## Contents

About the Author iii  
Introduction xv  

### Part I: Fundamentals 1

#### Chapter 1: Overview of Java UI Toolkits and SWT/JFace 3

- **Evolution of Java GUI Frameworks** 3  
  - Abstract Window Toolkit 4  
  - Swing 5  
  - SWT and JFace 8  

- **SWT/JFace Advantages** 11  
  - Full Support for Native Features 11  
  - Speed 12  
  - Portability 13  
  - Easy Programming 13  
  - Flexibility 14  
  - Maturity 18  

- **Summary** 18  

#### Chapter 2: SWT/JFace Mechanisms 19

- **The Implementation of SWT** 19  
- **Resource Management with SWT/JFace** 28  
  - Operating System Resources 28  
  - Rules of Operating System Resource Management 29  
  - Managing Fonts and Images with JFace 36  

- **Model-View-Controller Pattern** 41  
  - The MVC Architecture 42  
  - Benefits of MVC 43  
  - Costs of MVC 43  
  - UI Delegation 44  

- **JFace and MVC** 44  
  - JFace Viewers 44  
  - JFace Text 45  

- **Summary** 45
Chapter 3: Jump Start with SWT/JFace

Preparation
- Downloading and Installing SWT/JFace
- Configuring Your IDEs

Your First SWT Program
- Coding Your First SWT Program: Hello World
- Running Your First SWT Program
- Creating a Bigger Application — Temperature Converter
- Rewriting the Temperature Converter with JFace

SWT/JFace Software Deployment with Java Web Start
- Introduction to Java Web Start
- Identifying Files to be Deployed
- Packaging and Signing Files
- Writing the JNLP Script
- Uploading and Running

Summary

Chapter 4: SWT Event Handling, Threading, and Displays

SWT Event Handling Fundamentals
- Native Event Handling Mechanism
- SWT Event Handling Basics
- Using Displays
- SWT Event Handling with Displays

Multithreaded UI Programming
- Multithreading with the UI Thread and Non-UI threads
- SWT Time-Consuming Operation UI Pattern
- Thread-Safe UI calls

The Event Model
- Events, Listeners, and the Listener Notification Process
- Untyped Events and Untyped Event Listeners
- Typed Events and Typed Event Listeners

Summary

Chapter 5: Basic SWT Widgets

Overview of SWT/JFace Widgets
- SWT/JFace UI Component Hierarchy
- The Widget Class
- The Control Class
- The Composite Class
## Contents

### Using Lists 159
- Single and Multi Selection 159
- Building Lists and Capturing Item Selections 160
- Accessing Items in Lists 163

### Using ListViewers 165
- Creating Domain-Specific Model Objects 165
- Creating a ListViewer 166
- Setting the Content Provider and the Content 167
- Setting the Label Provider 168
- Capturing Events and Getting Selections 168
- Adding Filters 171
- Setting a Sorter 172
- Updating/Refreshing the Viewer 172

### Summary 175

### Chapter 8: Text Controls 177

### Using Texts 177
- Styles 177
- Text Basics 178
- Text Operations 181
- Text Selections 183

### Using StyledTexts 184
- Setting Text Styles with StyleRanges 184
- Setting Line Backgrounds 187
- Using LineStyleListeners and LineBackgroundListeners 188

### Summary 191

### Chapter 9: Menus, Toolbars, Cool Bars, and Actions 193

### Using Menus and Menu Items 193
- Using Menus 193
- Using MenuItems 196
- Creating a Text Editor 199

### Using ToolBars and ToolItems 202
- Using ToolBars 202
- Using ToolItems 203
- Adding a Toolbar for the Text Editor 207

### Using CoolBars and CoolItems 210
- Creating a CoolBar with CoolItems 210
- Saving and Loading the Display State of a CoolBar 212
<table>
<thead>
<tr>
<th>Using Actions and ContributionManagers</th>
<th>216</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creating Actions</td>
<td>216</td>
</tr>
<tr>
<td>Creating Menus with MenuManagers</td>
<td>219</td>
</tr>
<tr>
<td>Creating Toolbars with ToolBarManagers</td>
<td>220</td>
</tr>
<tr>
<td><strong>Summary</strong></td>
<td><strong>221</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 10: Tables</th>
<th>223</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Using Tables</strong></td>
<td>223</td>
</tr>
<tr>
<td>Creating a Table</td>
<td>223</td>
</tr>
<tr>
<td>Defining Table Columns</td>
<td>224</td>
</tr>
<tr>
<td>Adding Data into a Table</td>
<td>225</td>
</tr>
<tr>
<td>Handling Selections</td>
<td>229</td>
</tr>
<tr>
<td>Using TableEditors</td>
<td>230</td>
</tr>
<tr>
<td>Sorting a Table by Column</td>
<td>233</td>
</tr>
<tr>
<td><strong>Using TableViewers</strong></td>
<td>235</td>
</tr>
<tr>
<td>Creating Domain-Specific Model Objects</td>
<td>236</td>
</tr>
<tr>
<td>Creating a TableViewer</td>
<td>237</td>
</tr>
<tr>
<td>Setting the Content Provider</td>
<td>238</td>
</tr>
<tr>
<td>Setting the Label Provider</td>
<td>238</td>
</tr>
<tr>
<td>Setting Cell Editors</td>
<td>239</td>
</tr>
<tr>
<td>Column-Wise Sorting Using Sorters</td>
<td>242</td>
</tr>
<tr>
<td>Adding a Filter</td>
<td>243</td>
</tr>
<tr>
<td><strong>Summary</strong></td>
<td><strong>244</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 11: Trees</th>
<th>245</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Using Trees</strong></td>
<td>245</td>
</tr>
<tr>
<td>Creating a Tree</td>
<td>245</td>
</tr>
<tr>
<td>Using TreeItems</td>
<td>246</td>
</tr>
<tr>
<td>Handling Events</td>
<td>249</td>
</tr>
<tr>
<td>Using TreeEditors</td>
<td>251</td>
</tr>
<tr>
<td><strong>Using TreeViewer</strong></td>
<td>253</td>
</tr>
<tr>
<td>Creating a TreeViewer</td>
<td>254</td>
</tr>
<tr>
<td>Setting the Content Provider</td>
<td>254</td>
</tr>
<tr>
<td>Setting the Label Provider</td>
<td>255</td>
</tr>
<tr>
<td>Setting the Sorter</td>
<td>256</td>
</tr>
<tr>
<td>Adding a Filter</td>
<td>256</td>
</tr>
<tr>
<td>Getting Selections</td>
<td>257</td>
</tr>
<tr>
<td><strong>Summary</strong></td>
<td><strong>259</strong></td>
</tr>
</tbody>
</table>
## Chapter 12: Dialogs

**Dialog Basics** 261

**Using ColorDialogs and FontDialogs** 262
- ColorDialogs 263
- FontDialogs 263
- Using ColorDialogs and FontDialogs 263

**Using DirectoryDialogs and FileDialogs** 266
- DirectoryDialogs 266
- FileDialogs 266
- Using DirectoryDialogs and FileDialogs 268

**Using MessageBoxes** 270

**Creating Your Own Dialogs** 272

**Summary** 274

## Part III: Dynamic Controls

275

## Chapter 13: Scales, Sliders, and Progress Bars

**Using Scales** 277

**Using Sliders** 280

**Using ProgressBars** 282

**Summary** 286

## Chapter 14: Other Important SWT Components

**Using Groups** 287

**Using Sashes and SashForms** 290
- Using Sashes 290
- Using SashForms 291

**Using TabFolders and TabItems** 294
- Basic Usages 294
- Accessing and Selecting TabItems 296
- Customizing TabItems 297

**Using Browsers** 298
- Navigation Methods 298
- Events 299
- A Simple Web Browser 301

**Summary** 305
## Chapter 15: SWT Graphics and Image Handling  
307

**Drawing with Graphics Contexts**  
- Getting a Graphics Context 308  
- Using Canvas 310  
- Drawing Lines, Arcs, and Shapes 311  
- Filling Shapes 313  
- Drawing and Copying Images 314  
- Drawing Text 316  
- Advanced Techniques 318

**Image Handling**  
- Image Basics 321  
- ImageData and PaletteData 322  
- Transparency and Alpha Blending 325  
- Image Scaling 327  
- Displaying Animation 327

**Summary**  
329

## Chapter 16: Drag and Drop and the Clipboard  
331

**Using Drag and Drop**  
- Creating Drag Sources 332  
- Creating Drop Targets 335  
- The Bookmark Organizer 338

**Using the Clipboard**  
- Putting Data on the Clipboard 347  
- Getting Data from the Clipboard 348

**Summary**  
349

## Chapter 17: Printing  
351

**Printing Fundamentals**  
351

**Selecting the Target Printer**  
353

**Basic Printing**  
355
- The Image Viewer Application 356  
- Setting the Page Margins 357  
- Printing the Image 360  
- Providing the Print Preview 362

**Text Printing and Pagination**  
366

**Summary**  
371
## Chapter 18: JFace Windows and Dialogs

### JFace Windows
- org.eclipse.jface.window.Window
- Application Windows
- Running Time-Consuming Operations with Application Windows
- Multiple Windows Management with WindowManagers

### JFace Dialogs
- Using MessageDialogs
- Using InputDialogs
- Using ProgressMonitorDialogs

### Summary

## Part IV: Application Development

## Chapter 19: JFace Wizards

### JFace Wizard Basics

### Creating a JFace Wizard
- Adding Wizard Pages with addPages()
- Finish Processing with performFinish()
- Cancel Processing with performCancel()
- Accessing Wizard Pages

### Creating Wizard Pages

### Running a Wizard

### Loading and Saving Dialog Settings

### Summary

## Chapter 20: Creating a Text Editor with JFace Text

### Overview of the JFace Text Framework
- JFace Text Package Organization
- Models, Views, and Controllers in JFace Text Framework

### Creating a Basic Custom Editor

### Syntax Highlighting

### Providing Content Assistance

### Running the Editor

### Summary
### Chapter 21: Eclipse Forms

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to Eclipse Forms</td>
<td>427</td>
</tr>
<tr>
<td>Creating a Basic Form</td>
<td>428</td>
</tr>
<tr>
<td>Customizing Forms</td>
<td>431</td>
</tr>
<tr>
<td>Using Custom Form Controls</td>
<td>432</td>
</tr>
<tr>
<td>Using Hyperlinks</td>
<td>432</td>
</tr>
<tr>
<td>Using FormTexts</td>
<td>435</td>
</tr>
<tr>
<td>Using ExpandableComposites</td>
<td>438</td>
</tr>
<tr>
<td>Using Sections</td>
<td>440</td>
</tr>
<tr>
<td>Using Form Layout Managers</td>
<td>441</td>
</tr>
<tr>
<td>Using TableWrapLayout</td>
<td>441</td>
</tr>
<tr>
<td>Using ColumnLayouts</td>
<td>442</td>
</tr>
<tr>
<td><strong>Summary</strong></td>
<td>443</td>
</tr>
</tbody>
</table>

### Chapter 22: Programming OLE in Windows

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>445</td>
</tr>
<tr>
<td>OleFrame</td>
<td>446</td>
</tr>
<tr>
<td>OleClientSite, OleControlSite</td>
<td>446</td>
</tr>
<tr>
<td>Embedding a Microsoft Word OLE Document into an SWT Application</td>
<td>447</td>
</tr>
<tr>
<td>Creating the OLE Container</td>
<td>447</td>
</tr>
<tr>
<td>Creating an OLE Site</td>
<td>448</td>
</tr>
<tr>
<td>Activating the OLE Object</td>
<td>450</td>
</tr>
<tr>
<td>Deactivating the OLE Object</td>
<td>451</td>
</tr>
<tr>
<td>Saving Changes</td>
<td>452</td>
</tr>
<tr>
<td>Executing Common Commands</td>
<td>453</td>
</tr>
<tr>
<td>OLE Automation</td>
<td>454</td>
</tr>
<tr>
<td>Listing OLE Automation Properties and Methods</td>
<td>454</td>
</tr>
<tr>
<td>Getting and Setting Property Values</td>
<td>459</td>
</tr>
<tr>
<td>Invoking Methods</td>
<td>460</td>
</tr>
<tr>
<td><strong>Summary</strong></td>
<td>461</td>
</tr>
</tbody>
</table>

### Chapter 23: Drawing Diagrams with Draw2D

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overview</td>
<td>463</td>
</tr>
<tr>
<td>Creating Simple UML Diagrams with Draw2D</td>
<td>465</td>
</tr>
<tr>
<td>Adding Connections</td>
<td>472</td>
</tr>
<tr>
<td>Capturing Events</td>
<td>473</td>
</tr>
<tr>
<td><strong>Summary</strong></td>
<td>474</td>
</tr>
</tbody>
</table>