

Contents

About This Book	ix
About The Author	xiii
Acknowledgments	xv
Chapter 1: Why Custom Tasks	1
Why Isn't Everything Built In for Me?	2
Options for Custom Processes in SAS Enterprise Guide	2
What Can I Do with Custom Tasks?	4
Who Uses Custom Tasks Today and What Do They Use Them For?	5
Deploying Custom Tasks	6
Method 1: Drop-In Deployment.....	7
Method 2: Add-In Manager.....	9
Accessing Custom Tasks from the Menu.....	9
Common Questions about Task Deployment	10
Accessing Ready-to-Use Example Tasks and Source Code.....	12
Exercise: Download, Deploy, and Access Custom Tasks from SAS	12
Chapter Summary	12
Chapter 2: Tools of the Trade	15
Introduction to the Microsoft .NET Framework	15
Which Language Is Right for You?	17
Introduction to Microsoft Visual Studio	18
Selecting a Version of Microsoft Visual Studio	18
Other Tools to Make You More Productive	21
Learning to be a .NET Programmer.....	23
Resources for the New .NET Programmer	23
Build or Buy: Using Third-Party Components	24
Chapter Summary	25

Chapter 3: Creating Custom Task Projects in Microsoft Visual Studio	27
Overview of the Process.....	27
Getting the Project Templates for Microsoft Visual Studio	28
Creating New Custom Tasks Using Project Templates.....	28
Using Microsoft Visual Studio 2010 or 2008	29
Creating a Custom Task Project Using Microsoft Visual Studio 2003	37
Chapter Summary	40
Chapter 4: Meet the Custom Task APIs.....	41
About Interfaces	41
Meet the Interfaces	43
Understanding the Life Cycles of Your Task.....	44
Special Interfaces for Special Tasks.....	49
More Interfaces That Play Nice	52
Chapter Summary	53
Chapter 5: Meet the Task Toolkit.....	55
Task Toolkit: What's In It?	55
The SasTask Class	56
The SasServer Class and SAS.Tasks.Toolkit.Data Namespace.....	59
The SAS.Tasks.Toolkit.SasSubmitter Class	60
The SAS.Tasks.Toolkit.Helpers Namespace	61
The SAS.Tasks.Toolkit.Controls Namespace.....	62
Examples of Using the SAS.Tasks.Toolkit Classes	63
Chapter Summary	67
Chapter 6: Your First Custom Task Using Visual Basic.....	69
Your First Custom Task Using Visual Basic Express	69
Creating the Project.....	70
Turning the Visual Basic Class into a Custom Task	71
Build, Deploy, and Test.....	74
Adding a User Interface.....	75
Saving and Restoring Task Settings	77
Chapter Summary	81
Chapter 7: Your First Custom Task Using C#	83
Your First Custom Task Using Visual C# Express	83
Creating the Project.....	84

Turning the C# Class into a Custom Task	85
Build, Deploy, and Test	89
Saving and Restoring Task Settings	92
Chapter Summary	96
Chapter 8: Debugging Techniques: Yes, You Will Need Them.....	97
Best Practices for Making Your Software Debuggable	98
Take Advantage of Object-Oriented Design	98
Consider Unit Testing	99
Catch and Handle Exceptions.....	100
Use Logging to Record Events and Progress	106
Debug with Microsoft Visual Studio	111
Debugging Basics: Some Definitions	111
Prepare to Debug a Custom Task	112
How to Attach a Debugger to a Custom Task	112
Example: Debugging a Custom Task	113
Chapter Summary	116
Chapter 9: The Top N Report	117
About This Example	118
Example Source Files and Information	118
Step 1: Exploring the Problem	119
Step 2: Creating the SAS Program	121
Step 3: Creating the Custom Task	123
Examining the Top N Report Solution.....	123
Chapter Summary	129
Chapter 10: For the Workbench: A SAS Task Property Viewer.....	131
About This Example	131
Example Source Files and Information	132
What's in Your Project?	132
Displaying Properties in a Simple User Interface	134
Accessing Properties Using the ISASProject APIs.....	135
More Possibilities with SAS Enterprise Guide Projects	138
Chapter Summary	139
Chapter 11: Calculating Running Totals.....	141
About This Example	142

Example Source Files and Information	142
Designing the Task Features	142
Assumptions: They Are Necessary.....	143
Scenario 1: Calculate the Running Total for One Measure across All Rows.....	143
Scenario 2: Calculate Running Totals across Groups.....	144
Designing the User Interface	146
Assembling the User Interface.....	147
Hooking the Controls to Data and Events	151
Saving User Selections.....	157
Using LINQ to Create XML	157
Using LINQ to Read XML.....	159
Generating a Correct SAS Program.....	160
Creating a Readable Program Header	160
Applying the Task-Specific Filter.....	161
Wrap Your Variable Names Appropriately	162
Chapter Summary	163
Chapter 12: Abracadabra: Turn Your Data Into a SAS Program	165
About This Example	166
Example Source Files and Information	166
Dissecting a SAS Data Set	167
Using .NET to Read Data from SAS Data Sets.....	167
Creating an Elegant Task Flow	169
Adding the SAS Enhanced Editor to a Windows Form.....	170
Using ISASTaskExecution to Take Matters into Your Own Hands.....	172
Cancel: Support Is Optional.....	173
ResultCount: How Many Results?	174
Run, Task, Run!	174
Chapter Summary	176
Chapter 13: Putting the Squeeze on Your SAS Data Sets	177
About This Task.....	177
Example Source Files and Information	178
Adapting the Sample.....	178
Refactoring a Macro	178
Compressing the Data Even Further	179
See How You Did: Adding Reporting	180

Wrapping the Sample in a Task	183
Designing a User Interface	183
Modeling the Options in a .NET Class.....	187
Putting It All Together: Running and Repeating the Task.....	189
Chapter Summary	191
Chapter 14: Take Command with System Commands	193
About This Task.....	193
Example Source Files and Information	194
Building a Task That Runs Commands.....	194
The Structure of This Task	195
Implementing a Task with ISASTaskExecution.....	196
Chapter Summary	201
Chapter 15: Running PROCs on Your Facebook Friends	203
Facebook to SAS: The Approach.....	204
Example Source Files and Information	204
Gathering Data from Facebook	205
Example of Transforming JSON to DATA Step Statements	205
Analyzing Data from Facebook.....	206
Preparing Data for Reporting	207
Creating Reports That Provide Insight.....	208
Using the Facebook API	209
Running the Example.....	210
Inside the Task	211
Connecting to Facebook and Collecting Data	212
Modeling Data Records with .NET Data Structures	213
Keeping the User Interface Responsive	216
Saving the Results in Your SAS Enterprise Guide Task.....	217
Chapter Summary	218
Chapter 16: Building a SAS Catalog Explorer	219
About This Task.....	219
Source Files for This Example	220
About SAS Catalogs.....	220
Working with SAS Catalogs	221
The SAS Catalog Explorer Interaction	225
Creating a Utility Window That Floats.....	226
Using SAS Workspace APIs	227

Using Windows Presentation Foundation (WPF)	230
Chapter Summary	231
Chapter 17: Building a SAS Macro Variable Viewer and SAS System Options Viewer	233
About These Tasks.....	234
Example Source Files and Information	234
Creating a Productive User Experience.....	234
Creating a Toolbox Window	235
Remembering the Window Position	238
Adding an About Window with Version Information.....	241
Designing Code with Objects and Lists.....	242
Planning for Object-Oriented Design	243
Using Data Structures to Represent SAS Objects.....	244
Performing Other Cool Tricks.....	247
Checking the Version of SAS	247
Running SAS Language Functions	248
Parsing the SAS Log to Detect Line Types.....	249
Chapter Summary	251
Index	253