Foundations of PyGTK Development

GUI Creation with Python

Second Edition

W. David Ashley
Andrew Krause
I dedicate this book to my wife.
Without you, all of this would not be possible.

—W. David Ashley
# Table of Contents

About the Author .......................................................................................................................... xv
About the Technical Reviewers ...................................................................................................... xvii
Acknowledgments .......................................................................................................................... xix
Introduction .................................................................................................................................. xxi

## Chapter 1: Getting Started........................................................................................................ 1
  Differences Between GTK+ 2.x and 3.x .................................................................................. 1
  Installing GTK+ 3.x ................................................................................................................. 3
  Summary ................................................................................................................................. 4

## Chapter 2: The Application and ApplicationWindow Classes .............................................. 5
  The Gtk.Application Class ....................................................................................................... 5
  Primary vs. Local Instance ...................................................................................................... 7
  Actions ................................................................................................................................. 7
  Dealing with the Command Line ............................................................................................ 8
  Example ............................................................................................................................... 9
  The Gtk.ApplicationWindow Class ....................................................................................... 10
  Actions ............................................................................................................................... 10
  Locking .............................................................................................................................. 11
  Example ............................................................................................................................. 11
  Summary ............................................................................................................................. 16

## Chapter 3: Some Simple GTK+ Applications ......................................................................... 17
  Hello World ......................................................................................................................... 17
  GTK+ Widget Hierarchy ........................................................................................................ 20
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extending HelloWorld.py</td>
<td>20</td>
</tr>
<tr>
<td>The GTK.Label Widget</td>
<td>22</td>
</tr>
<tr>
<td>Layout Containers</td>
<td>23</td>
</tr>
<tr>
<td>Signals and Callbacks</td>
<td>24</td>
</tr>
<tr>
<td>Connecting the Signal</td>
<td>24</td>
</tr>
<tr>
<td>Callback Methods/Functions</td>
<td>26</td>
</tr>
<tr>
<td>Connecting the Signal</td>
<td>24</td>
</tr>
<tr>
<td>Callback Methods/Functions</td>
<td>26</td>
</tr>
<tr>
<td>Events</td>
<td>26</td>
</tr>
<tr>
<td>Event Types</td>
<td>28</td>
</tr>
<tr>
<td>Using Specific Event Structures</td>
<td>28</td>
</tr>
<tr>
<td>Further GTK+ Methods</td>
<td>29</td>
</tr>
<tr>
<td>Gtk.Widget Methods</td>
<td>30</td>
</tr>
<tr>
<td>Gtk.Window Methods</td>
<td>31</td>
</tr>
<tr>
<td>Process Pending Events</td>
<td>33</td>
</tr>
<tr>
<td>Buttons</td>
<td>33</td>
</tr>
<tr>
<td>Test Your Understanding</td>
<td>36</td>
</tr>
<tr>
<td>Exercise 1: Using Events and Properties</td>
<td>36</td>
</tr>
<tr>
<td>Summary</td>
<td>37</td>
</tr>
<tr>
<td>Chapter 4: Containers</td>
<td>39</td>
</tr>
<tr>
<td>GTK.Container</td>
<td>39</td>
</tr>
<tr>
<td>Decorator Containers</td>
<td>40</td>
</tr>
<tr>
<td>Layout Containers</td>
<td>40</td>
</tr>
<tr>
<td>Resizing Children</td>
<td>41</td>
</tr>
<tr>
<td>Container Signals</td>
<td>42</td>
</tr>
<tr>
<td>Horizontal and Vertical Boxes</td>
<td>42</td>
</tr>
<tr>
<td>Horizontal and Vertical Panes</td>
<td>48</td>
</tr>
<tr>
<td>Grids</td>
<td>52</td>
</tr>
<tr>
<td>Grid Spacing</td>
<td>54</td>
</tr>
<tr>
<td>Fixed Containers</td>
<td>54</td>
</tr>
<tr>
<td>Expanders</td>
<td>57</td>
</tr>
</tbody>
</table>
# Table of Contents

## Chapter 6: Dialogs
- Creating Your Own Dialogs ................................................................. 108
  - Creating a Message Dialog .......................................................... 109
  - Nonmodal Message Dialog ......................................................... 115
  - Another Dialog Example ........................................................... 117
- Built-in Dialogs .................................................................................. 121
  - Message Dialogs ........................................................................... 121
  - About Dialogs ............................................................................... 124
  - Gtk.FileChooser Dialogs .............................................................. 130
  - Color Selection Dialogs ............................................................... 139
  - Font Selection Dialogs ............................................................... 143
- Dialogs with Multiple Pages ............................................................... 146
  - Creating Gtk.Assistant Pages ....................................................... 151
  - Gtk.ProgressBar .......................................................................... 154
  - Page Forward Methods .............................................................. 155
- Test Your Understanding .................................................................... 156
  - Exercise 1: Implementing File Chooser Dialogs ......................... 157
- Summary ........................................................................................... 157

## Chapter 7: Python and GTK+
- Arguments and Keyword Arguments .............................................. 159
- Logging ............................................................................................ 162
  - When to Use Logging ................................................................. 162
  - Some Simple Examples ............................................................... 163
  - Logging to a File ......................................................................... 164
  - Logging from Multiple Modules ............................................... 165
  - Logging Variable Data ............................................................... 166
  - Changing the Format of Displayed Messages ......................... 166
<table>
<thead>
<tr>
<th>Exceptions........................................................................................................................................</th>
<th>167</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raising Exceptions ....................................................................................................................</td>
<td>167</td>
</tr>
<tr>
<td>Catching Exceptions ...................................................................................................................</td>
<td>170</td>
</tr>
<tr>
<td>Raising and Reraising Exceptions ...............................................................................................</td>
<td>171</td>
</tr>
<tr>
<td>Catching Multiple Exceptions .....................................................................................................</td>
<td>172</td>
</tr>
</tbody>
</table>

**Chapter 8: Text View Widget** ........................................................................................................ 175

| Scrolled Windows .......................................................................................................................... | 175 |
| Text Views ..................................................................................................................................... | 181 |
| Text Buffers .................................................................................................................................. | 182 |
| Text View Properties ................................................................................................................... | 184 |
| Pango Tab Arrays ........................................................................................................................ | 188 |
| Text Iterators and Marks ............................................................................................................ | 190 |
| Editing the Text Buffer .............................................................................................................. | 191 |
| Retrieving Text Iterators and Marks ......................................................................................... | 193 |
| Changing Text Buffer Contents ................................................................................................. | 195 |
| Cutting, Copying, and Pasting Text ............................................................................................ | 196 |
| Searching the Text Buffer .......................................................................................................... | 199 |
| Scrolling Text Buffers ................................................................................................................ | 203 |
| Text Tags ...................................................................................................................................... | 204 |
| Inserting Images ........................................................................................................................ | 209 |
| Inserting Child Widgets ............................................................................................................. | 211 |
| Gtk.SourceView .......................................................................................................................... | 214 |

**Chapter 9: Tree View Widget** ....................................................................................................... 219

<p>| Parts of a Tree View .................................................................................................................... | 220 |
| Gtk.TreeModel ............................................................................................................................ | 221 |
| Gtk.TreeViewColumn and Gtk.CellRenderer ................................................................................ | 223 |</p>
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keyboard Accelerators</td>
<td>283</td>
</tr>
<tr>
<td>Status Bar Hints</td>
<td>287</td>
</tr>
<tr>
<td>The Status Bar Widget</td>
<td>287</td>
</tr>
<tr>
<td>Menu Item Information</td>
<td>289</td>
</tr>
<tr>
<td>Menu Items</td>
<td>293</td>
</tr>
<tr>
<td>Submenus</td>
<td>294</td>
</tr>
<tr>
<td>Image Menu Items</td>
<td>294</td>
</tr>
<tr>
<td>Check Menu Items</td>
<td>295</td>
</tr>
<tr>
<td>Radio Menu Items</td>
<td>296</td>
</tr>
<tr>
<td>Menu Bars</td>
<td>296</td>
</tr>
<tr>
<td>Toolbars</td>
<td>299</td>
</tr>
<tr>
<td>Toolbar Items</td>
<td>303</td>
</tr>
<tr>
<td>Toggle Tool Buttons</td>
<td>304</td>
</tr>
<tr>
<td>Radio Tool Buttons</td>
<td>305</td>
</tr>
<tr>
<td>Menu Tool Buttons</td>
<td>305</td>
</tr>
<tr>
<td>Dynamic Menu Creation</td>
<td>307</td>
</tr>
<tr>
<td>Creating XML Files</td>
<td>307</td>
</tr>
<tr>
<td>Loading XML Files</td>
<td>311</td>
</tr>
<tr>
<td>Test Your Understanding</td>
<td>313</td>
</tr>
<tr>
<td>Exercise 1: Toolbars</td>
<td>314</td>
</tr>
<tr>
<td>Exercise 2: Menu Bars</td>
<td>314</td>
</tr>
<tr>
<td>Summary</td>
<td>314</td>
</tr>
<tr>
<td><strong>Chapter 11: Dynamic User Interfaces</strong></td>
<td>317</td>
</tr>
<tr>
<td>User Interface Design</td>
<td>318</td>
</tr>
<tr>
<td>Know Your Users</td>
<td>318</td>
</tr>
<tr>
<td>Keep the Design Simple</td>
<td>319</td>
</tr>
<tr>
<td>Always Be Consistent</td>
<td>320</td>
</tr>
<tr>
<td>Keep the User in the Loop</td>
<td>321</td>
</tr>
<tr>
<td>We All Make Mistakes</td>
<td>322</td>
</tr>
<tr>
<td>The Glade User Interface Builder</td>
<td>322</td>
</tr>
<tr>
<td>Chapter 12: Custom Widgets ................................................................. 345</td>
<td></td>
</tr>
<tr>
<td>-------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>An Image/Label Button ................................................................. 345</td>
<td></td>
</tr>
<tr>
<td>Custom Message Dialogs ................................................................. 349</td>
<td></td>
</tr>
<tr>
<td>Multithreaded Applications ............................................................. 351</td>
<td></td>
</tr>
<tr>
<td>The Proper Way to Align Widgets ...................................................... 358</td>
<td></td>
</tr>
<tr>
<td>Summary .......................................................................................... 361</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 13: More GTK Widgets ............................................................ 363</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drawing Widgets ................................................................. 363</td>
</tr>
<tr>
<td>A Drawing Area Example ................................................................. 364</td>
</tr>
<tr>
<td>The Layout Widget ................................................................. 370</td>
</tr>
<tr>
<td>Calendars ......................................................................................... 371</td>
</tr>
<tr>
<td>Printing Support .............................................................................. 373</td>
</tr>
<tr>
<td>Print Operations ................................................................. 378</td>
</tr>
<tr>
<td>Beginning the Print Operation ...................................................... 382</td>
</tr>
<tr>
<td>Rendering Pages ................................................................. 383</td>
</tr>
<tr>
<td>Finalizing the Print Operation ...................................................... 384</td>
</tr>
<tr>
<td>Cairo Drawing Context</td>
</tr>
<tr>
<td>Drawing Paths</td>
</tr>
<tr>
<td>Rendering Options</td>
</tr>
<tr>
<td>Recent Files</td>
</tr>
<tr>
<td>Recent Chooser Menu</td>
</tr>
<tr>
<td>Adding Recent Files</td>
</tr>
<tr>
<td>Recent Chooser Dialog</td>
</tr>
<tr>
<td>Automatic Completion</td>
</tr>
<tr>
<td>Test Your Understanding</td>
</tr>
<tr>
<td>Exercise 1: Creating a Full Text Editor</td>
</tr>
<tr>
<td>Summary</td>
</tr>
</tbody>
</table>

**Chapter 14: Integrating Everything** | 403 |
| File Browser | 403 |
| Calculator | 405 |
| Ping Utility | 406 |
| Calendar | 408 |
| Markup Parser Functions | 409 |
| Parsing the XML File | 410 |
| Further Resources | 410 |
| Summary | 411 |

**Appendix A: GTK+ Properties** | 413 |
| GTK+ Properties | 413 |
| Child Widget Properties | 475 |

**Appendix B: GTK+ Signals** | 481 |
| Events | 482 |
| Widget Signals | 485 |
| TABLE OF CONTENTS |
|-------------------------------------------------|-----------------|
| **Appendix C: GTK+ Styles**                      | 537             |
| Default RC File Styles                           | 537             |
| Pango                                           | 537             |
| Gtk.TextTag Styles                               | 540             |
| **Appendix D: Exercises Solutions and Hints**    | 545             |
| Chapter 3, Exercise 1: Using Events and Properties| 545             |
| Chapter 4, Exercise 1: Using Multiple Containers | 546             |
| Chapter 4, Exercise 2: Even More Containers      | 547             |
| Chapter 5, Exercise 1: Renaming Files            | 547             |
| Chapter 5, Exercise 2: Spin Buttons and Scales   | 548             |
| Chapter 6, Exercise 1: Implementing File Chooser Dialogs | 549         |
| Chapter 8, Exercise 1: Text Editor               | 549             |
| Chapter 9, Exercise 1: File Browser              | 550             |
| Chapter 10, Exercise 1: Toolbars                 | 551             |
| Chapter 10, Exercise 2: Menu Bars                | 554             |
| Chapter 11, Exercise 1: Glade Text Editor        | 556             |
| Chapter 11, Exercise 2: Glade Text Editor with Menus | 557         |
| Chapter 13, Exercise 1: Full Text Editor         | 558             |
| **Index**                                        | 561             |
About the Author

W. David Ashley is a technical writer for SkillSoft, where he specializes in open source, particularly Linux. As a member of the Linux Fedora documentation team, he recently led the Libvert project documentation and wrote the Python programs included with it. He has developed in 20 different programming languages during his 30 years as a software developer and IT consultant. This includes more than 18 years at IBM and 12 years with American Airlines.
About the Technical Reviewers

Jonathan Giszczak is a professional software developer with extensive experience writing software for the military and financial services industries, as well as the game industry. He graduated from the University of Michigan with a degree in computer engineering. He has been writing C, C++, and Python applications since the 1990s, including applications in Motif and PyGTK.

Peter Gill loves spending time with his family in Newfoundland, Canada. He is currently a software developer at TownSuite, where he specializes in release deployment and leading a full stack web development team. Peter loves learning programming language and has used Python, Ruby, Rust, Io, Prolog, Java, C, C++, C#, VB, JavaScript, Typescript, Bash, PowerShell and is currently focused on C# with ASP .NET Core and Typescript. He is a huge advocate open source software. He loves to use Git, Jenkins, Docker, and other tools related to automated deployments.
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—W. David Ashley
Introduction

One of the most important aspects of an application is the interface that is provided to interact with the user. With the unprecedented popularity of computers in society today, people have come to expect those user interfaces to be graphical, and the question of which graphical toolkit to use quickly arises for any developer. For many, the cross-platform, feature-rich GTK+ library is the obvious choice.

Learning GTK+ can be a daunting task, because many features lack documentation and others are difficult to understand even with the API documentation. *Foundations of PyGTK Development* aims to decrease the learning curve and set you on your way to creating cross-platform graphical user interfaces for your applications.

Each chapter in this book contains multiple examples that help you further your understanding. In addition to these examples, the final chapter of this book provides five complete applications that incorporate topics from the previous chapters. These applications show you how to bring together what you have learned to accomplish in various projects.

Each chapter starts with an overview, so that you are able to skip around if you want. Most chapters also contain exercises to test your understanding of the material. I recommend that you complete all the exercises before continuing, because the best way to learn GTK+ is to use it.

At the end of this book, there are multiple appendixes that serve as references for various aspects of GTK+. These appendixes include tables listing signals, styles, and properties for every widget in GTK+. These appendixes will remain a useful reference after you have finished reading the book and begin creating your own applications. In addition, Appendix D explains the solutions to all the exercises in the book.

Who Should Read This Book

Because this book begins with the basics and works up to more difficult concepts, you do not need any previous knowledge of GTK+ development to use this book. This book does assume that you have a decent grasp of the Python programming language. You should
also be comfortable with running commands and terminating applications (Ctrl+C) in a Linux terminal.

In addition to a grasp of the Python programming language, some parts of this book may be difficult to understand without some further knowledge about programming for Linux in general. You will get more out of this book if you already comprehend basic object-oriented concepts. It is also helpful to know how Linux handles processes.

You can still use this book if you do not already know how to implement object orientation or manage processes in Linux, but you may need to supplement this book with one or more online resources. A list of helpful links and tutorials can be found on the book's web site, which is located at www.gtkbook.com. You can also find more information about the book at www.apress.com.

How This Book Is Organized

*Foundations of PyGTK Development* is composed of 14 chapters. Each chapter gives you a broad understanding of its topic. For example, Chapter 4 covers container widgets and introduces many of the most important widgets derived from the `Gtk.Container` class.

Because of this structure, some chapters are somewhat lengthy. Do not feel as though you have to complete a whole chapter in one sitting, because it can be difficult to remember all the information presented. Also, because many examples span multiple pages, consider focusing on just a few examples at a time; try to understand their syntax and intent.

Each chapter provides important information and unique perspectives that help you to become a proficient PyGTK developer.

Chapter 1 teaches you how to install the GTK+ libraries and their dependencies on your Linux system. It also gives an overview of each of the GTK+ libraries, including GObject, GDK, GdkPixbuf, Pango, and ATK.

Chapter 2 introduces the `Gtk.Application` and `Gtk.ApplicationWindow` classes. These classes are fundamental classes that wrap the program logic and provide some useful features for your application. While a GTK+ program can be written without utilizing these classes, you will find the creation process much easier and more object-oriented if you utilize these classes.

Chapter 3 steps through two Hello World applications. The first shows you the basic essentials that are required by every GTK+ application. The second expands on the first
while also covering signals, callback functions, events, and child widgets. You then learn about widget properties and the Gtk.Button and Gtk.Label widgets.

Chapter 4 begins by introducing the Gtk.Container class. Next, it teaches you about horizontal and vertical boxes, grids, fixed containers, horizontal and vertical panes, notebooks, and event boxes.

Chapter 5 covers basic widgets that provide a way for you to interact with users. These include toggle buttons, specialized buttons, text entries, and spin buttons.

Chapter 6 introduces you to the vast array of built-in dialogs. It also teaches you how to create your own custom dialogs.

Chapter 7 is a general overview of the most useful features of Python. It covers many Python features that are directly useful to the GTK+ programmer but not necessarily covered in depth in many Python introductory texts.

Chapter 8 introduces you to scrolled windows. It also gives in-depth instructions on using the text view widget. Other topics include the clipboard and the Gtk.SourceView library.

Chapter 9 covers two types of widgets that use the Gtk.TreeModel object. It gives an in-depth overview of the tree view widget and shows you how to use combo boxes with tree models or strings.

Chapter 10 provides two methods of menu creation: manual and dynamic. It covers menus, toolbars, pop-up menus, keyboard accelerators, and the status bar widget.

Chapter 11 is a short chapter about how to design user interfaces with the Glade user interface builder. It also shows you how to dynamically load your user interfaces using Gtk.Builder.

Chapter 12 teaches you how to create your own custom GTK+ widgets by deriving them from other widgets.

Chapter 13 covers many of the remaining widgets that do not quite fit into other chapters. This includes several widgets that were introduced in GTK+ 2.10, including recent files and tray icon support.

Chapter 14 gives you a few longer, real-world examples. They take the concepts you have learned throughout the book and show you how they can be used together.

The appendixes act as references to widget properties, signals, styles, stock items, and descriptions of exercise solutions.
Official Web Site

You can find additional resources on the book’s official web site, found at www.gtkbook.com. This web site includes up-to-date documentation, links to useful resources, and articles that supplement what you learn in this book. There is also find a link to the downloadable source code for every example in this book. The Apress web site (www.apress.com) is another great place to find more information about this book.

When you unzip the source code from the web site, you will find a folder that contains the examples in each chapter and an additional folder that holds exercise solutions. You can run all the files within the current folder.