notepad, including statement color-coding, a built-in debugger, line and column numbering, script execution from within the editor, statement indentation, and more. A good example of a VBScript editor is Adersoft VbsEdit. It is distributed as shareware with a limited period of free trial and can be downloaded from [www.vbsedit.com](http://www.vbsedit.com).

## How This Book Is Organized

The fourth edition of *Microsoft WSH and VBScript Programming for the Absolute Beginner* has been improved in a number of ways. For starters, it has been updated to cover WSH 5.8 and VBScript 5.8, both of which were updated with the release of Windows 7. All scripts have been tested and their execution verified on both Windows 7 and Windows 8.1. In addition, a new chapter has been added that provides an introduction to HTML Applications (HTAs), which provide a mechanism for creating scripts that feature a graphical user interface (GUI). Lastly, I have streamlined coverage of many topics spread throughout the book to provide an even better learning experience.

This book is organized into four parts with the intention that you read it sequentially from beginning to end. If you are a new or inexperienced programmer, you will want to read this book in this manner. However,

if you already know another programming language and feel that you have a strong enough background in basic programming concepts, you might want to skip around and tackle each chapter in the order that best suits your particular requirements.

Part I, “Introducing the WSH and VBScript,” consists of two chapters and provides an introduction to both VBScript and the WSH. Part II, “Learning VBScript and WSH Scripting,” contains five chapters, which cover the programming statements that make up the VBScript scripting language. In addition, you’ll find coverage of the WSH woven throughout these chapters. The seven chapters in Part III, “Advanced Topics,” are dedicated to covering a collection of advanced topics that include file and folder administration, error handling, interaction with the Windows Registry, working with built-in VBScript objects, using XML to create WSH files, working with Windows Management Instrumentation, and adding graphical user interfaces to your scripts. Part IV, “Appendices,” is a collection of five appendices that provide you with additional avenues of exploration, including examples of real-world scripts, an introduction to Remote WSH, documentation of built-in VBScript functions, and a look at this book’s companion website.

The basic outline of the book is as follows:

- **Chapter 1, “Getting Started with the WSH and VBScript.”** This chapter provides a high-level introduction to both the WSH and VBScript. This includes how to install the WSH and how to create and execute your first VBScript.
- **Chapter 2, “An Introduction to the Windows Script Host.”** This chapter provides an introduction to the WSH core object model and the objects that comprise it. Particular attention is paid to the `WScript` root object. You’ll also learn how to configure the WSH and how to specify a default script execution host.
- **Chapter 3, “VBScript Basics.”** This chapter begins your VBScript education. You’ll learn about VBScript’s core and run-time objects and their properties and methods. You’ll learn about other VBScript elements including VBScript’s built-in functions, syntax rules, and output methods. You’ll also learn about various WSH output functions.
- **Chapter 4, “Constants, Variables, Arrays, and Dictionaries.”** This chapter shows you how to create and reference data stored in the computer’s memory using constants, variables, and arrays. You’ll learn about VBScript’s built-in collection constants. This chapter also presents the rules for variable creation and the enforcement of variable use as well as the techniques required to store and retrieve collections of data in arrays.
- **Chapter 5, “Conditional Logic.”** This chapter expands your scripting background to include an understanding of how to add conditional logic to your scripts to provide alternative execution paths for script execution. You’ll examine both the VBScript `If` and `Select Case` statements. In addition, you’ll learn about VBScript operators and operator precedence.
- **Chapter 6, “Processing Collections of Data.”** This chapter teaches you how to process collections of data and resources using various VBScript looping statements (`For...Next`, `Do While`, `Do...Until`, `While...End`, and `For Each...Next`). You’ll learn how to write small scripts that can add shortcuts to your scripts on the Windows desktop and Start menu.

- **Chapter 7, “Using Procedures to Organize Scripts.”** In this chapter, you learn how to improve the organization of your scripts using procedures. You’ll also be introduced to the concept of creating reusable procedures. This will help you create scripts that are more complicated and easier to modify.
- **Chapter 8, “Storing and Retrieving Data.”** This chapter teaches you how to create VBScripts that can write to and read from text files. In addition to learning how to create reports and log files, this chapter shows you how to store and retrieve script configuration settings in INI files, thus allowing you to externalize key script settings.
- **Chapter 9, “Handling Script Errors.”** This chapter focuses on teaching you how to deal with the errors that occur during script development and execution. This chapter introduces errors during script development and shows you how to troubleshoot them. In addition, you’ll learn how to bypass errors and to develop code that handles specific error conditions.
- **Chapter 10, “Using the Windows Registry to Configure Script Settings.”** This chapter provides an overview of the Windows Registry and shows you how to develop scripts that store and retrieve data in Registry keys and values. Because most Windows functionality is controlled from the Registry, this knowledge will provide the basic building blocks required to manipulate any number of Windows settings.
- **Chapter 11, “Working with Built-in VBScript Objects.”** This chapter expands your understanding of object-based programming by reviewing VBScript’s built-in collection of objects. Specifically, you’ll learn new techniques for parsing and extracting data from strings.
- **Chapter 12, “Combining Different Scripting Languages.”** In this chapter, you learn how to take advantage of the WSH’s support for Windows Script Files. Windows Script Files enable you to combine two or more WSH-supported scripting languages, such as VBScript and JScript, into a single script using XML. You’ll also learn a little about XML and the XML tags supported by the WSH.
- **Chapter 13, “Working with the Windows Management Instrumentation.”** This chapter was added to the third edition of this book. It provides an overview of the WMI and the WMI model. You will learn about WMI objects, namespaces, providers, and classes. You will also learn how to develop scripts that use WMI to collect and process systems information.
- **Chapter 14, “Adding a GUI to Your Scripts.”** This chapter, which is entirely new to this edition of the book, introduces HTML Applications (HTAs), which can be used to provide scripts with graphical user interfaces (GUIs). This chapter explains how HTAs work and teaches you how to add GUIs to your scripts, replete with radio buttons, checkboxes, text fields, drop-down lists, and other attributes associated with Windows applications.
- **Appendix A, “WSH Administrative Scripting.”** In this appendix, I show you some practical examples that demonstrate the use of VBScript and the WSH in real-world situations. This appendix will assist you in making a transition from the book’s game-based approach to real-world script development.
- **Appendix B, “Introducing Remote WSH.”** This appendix was added to the third edition of this book. In it, you will learn how to execute, monitor, and terminate the remote execution of scripts using Remote WSH. You will learn about the objects that make up Remote WSH and how to work with their properties and methods.

- **Appendix C, “The WSH Core Object Model.”** This appendix provides detailed information on the WSH core object model using material previously presented in Chapter 2. This includes a detailed examination of WSH objects’ methods and properties.
- **Appendix D, “Built-in VBScript Functions.”** In this appendix, I list and define all the functions that are available as you develop your VBScripts.
- **Appendix E, “What’s on the Companion Website?”** In this appendix, I provide more information about the sample scripts provided on the book’s companion website ([www.cengageptr.com/downloads](http://www.cengageptr.com/downloads)).

## Conventions Used in This Book

To help make this book as easy as possible to read and understand, a number of conventions have been applied to help highlight critical information and to emphasize specific points. These conventions are as follows:

### Hint

Whenever I can, I provide tips on how to do things differently and point out techniques that you can try to become a better programmer in “hint” boxes.

### Trap

From time to time, I use “trap” boxes to point out areas where you are likely to run into problems and then provide you with advice on how to deal with these situations—or, better yet, to prevent them from happening in the first place.

### Trick

Whenever I can, I share programming shortcuts that will help to make you a better and more efficient programmer. These appear in “trick” boxes.

### In the Real World

Throughout the book, I’ll stop along the way to point out how the knowledge and techniques that you are learning can be applied to real-world scripting projects. These will appear in “real world” boxes.

### Definition

Whenever a new term is introduced, I will provide you with an explanation of that term’s meaning in a “definition” box.

In addition, toward the end of each chapter, you will find instructions that guide you through the development of a new computer game. In most chapters, immediately following each game project, you will find a series of suggestions or challenges designed to provide you with ideas that you should be able to apply in order improve the game and further the development of your programming skills. These appear under a “Challenge” heading.

## **Companion Website Downloads**

You may download the files for this book from [www.cengageptr.com/downloads](http://www.cengageptr.com/downloads). For more information about what files are available, see Appendix E.

# I

## Introducing the WSH and VBScript

**Chapter 1: Getting Started with the  
WSH and VBScript**

**Chapter 2: An Introduction to the  
Windows Script Host**

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# 1

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## Getting Started with the WSH and VBScript

In this chapter, you'll be introduced to a number of topics. These include a high-level overview of the Windows Script Host (WSH) and VBScript. You will learn how the WSH and VBScript work together to provide a comprehensive scripting environment. You will also be introduced to HTML Applications (HTAs) and learn how an HTA can be used to provide your scripts with a graphical user interface (GUI). In addition, you'll learn a little bit about VBScript's history and its relationship to other languages in the Visual Basic programming family. As a wrap-up, you'll learn how to create and execute your very first VBScript.

Specifically, you will learn the following:

- The basic mechanics of the WSH
- How to write and execute VBScripts using the WSH
- Background information about VBScript and its capabilities
- How you can use HTAs to add GUIs to your scripts
- How to create your first VBScript game

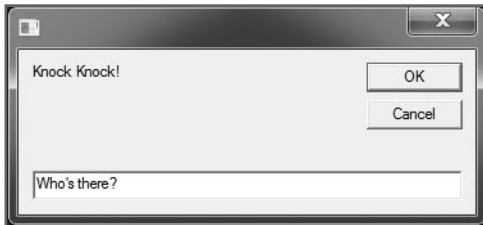
### **Project Preview: The Knock Knock Game**

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In this chapter, as in all the chapters to follow, you will learn how to create a computer game using VBScript. This chapter's game is called the Knock Knock game. Actually, it's more of a riddle than a game, but it provides a great starting point for demonstrating how VBScript works and how it can be used to develop games and other useful scripts.



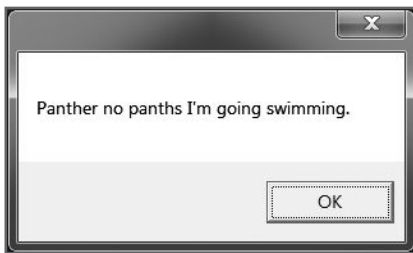
The Knock Knock game begins by displaying a pop-up dialog box that reads “Knock Knock.” It then waits for the user to respond with “Who’s there?” The dialog between the game and the player continues until the computer finally displays the game’s punch line. Figures 1.1 through 1.3 demonstrate operations of the script on Windows 7 and show the flow of the conversation between the game and the player. Figure 1.4 shows the message that appears if the player does not play the game correctly.



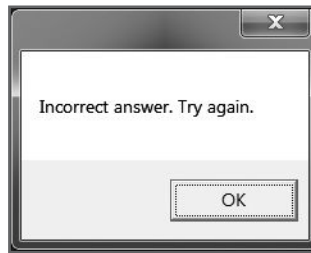
**Figure 1.1** The game begins by knocking on the door and waiting for the player to respond. © 2014 Cengage Learning.



**Figure 1.2** The first clue is provided. © 2014 Cengage Learning.



**Figure 1.3** The joke’s punch line is delivered. © 2014 Cengage Learning.



**Figure 1.4** If the user makes a mistake when playing the game, an error message providing another invitation to play the game appears. © 2014 Cengage Learning.

By the time you have created and run this game, you’ll have learned the fundamental steps involved in writing and executing VBScripts. At the same time, you will have prepared yourself for the more advanced programming concepts developed in later chapters, including how to use the WSH and VBScript to develop some really cool games.

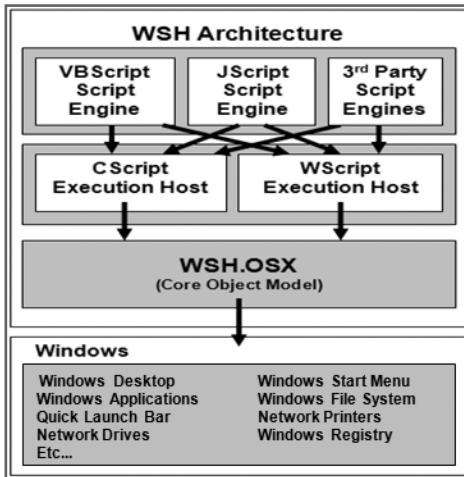
## What Is the WSH?

The Windows Script Host (WSH) is a programming environment that allows you to write and execute scripts that run on Windows operating systems. You can use the WSH to create and execute *scripts*—small text-based files written in an English-like programming language—from the Windows command prompt or directly from the Windows desktop. Scripts provide quick and easy ways to automate lengthy or mundane tasks that take too much time or effort using the Windows graphical user interface (GUI). Scripts are also better suited for automating tasks that are not complex enough to justify the development of an entire application using a language such as C++ or Visual Basic.

The WSH is made up of a number of different components. These components include the following:

- Script engines
- Script execution hosts
- The WSH core object model

The relationship of each of the components to one another is shown in Figure 1.5.



**Figure 1.5** The components that comprise the WSH.

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## WSH Scripting Engines

A *script execution engine* is a program that processes (interprets) the statements that make up scripts and translates them into machine-readable code that the computer can understand and execute. By creating an environment in which scripts can execute, the WSH makes script development a straightforward task.

The WSH provides each script with a number of resources. The WSH provides script engines for processing scripts. By default, Microsoft provides two script engines for the WSH:

- **VBScript.** A scripting language based on Microsoft's Visual Basic programming language.
- **JScript.** A scripting language based on Netscape's JavaScript Web-scripting language.

Therefore, by default, the WSH can process scripts written in either VBScript or JScript. The WSH is designed in a modular fashion, allowing Microsoft and third-party software developers to add support for additional scripting engines. For example, script execution engines have been developed for Perl, Python, and Rexx.

## Selecting a WSH Script Execution Host

To actually run a script, the WSH uses a script execution host to process a script after a script engine has interpreted that script. The WSH supplies two different script execution hosts:

- **CScript.exe.** An execution host that enables scripts to execute from the Windows command prompt and display text-based messages.
- **WScript.exe.** An execution host that enables scripts to execute from the Windows desktop, display messages, and collect user input using graphical pop-up dialog boxes.

With the exception of the WScript.exe execution host's capability to display graphical pop-up dialog boxes, the functionality provided by the WSH's two execution hosts is identical. In fact, if you run a script using the CScript.exe execution host, the script can, depending on how it is written, still display messages using pop-up dialog boxes.

### Definition

Within the context of this discussion, the term *host* describes an environment that provides all the resources required for a script to execute.

As both execution hosts provide the same basic functionality, you're probably wondering which one you should use. There's no right or wrong answer here. Often, the selection of an execution host is simply a matter of personal preference. However, there are some circumstances in which you may want to choose one over the other. For example, if you plan to run your scripts in the background, or if you want to schedule the execution of your scripts using the Windows Task Scheduler service and have no requirement for interacting with the user, you might want to use CScript.exe. However, if your scripts need to interact with the user—which will be the case with the games you'll create with this book—you'll want to use the WScript.exe execution host. Another factor that may affect your selection of a script execution host is your personal comfort level in working with the Windows command prompt.

## Introducing the WSH Core Object Model

The WSH provides one final component, called the *core object model*, which is critically important to the development and execution of scripts. The WSH core object model provides VBScript with direct access to Windows resources.

Examples of the types of Windows resources to which the WSH core object model provides access include the following:

- Windows desktop
- Windows Start menu
- Windows applications
- Windows file system
- Network printers
- Network drives
- Windows Registry

The Windows operating system can be viewed as a collection of objects. For example, a file is an object. So is a folder, disk drive, printer, or any other resource that is part of the computer. What the core object model does is expose these objects in a format that allows scripts to view, access, and manipulate them. Each exposed object has associated properties and methods that scripts can then use to interact with an object, as well as affect its behavior or status. For example, a file is an object, and a file has a number of associated properties, such as its name and file extension. By exposing the Windows file system, the WSH enables scripts to access files and their properties and to perform actions, such as renaming a particular file or its file extension. Files also have methods associated with them. Examples of these methods are those that perform the copy and move operations. Using these methods, you can write scripts that can move or copy files from one folder to another or, if you are working on a network, from one computer to another.

**Definition**

In this book, the term *property* refers to an object-specific attribute, such as a file's name, that can be used to affect the status of the object.

Don't worry if the WSH core object model seems a little confusing right now. You will learn more about it in Chapter 2, "An Introduction to the Windows Script Host." In addition, you can jump to Appendix C, "The WSH Core Object Model," at any time for additional insight. The important thing to understand for now is that the WSH enables scripts to access Windows resources (objects) and to change their attributes (properties) or perform actions that affect them (using object methods).

**Definition**

In this book, the term *method* is used to refer to a built-in function that your scripts can execute to perform an action on an object, such as to copy or move a file to another location.

## How Does the WSH Compare to Windows Shell Scripting?

Windows shell scripts are plain text files that have a .bat or .cmd file extension. Unlike scripts written to work with the WSH, which are written using specific scripting languages like VBScript and JScript, Windows shell scripts are developed using regular Windows commands and a collection of shell-scripting statements. The WSH provides a more complete scripting environment due in large part to its core object model. However, Windows shell scripts still offer a powerful scripting solution. This is partly because you can execute any Windows command or command-line utility from within a shell script. Windows shell scripting also provides a complete collection of programming statements that include support for variables, looping, conditional logic, and procedures. For non-programmers, shell scripts may be easier to read, understand, and modify.

Another difference between scripts written using the WSH and Windows shell scripts is that Windows shell scripts only support text-based communications with the user. In other words, shell scripts cannot display messages or prompt the user for information using graphical pop-up dialog boxes. Windows shell scripting does not provide support for any type of object model like the WSH does. Therefore, Windows shell scripts are not capable of directly interacting with many Windows resources. For example, Windows shell scripts cannot directly edit the Windows Registry or create desktop shortcuts. However, Windows Resource Kits

provide Windows shell scripts with access to a number of command-line utilities that provide indirect access to many Windows resources.

To write shell scripts, you must have a good understanding of Windows commands and their syntax. You must also be comfortable working with the Windows command prompt. Conversely, to effectively use the WSH, you must be well versed in one of its supported scripting languages. There are many cases in which you can accomplish the same task using either Windows shell scripting or the WSH. As a general rule, however, the more complex the task, the more likely you'll want, or need, to use the WSH.

**Definition**

A *Windows Resource Kit* is a combination of additional utilities and documentation designed for a particular Windows operating system but provided as a separate downloadable package. You can obtain Windows Resource Kits via the Microsoft Download Center ([www.microsoft.com/en-us/download](http://www.microsoft.com/en-us/download)).

**Hint**

If you're really interested in learning more about Windows shell scripting, read *Microsoft Windows Shell Script Programming for the Absolute Beginner* (ISBN 1-59200-085-1).

## WSH Versus Windows PowerShell

PowerShell is fully integrated into Microsoft's .NET framework, providing system administrators with access to system resources. Like VBScript and the WSH, Windows PowerShell is object oriented. PowerShell lets you execute PowerShell commands, referred to as cmdlets, and develop and execute small scripts that use those cmdlets.

Like WSH and VBScript, Windows PowerShell provides access to system resources and can be used to programmatically interact with the files system, Windows Registry, .NET, and WMI. WSH, VBScript, and Windows PowerShell support a robust collection of language constructions like variables, conditional logic, loops, and functions.

Unlike WSH and VBScript, PowerShell does not support the use of pop-up dialog boxes and is restricted to the command line. Unlike VBScript, which is based on the widely popular and easy-to-use BASIC programming language, Windows PowerShell represents a completely new scripting language, which is arguably more difficult for new programmers to learn and understand.

Microsoft has put a lot of time and resources into the development of Windows PowerShell and is promoting it as the future of Windows scripting. However, Microsoft is continuing to support the WSH as a Windows scripting environment, as evidenced by the recent release of WSH 5.8. Microsoft will continue to support the WSH—and for good reason. Companies all over the world have invested significant time and resources in it and have developed hundreds of millions of lines of code that are used to run mission-critical applications and administer servers and workstations.

Companies continue to rely on the WSH and VBScript and extend their use. As such, WSH and VBScript programming will remain essential for application developers and systems administrators for the foreseeable future.

### Hint

If you're really interested in learning more about Windows PowerShell, read *Microsoft Windows PowerShell 2.0 Programming for the Absolute Beginner, Second Edition* (ISBN 1-59863-899-8).

## Understanding How the Windows Shell Works

Even if you have used Windows operating systems for many years, chances are that you have only limited experience working with the Windows shell. To become a really efficient and proficient script programmer, you'll need a solid understanding of what the Windows shell is and how to work with it.

An understanding of how to work with the Windows shell is also important when learning how to work with the Cscript.exe execution host, because scripts run by this execution host are generally started from the Windows command prompt. Finally, it's important to understand the Windows shell when working with the WScript.exe execution host because it provides support for command-line script execution.

### Definition

The Windows *command prompt* enables you to submit commands to the Windows shell for processing. By default, the command prompt appears in the form of a drive letter followed by a colon, the backslash character, and then the greater-than character (for example, C:\>).

You cannot touch the Windows operating system itself. This would be far too complex and difficult. Instead, you must go through an interface. Windows operating systems support two such interfaces:

- **The Windows GUI.** The Windows GUI is provided in the form of the Windows desktop, Start menu, and other graphical elements with which you normally interact when using your computer. The purpose of the GUI is to make the operating system easier to work with.
- **The Windows shell.** The Windows shell is a text-based interface between you or your scripts and the operating system. You communicate with the Windows shell by typing commands in the Windows command prompt; the Windows shell translates these commands into a format that the operating system can process. The operating system then returns any results to the Windows shell, which displays them in the Windows Console.

## Accessing the Windows Console in Normal Mode

To access the Windows shell and begin working with it using the command prompt, you must first open a Windows Console. To open a Windows Console on a computer running Windows Vista or Windows 7 (see Figure 1.6), open the Start menu, choose All Programs, choose Accessories, and then choose Command Prompt.