

THE EXPERT'S VOICE® IN .NET

Visual Studio LightSwitch 2015

Create business applications easily,
quickly, and effectively

—

Second Edition

—

Tim Leung

Apress®

Visual Studio LightSwitch 2015

Second Edition



Tim Leung

Apress®

Visual Studio LightSwitch 2015

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Contents at a Glance

About the Author	xxiii
About the Technical Reviewers	xxv
Acknowledgments	xxvii
Introduction	xxix
■ Part I: Introducing LightSwitch	1
■ Chapter 1: Introducing LightSwitch.....	3
■ Chapter 2: Setting Up Your Data	15
■ Chapter 3: Building HTML Applications	43
■ Chapter 4: Creating Desktop Applications.....	73
■ Part II: Working with Data	111
■ Chapter 5: Querying Your Data	113
■ Chapter 6: Writing Data-Access Code.....	129
■ Chapter 7: Validating Data.....	167
■ Part III: Writing ScreenCode	201
■ Chapter 8: Refining HTML Clients Screens with JavaScript/CSS.....	203
■ Chapter 9: Enhancing Desktop Screens with .NET Code.....	259
■ Part IV: Refining Your Application	303
■ Chapter 10: Searching Data.....	305
■ Chapter 11: Building Practical Application Features.....	329

■ Chapter 12: Supporting Multiple Languages	387
■ Chapter 13: Creating and Using Custom Controls	407
■ Part V: Extending the Reach of Your Data	441
■ Chapter 14: Optimizing Data Connectivity with RIA Services	443
■ Chapter 15: Sharing Data with OData	465
■ Part VI: Getting Data Out	483
■ Chapter 16: Creating Reports	485
■ Chapter 17: Generating Office Documents	521
■ Chapter 18: Sending Email	561
■ Part VII: Extending LightSwitch	591
■ Chapter 19: Creating Control Extensions	593
■ Chapter 20: Creating Data and Presentation Extensions	655
■ Part VIII: Securing Your Application	735
■ Chapter 21: Authenticating Your Users	737
■ Chapter 22: Authorizing Your Users	751
■ Part IX: Going Live with Your Application	777
■ Chapter 23: Deploying Applications	779
■ Appendix A: Culture Names	811
■ Appendix B: Data Type Identifiers	817
■ Appendix C: Using Properties in Custom Controls	819
■ Appendix D: Custom Screen Template View IDs	823
■ Appendix E: Data Schemas	827
Index	841

Contents

About the Author	xxiii
About the Technical Reviewers	xxv
Acknowledgments	xxvii
Introduction	xxix
■ Part I: Introducing LightSwitch	1
■ Chapter 1: Introducing LightSwitch.....	3
What's New in 2015	3
Understanding LightSwitch's Architecture	4
The Data Tier	5
The Logic Tier	5
The Presentation Tier.....	6
Introducing the Model-Centric Architecture	8
Building Your Application.....	9
Understanding MVVM (Model-View-ViewModel).....	10
Walkthrough: Creating a LightSwitch Project.....	10
Summary.....	13
■ Chapter 2: Setting Up Your Data	15
Choosing Where to Store Your Data.....	15
What Are Entities and Properties?	16
Creating Tables (Entities).....	16

Creating Fields (Properties)	18
Storing Textual Data.....	18
Storing Numbers (Double and Decimal Types)	19
Storing Numbers (Integer Types)	19
Formatting Numeric Fields	19
Storing Images	21
Storing Binary Data	21
Storing Dates	21
Ensuring Unique Values	22
Changing Data Types	22
Using LightSwitch Business Types	23
Storing Email Addresses.....	23
Storing Monetary Values.....	23
Storing Phone Numbers.....	25
Storing Web Addresses and Percentage Values	26
Storing People Data.....	26
Examining What Happens in SQL Server	26
Creating Choice Lists	27
Choice List Versus Related Tables	28
Defining Relationships	28
Defining One-to-Many-Type Relationships.....	29
How Relationships Are Defined in SQL Server.....	30
Defining Self-Referencing Relationships.....	31
Defining Many-to-Many Relationships	31
Determining How Child Records Are Deleted	32
Attaching Existing Data	32
Attaching to an Existing Database.....	34
Attaching to SharePoint Data.....	36
Deleting a Data Source.....	37
Defining Relationships between Data Sources.....	37

Creating Computed Properties	37
Creating Summary Properties	37
Calculating Dates with Computed Properties	38
Summarizing Child Records with Computed Properties.....	39
Returning Images with Computed Properties.....	40
Sorting and Filtering by Computed Properties.....	41
Summary.....	41
■ Chapter 3: Building HTML Applications	43
Building an HTML Application.....	43
Creating Screens	43
Walkthrough 3-1. Creating an Application.....	45
Using the Screen Designer.....	53
Understanding Top-Level Screen Layout	53
Using the Screen Designer Toolbar.....	55
Using Tabs	55
Laying Out Your Screen with Group Controls.....	56
Using Data Controls.....	58
Showing/Editing String Values.....	58
Working with Boolean Values	60
Showing/Editing Date Values.....	60
Showing/Editing Email or Web Addresses	61
Showing Lists of Records	61
Using Data Picker Controls	64
Positioning Controls	64
Setting Screen Properties	66
Building a Navigation Structure	67
Setting a Home Screen.....	67
Configuring the Navigation Menu	68
Navigating to Different Screens	69

Adding Navigation Buttons	70
Changing Button Icons.....	70
Summary	71
■ Chapter 4: Creating Desktop Applications.....	73
What This Chapter Covers	73
What Are the Benefits of Desktop Applications?	74
Creating a Desktop Client.....	75
Setting the Application Type	75
Choosing a Screen Template	76
Walkthrough 4-1. Creating New Data Screens.....	77
Designing Screens	78
Setting Screen Properties.....	80
Grouping and Laying Out Controls	80
Choosing Data Controls	82
Displaying Data Using Data-Item Containers.....	84
Using Data-Selection Controls	85
Using the Auto-Complete Box Control	86
Using the Modal Window Picker Control.....	87
Displaying Static Text and Images.....	88
Setting Control Appearances.....	88
Positioning Control Labels	90
Styling Labels and Static Text Controls.....	91
Making Controls Read-Only	92
Including Related Data Items	93
Using the Data Grid and Data List Controls	94
Creating an Editable Grid Screen	95
Configuring Data Grid Settings	96
Setting Data Grid Header Buttons.....	98
Creating a List and Details Screen	100
Creating a Search Screen.....	101

Creating Details Screens.....	102
Walkthrough 4-2. Using Details Screens.....	103
Setting Application Properties.....	106
Configuring Screen Navigation.....	107
Designing Screens at Runtime.....	108
Reducing Project Sizes.....	109
Summary.....	109
■ Part II: Working with Data	111
■ Chapter 5: Querying Your Data	113
Introduction to Data Retrieval.....	113
LightSwitch Queries Always Return Entities.....	113
Understanding the Query Pipeline.....	114
Using LightSwitch’s Default Queries	115
Filtering and Sorting data.....	116
Creating Queries Based on Entities	116
Applying Filters.....	117
Comparing Against Other Fields/Properties.....	119
Passing Arguments into a Query	120
Filtering by Global Values	120
Modifying Screen Queries	121
Sorting Data	121
Sorting Data Grids in Desktop Applications	122
Examining User-Setting Files.....	123
Walkthrough: Working with Queries	124
5-1. Filtering Controls.....	124
5-2. Using Queries on Screens	126
Summary.....	127

■ Chapter 6: Writing Data-Access Code.....	129
LightSwitch Data API	129
Retrieving Single Records by ID Value.....	130
Working with Records and Nullable Data Types	131
Using JavaScript Promises.....	132
Walkthrough 6-1: Client-Side Data-Access Code	133
Executing Queries Remotely.....	144
Working with the Save Pipeline.....	146
Walkthrough 6-2: Working with Change Sets	148
Managing Transactions in LightSwitch.....	156
Understanding Transactions	156
Walkthrough 6-3: Creating Transactions in the Save Pipeline	157
Understanding Concurrency.....	160
Displaying a Data-Conflict Screen.....	160
Walkthrough 6-4: Handling Conflicts in Code	162
Summary.....	164
■ Chapter 7: Validating Data.....	167
Understanding Validation in LightSwitch.....	167
How Client Validation Works in Desktop Clients.....	169
How MVVM Applies to Validation	169
Defining Simple (Predefined) Validation Rules	170
Writing Custom Property Validation.....	171
Identifying Where Validation Runs	171
Creating Validation Rules and Warnings.....	172
Custom Validation Examples	174
Comparing against Other Properties	175
Mandating Data with Conditions	176
Validating Patterns with Regular Expressions.....	177
Checking against Child Collections	179

Validating Data on the Client	181
HTML Client Validation	181
Desktop Client Validation	186
Validating Data at the Database	188
Walkthrough 7-1. Enforcing Data Rules	189
Enforcing Uniqueness and Preventing Duplicates	189
Validating Deletions on the Server	192
Summary	198
■ Part III: Writing ScreenCode	201
■ Chapter 8: Refining HTML Clients Screens with JavaScript/CSS.....	203
Examining the JavaScript API.....	203
Handling Screen Events.....	203
API Objects	204
Performing Screen Tasks with JavaScript.....	207
Setting Default Screen Values	207
Hiding Controls and Setting Screen Titles	209
Displaying Custom Content on Screens	211
Adding Custom Text on Screens	211
Adding Custom HTML to Screens	213
Using Popups	214
Walkthrough 8-1. Confirming Actions with Popups.....	214
Using Data-Binding Techniques.....	217
Formatting Data.....	217
Running Code When Data Changes	221
Using Custom Controls	222
Displaying Data with Custom Controls	223
Editing HTML Data with Custom Controls.....	226
Customizing the Appearance of Your Application	229
Theming Your Application	229
Bespoke Customization	231

Walkthrough 8-2. Customizing the UI.....	250
Creating Custom Navigation	251
Creating Custom Buttons.....	257
Summary.....	257
■ Chapter 9: Enhancing Desktop Screens with .NET Code.....	259
Adding Code to Your Application	259
General Methods	260
Access Control Methods.....	260
Collection Methods.....	260
Screen Property Methods.....	261
Working with Code and Data.....	261
Displaying Custom Text and Information	262
Accessing Grid and List Values.....	264
Setting the Screen Title in Code	264
Setting Default Screen Values	265
Navigating Screens	267
Opening Screens from Buttons or Links.....	267
Adding Unbound Auto-Complete Boxes.....	270
Refreshing All Open Screens	271
Passing Arguments into Screens	271
Showing MessageBox and InputBox alerts.....	274
Working with Controls.....	275
Finding Controls Using FindControl	275
Referencing the Underlying Silverlight Control.....	279
Handling Silverlight Control Events	281
Working with Threads	283
Finding Out Which Thread Your Code Is Executing On.....	285
Understanding When to Execute Code on a Different Thread.....	285
Reacting to Data Changes.....	288
Using PropertyChanged on a New Data Screen.....	288
Using PropertyChanged on a Details Screen.....	291

Walkthrough: Practical Screen Enhancements	294
Creating a Continuous New Data Screen	294
Designing an Add/Edit Screen	295
Customizing Data-Grid Dialogs.....	297
Summary.....	301
■ Part IV: Refining Your Application	303
■ Chapter 10: Searching Data.....	305
An Overview of Built-In Search	305
Walkthrough 10-1. Building Custom Search	306
Defining a Search Query.....	306
Creating the Search Screen.....	307
Building Advanced Searches.....	308
Introducing LINQ.....	308
Practical Querying Examples.....	311
Filtering by Related Child Items.....	311
Exists, In	313
Not Exists, Not In	314
Filtering by Date Elements.....	315
Top N Records.....	317
String-Matching Examples.....	318
Matching Non-Concurrent Words	318
Matching Multiple Words (Optionally).....	321
Case Sensitivity	323
Phonetic Searching.....	323
Debugging Queries.....	326
Walkthrough 10-2. Opening a Search Screen	327
Summary.....	328

■ Chapter 11: Building Practical Application Features.....	329
Working with Files.....	329
Adding File Support to HTML Client Applications	330
Adding File Support to Desktop Client Applications	343
Validating File Sizes.....	352
Selecting Multiple Records	353
Assigning and Unassigning Self-Joined Data	360
Creating Screens to Work with Single-Row Tables	364
Nesting Data-Selection Controls	368
Working with Locations.....	373
Picking Up GPS Locations.....	373
Integrating with Mapping Systems.....	376
Summarizing Data.....	379
Showing Aggregate Counts/Sums/Averages	379
Querying Data Remotely	382
Merging Data	383
Summary.....	385
■ Chapter 12: Supporting Multiple Languages	387
Introduction	387
Supported Languages.....	388
Preparing an Application for Localization.....	388
Localizing Server Objects.....	389
Translating Table Field Names.....	390
Testing a Localized Application	392
Translating .NET Server Messages.....	393
Localizing HTML Client Resources	398
Localizing Screen Titles and Menu Items	398
Localizing JavaScript Messages.....	400
Localizing Dates and Numbers.....	401

Localizing Desktop Apps	401
Localizing Screen Titles and Menu Items	401
Localizing Silverlight .NET Code	403
Summary.....	405
■ Chapter 13: Creating and Using Custom Controls	407
Using Custom Controls.....	407
Specifying a Custom Control	408
Binding Data to Custom Controls.....	410
Binding Data Collections to Custom Control.....	412
Converting Values When Data Binding.....	414
Creating a Custom Silverlight Control	419
Understanding Dependency Properties	419
Creating a New Control and Dependency Property.....	420
Binding Dependency Properties to the Data Context.....	427
Adding the Duration Control to a Screen	429
Calling Custom Control Methods via Dependency Properties.....	429
Calling Screen Code from a Custom Control	432
Summary.....	438
■ Part V: Extending the Reach of Your Data.....	441
■ Chapter 14: Optimizing Data Connectivity with RIA Services	443
The History behind RIA Services	443
Creating an RIA Services Project.....	444
Creating a New Project.....	445
Creating an Entity Class.....	445
Creating a Domain Service Class	448
Retrieving Data.....	448
Retrieving a Connection String from <i>web.config</i>	453
Updating Data.....	453

Calling SQL Stored Procedures	456
Consuming Your RIA Service	461
Summary	463
■ Chapter 15: Sharing Data with OData.....	465
Introduction	465
Using External Data Sources	465
Finding Third-Party Data Sources to Use.....	466
Determining Connection Settings	466
Connecting to an OData Data Source	468
Understanding Default Data-Source Options.....	469
Exposing Your LightSwitch Data Via OData	470
Finding Your Application's Endpoint URL	470
Querying OData.....	471
Securing OData Feeds	472
Consuming LightSwitch Data	472
Connecting to LightSwitch Data from Excel	472
Connecting to LightSwitch Data from .NET	473
Connecting to LightSwitch from Other Platforms.....	480
Summary	481
■ Part VI: Getting Data Out.....	483
■ Chapter 16: Creating Reports	485
Introduction to Reporting	485
Using ASP.NET to Create Reports.....	485
Showing Grid Data on a Web Form.....	486
Displaying Grids within Grids.....	490
Creating Charts.....	492
Securing and Deploying Reports	495
Using Microsoft Reporting Services	495
Installing Reporting Services.....	496
Installing the Report Designer Components	496

Creating Reports.....	498
Deploying Reports	503
Using the Report Viewer Control	505
Linking Reports from Desktop Applications	507
Opening Reports in a New Browser Window	507
Displaying Reports inside LightSwitch Screens	509
Printing Reports.....	515
Linking Reports from HTML Client Applications	516
Displaying Content inside an iframe.....	516
Adding Hyperlinks.....	517
Summary.....	518
■ Chapter 17: Generating Office Documents.....	521
Overview of Techniques	521
Using the OpenXML SDK.....	522
Performing COM Automation	539
Performing Mail Merges with Word	544
Creating Adobe PDF Documents.....	555
Summary.....	558
■ Chapter 18: Sending Email	561
Overview to Sending Email	561
Sending Email Notifications	562
Using Configuration Settings to Save Credentials	562
Creating a Reusable Email Class.....	563
Sending the Email	567
Initiating Emails from LightSwitch Clients	570
Building an Email service	570
Sending Messages from HTML Client Applications	578
Sending Messages from Desktop Applications	580
Sending Mail with Microsoft Outlook	585
Summary.....	590

■ **Part VII: Extending LightSwitch** **591**

■ **Chapter 19: Creating Control Extensions** **593**

 Using LightSwitch Extensions **593**

 Installing LightSwitch Extensions 593

 Using the Many-to-Many Data Control 596

 Preparing Your Computer to Develop Extensions **597**

 Understanding Custom Control Types **598**

 Creating Value Controls **599**

 Specifying Which Data Types to Support 601

 Supporting the FindControl Method 601

 Setting the Control Icon 603

 Optimizing Controls for Data-Grid Use 603

 Retrieving Height, Size, and Property Settings 609

 Running and Deploying Your Extension **610**

 Setting Product/Installation Attributes 611

 Creating a Detail Control (ComboBox) **611**

 Setting the Control's Metadata 612

 Finding the Summary Property for an Entity 620

 Creating Custom Property Editors **628**

 Customizing Visual Studio's Property Editor 628

 Preparing Your Project 629

 Creating a Custom Control Editor 630

 Linking Your Property with the Editor 639

 Customizing the Runtime Designer 640

 Creating a Group Control Extension **645**

 Setting the Visibility of Labels 648

 Creating a Command Control Extension **649**

 Summary **652**

■ Chapter 20: Creating Data and Presentation Extensions	655
Introduction.....	655
Creating a Business Type Extension	656
Associating Custom Controls with Business Types	657
Enforcing Validation.....	657
Associating Validation Logic with a Business Type.....	659
Defining Property Sheet Attributes	659
Applying Validation Logic.....	660
Creating Custom Property Editor Windows.....	665
Using Your Business Type	674
Creating a Custom Shell Extension	675
Preparing Your Project.....	675
Defining the Look of Your Shell.....	676
Binding Data to Your Shell	680
Displaying Your Application’s Logo	681
Adding Code That Supports Our Custom Shell.....	681
Managing Screens.....	700
Executing Commands.....	701
Performing Navigation.....	702
Persisting User Settings	702
Setting the Name and Description.....	704
Using Your Custom Shell.....	705
Creating a Custom Theme Extension	706
Applying a Different Font.....	706
Setting Different Colors	707
Creating a Screen Template Extension	708
Setting Template Properties	709
Defining the Data-Source Type	712
Generating Screen Controls.....	712
Generating Screen Code.....	716
Creating More Complex Screen Templates.....	719

Creating an HTML Screen Template Extension.....	719
Creating a Data-Source Extension	724
Creating an Entity Class.....	724
Creating the Data Service Class	727
Using the Data-Source Extension	732
Summary.....	733
■ Part VIII: Securing Your Application	735
■ Chapter 21: Authenticating Your Users	737
Choosing an Authentication Method.....	737
No Authentication	738
Enabling Windows Authentication	739
Forms Authentication	740
Understanding Where User Details Are Stored	741
Changing the Password Complexity Rules	742
Changing Password Encryption Settings.....	743
Sharing Forms Authentication Data with ASP.NET	744
Allowing Users to Log Out of Desktop Web Applications	746
Summary.....	749
■ Chapter 22: Authorizing Your Users	751
Applying Permissions.....	751
Defining Permissions	753
Creating an Application Administrator.....	753
Managing Roles and Users.....	754
Debugging Permission Code.....	755
Securing Server Objects.....	755
Applying Table-Level Access Control	755
Applying Query-Level Permissions.....	760
Securing Client Objects	761
Securing HTML Client Applications.....	763

Custom Authorization Examples.....	764
Associating Logins with Your Data	764
Opening Screens Conditionally at Login	768
Restricting Row-Level Access to Data.....	771
Setting Screen Control Properties by Permission.....	772
Allowing Users to Bypass Validation.....	774
Summary.....	775
■ Part IX: Going Live with Your Application	777
■ Chapter 23: Deploying Applications	779
Getting Started with Deployment	779
Choosing an Application Topology	780
Choosing Whether to Publish or Package.....	781
Setting Up Your Workstations	781
Setting Up SQL Server	782
Using the Publish Wizard.....	782
Data Connections Page.....	784
Prerequisites Page.....	786
Security Page	787
Digital Signature/Certificate Page	787
Setting Up Your Web Server	789
Installing the .NET 4.6 Framework	789
Setting Up IIS on Windows Server 2012/2008.....	789
Setting Up IIS on Windows 7 and Above	791
Configuring the Web Deploy Tool	791
Setting Up IIS Application Pools.....	792
Configuring SQL Server for Windows Authentication	794
Configuring Secure Sockets Layer (SSL)	795
Installing the Packages	795
Installing a Two-Tier Desktop Application.....	795
Installing a Three-Tier Application in IIS	797

Three-Tier Manual Deployment.....	799
Deploying Data	799
Updating an Application	800
Troubleshooting Deployment Errors	800
Tracing Your Application	801
Deploying to Azure	803
Connecting Visual Studio to Azure	803
Selecting a Service Type.....	804
Creating a Database	805
Completing the Publishing Process	806
Publishing to SharePoint	807
Summary.....	808
■ Appendix A: Culture Names	811
■ Appendix B: Data Type Identifiers.....	817
■ Appendix C: Using Properties in Custom Controls.....	819
■ Appendix D: Custom Screen Template View IDs	823
Desktop Client View IDs.....	823
HTML Client View IDs	825
■ Appendix E: Data Schemas	827
Help Desk Tables	827
External Tables	838
Database Diagram.....	838
Index.....	841

About the Author



Tim Leung is a professional software developer based in England. For the past 15 years, he has specialized in enterprise application development using products from the Microsoft technology stack. In particular, he possesses deep knowledge of Microsoft LightSwitch, the Microsoft .NET Framework, and SQL Server. He is an active member of the U.K. developer community and often delivers presentations on technical topics. He is also a chartered member of the British Computer Society. He is passionate about the concept of rapid application development and was awarded the Microsoft Community Contributor Award in 2011 for contributions to the LightSwitch community.

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Fabio Claudio Ferracchiati is a senior consultant and a senior analyst/developer using Microsoft technologies. He works for Blu Arancio (www.bluarancio.com). He is a Microsoft Certified Solution Developer and a Microsoft Certified Application Developer for .NET, a Microsoft Certified Professional, and a prolific author and technical reviewer. Over the past ten years, he's written articles for Italian and international magazines and coauthored more than ten books on a variety of computer topics.

Stephen Provine is a principal software design engineer on the Microsoft Visual Studio team. He has 14 years of experience working across many aspects of the Visual Studio rapid application development (RAD) experiences, including the Server Explorer, SQL database tooling and data designer extensibility, and was a key member of the Visual Studio LightSwitch team, contributing across all areas of the product. Stephen is currently a technical leader in the Azure Developer Experience group, working across the breadth of tooling that aids developers in being most effective when developing applications for Microsoft Cloud. Prior to working at Microsoft, Stephen received a bachelor's degree in computer science from Harvard University.

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Introduction

When I look back at the time that I have spent with LightSwitch, the product almost feels like a child of mine. I started using LightSwitch during the beta version when the product was in its infancy. Through the years, I've seen LightSwitch grow to be the mature product that it is today.

The early years were exciting. The concept was revolutionary, and there was a great buzz around the product. However, the documentation was poor, which inspired me to write the first edition of this book. I wanted to share my experience and to help developers avoid making the same mistakes that I made.

As developers began using LightSwitch and as market conditions changed, the product adapted to meet the changing environment. As an example, the first version of LightSwitch employed RIA services as the communication channel between the client and server. In 2012, Microsoft rewrote this part of LightSwitch to use OData instead. Another significant feature that Microsoft added in 2012 was the HTML client. This enables you to build HTML5-compatible applications that are optimized for touchscreen and mobile devices.

In subsequent releases, Microsoft improved several other areas of LightSwitch. A notable example is the improvements to the Visual Studio design environment. Early developers will remember how Visual Studio provided two views of a solution: a simplified logical view and a more advanced file view. In 2013, Microsoft replaced this with a simplified single view. Today, Visual Studio also provides much better IntelliSense and debugging support, particularly for JavaScript—an area for which support has previously been weak. Another significant addition was the Server Application Context. This feature makes it possible to execute data-access code on the server, outside the context of a LightSwitch application. All of this illustrates how LightSwitch has evolved into a far more powerful product.

In recent times, Microsoft has not been as proactive in further developing LightSwitch. Some developers are concerned about this, but I see this as a sign of a mature product. LightSwitch does everything that Microsoft intended it to do, and there is little more they can profitably add. If you're just starting out with LightSwitch, my view is that now is a great time to begin. You can be confident that you're working with a stable and mature product that has been tested by thousands of developers. There are few competing products that can match the capabilities that LightSwitch offers.

I've personally gained a lot from LightSwitch. With the help of LightSwitch, I've built some great applications with minimal time and effort. Through the work of this book, I've also had the chance to work with some really smart people in the Microsoft Visual Studio team.

By reading this book, I hope that you can attain similar rewards and develop some great applications at the same time.

Who This Book Is For

This book is designed for readers who want to build data-driven business applications quickly. You don't need to have any prior knowledge of LightSwitch, but it helps if you know a little about .NET and database development in general.

How This Book Is Organized

If learning LightSwitch seems like an enormous task, don't worry! You might have heard of the Pareto Principle, which also goes by the name of the 80/20 rule. This rule states that in most situations, 20% of something causes 80% of the results.

If you apply the Pareto Principle to this book, it suggests that you can accomplish 80% of what you want to accomplish by reading less than four chapters. And, in fact, the first four chapters highlight the key topics that are all you need in order to build an application that's almost 80% complete.

By the end of Chapter 4, you'll understand how to create data tables and attach to external data. You'll know how to build applications that include Data Entry screens and navigation controls. The type of data entry screens I'll describe will include screens that show lists of data and those that enable the entry and display of single records. You'll also discover how to provide drop-down controls to enable users to make selections during data entry. In short, you'll know how to build a working business application with enough functionality to perform most basic tasks. In the next part of the book, I'll show you how to write code and queries. This includes .NET code that runs on the server and Silverlight desktop client, and JavaScript code that runs on HTML client applications.

Unless you want to create an application that's completely isolated from other systems, it's useful to know how to attach to unusual data sources and how to share your LightSwitch data with other applications. You'll discover how to do this through RIA services and OData.

You can extend your Silverlight applications through custom controls and extensions, and you'll find an entire section of the book devoted to this topic.

The remaining chapters of the book show you how to build reports, integrate with email systems, and deploy your application.

The Sample Application

Most of the chapters include code samples that refer to a Help Desk application. The purpose of this application is to relate the technical content in the book to a real-life scenario that you can more easily understand.

The Help Desk application is typical of the applications that you can build with LightSwitch. Its features are simple enough to understand, yet complex enough to show off the more advanced features of LightSwitch. It is designed to help companies manage problems, and it's especially suitable for departments that deal with technical support issues. It allows users to record the actions they carry out to resolve a problem while giving managers an overview of all current issues.

Figure I-1 shows a screen from this application and illustrates some of the features that I'll cover in this book.

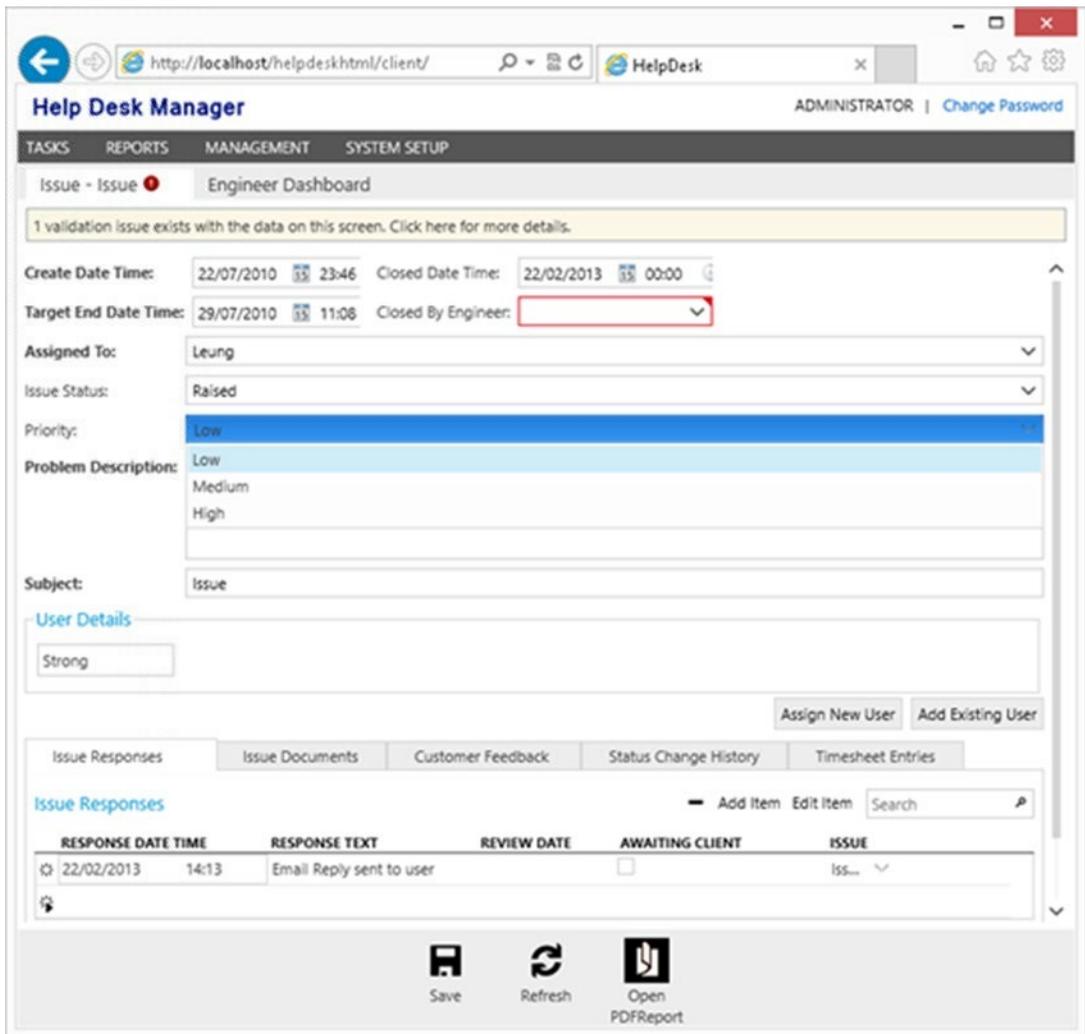


Figure I-1. Typical screen from the Help Desk application

Figure I-1 shows the Data Entry screen through which users can enter help-desk issues. They can set the user that the issue relates to and allocate an engineer to the record. The Data Entry screen allows users to respond to the issue, attach documents, register feedback, and record the amount of time that engineers spend on the task. To help you recreate this application, you can find a summary of the application’s tables in Appendix E.

Code Samples

LightSwitch supports C#, VB.NET, and JavaScript. This book includes code samples in all three languages. To make life simple, LightSwitch hides much of the complexity that's associated with application design. When you want to write some code, you do so by clicking on a Write Code button that LightSwitch shows in its graphical designers. This button shows a list of events that you can handle. When you select one of the options in the list, LightSwitch opens a Code Editor window that you can use to author your code.

When you're starting out with LightSwitch, it isn't always obvious where your code is stored. To add some clarity, each code listing includes a file location, as shown in Listing I-1.

Listing I-1. "Hello, World!" example

VB:

File: HelpDeskVB.Server\DataSources\ApplicationData_ApplicationDataService.lsml.vb

Imports System.Text.RegularExpressions

```
'REM VB Code appears here           ❶
Dim message = "Hello, World!"       ❷
```

C#:

File: HelpDeskCS.Server\DataSources\ApplicationData_ApplicationDataService.lsml.cs

using System.Text.RegularExpressions;

```
//REM C# Code appears here          ❶
var message = "Hello, World!";      ❷
```

For both the VB and C# examples in Listing I-1, the File heading specifies the file name and path. In this example, HelpDeskVB and HelpDeskCS prefixes identify the name of your LightSwitch application. The Server part indicates that the code refers to the Server project. This piece of information is useful, because it informs you that the code runs on the server rather than on the client. (You'll learn all about this in Chapter 1.) The next part of the file heading, DataSources\ApplicationData, indicates the folder in the Server project that contains the code file. Finally, _ApplicationDataService.vb and _ApplicationDataService.cs refer to the name of the VB or C# file that the listing shows.

If a piece of code requires you to reference a .NET namespace, the code listing will show the necessary import (VB.NET) or using (C#) statements. Be sure to add these statements to the top of your code file.

Many of the code samples include numeric symbols to help you locate specific lines in a code listing. For example, line ❶ defines a comment, whereas line ❷ declares a variable. There's obviously no need to enter these numeric symbols when you recreate this code for real!

As in all books, the length of a code line can exceed the width of the page. In most cases, I've put line breaks in places that still allow the code to compile, but in some circumstances this isn't possible. Notable examples include namespace declarations in XAML files and VB.NET keywords like inherits and implements. If your application doesn't compile, it's worth checking your code for extraneous line breaks.