

100%

ONE HUNDRED PERCENT
COMPREHENSIVE
AUTHORITATIVE
WHAT YOU NEED
ONE HUNDRED PERCENT

Create state-of-the-art GUIs for Linux applications

Master the complex architecture of GNOME/GTK+

Harness the power of GNOME and GTK+ widgets

GNOME/GTK+ Programming

Bonus CD-ROM

Suranaree University of Technology



31051000651204

**BONUS
CD-ROM**

Covers all examples from the book and includes useful tools and libraries

Bible

Arthur Griffith

Contents

Preface	ix
Acknowledgments	xiii

Part I: Getting Started

1

Chapter 1: What Is This Thing Called GNOME? 3

It's a Jumble Out There	3
The Software Levels	4
Naming Conventions	5
Let Me Count the Ways	6
C Object Run	7
Encapsulation	7
Inheritance	8
Methods	9
The Things That Widgets Do	10
Signals and Callbacks	10
Enter glib of GIMP	11
The Fundamental Data Types	11
Utility Functions of glib	14
Perusing the Source	16

Chapter 2: Displaying a Window 19

Getting Set Up	19
The Hello World Program	19
A Window from GTK+	24
A Window That Closes	26
Callbacks and Events	28
A Window with a Button	29
A Window from GNOME	31
The Beginning of a GNOME Application	34

Chapter 3: Displaying a Popup Dialog 39

The Popup, the Dialog, and the Widget	39
Dialogs Are on Their Own	40
The GNOME Defined Dialogs	40
Make a Simple Statement	41

Ask a Simple Question	44
Are You Sure?	47
Keyboard Input	49
Data to the Callback	53
Progress Bar	56
Creating a Popup and a Dialog	57
Destroying After Popping Down	59
Popping Down by Hiding	63
Data Out and Data In	65
Chapter 4: Laying Out Widgets in a Window	71
Packing Boxes	71
The Vertical Packing Box	72
The Horizontal Packing Box	75
The Options of the Horizontal Box	76
The Options of the Vertical Box	80
Spacing Widgets in Boxes	83
Boxes within Boxes	87
Packing Tables	91
Packing a Small Table	91
Three Buttons on the Table	94
Optional Settings	98
Overlapping Widgets	102
Combining Boxes and Tables	104
Chapter 5: Widgets to Contain Widgets	109
The Fixed Container	109
The Alignment Container	112
The Frame Container	116
The Aspect Frame Container	121
The Paned Container	124
The Layout Container	128
The Scrolled Window Container	132
The Notebook Container	135
The Button Box	140
Chapter 6: Events, Signals, and Callbacks	149
Reading the Event Queue	149
The Sequence of Dispatching Events	150
Issuing Your Own Signal	151
Names and IDs of the Signals	154
Forms of the Callback Functions	154
Background Processing during Idle Time	163
Timers	166
Reading Input from a File or Socket	169

Chapter 7: Bitmaps, Pixmaps, and Cursors 173

Two Kinds of Graphics	173
The XPM Format	174
Show XPM from Data	177
Show XPM from File	179
Using XPM to Decorate a Button	179
The XBM Format	181
The bitmap Utility	181
Show XBM Cursor	183
Create Cursor	188
Create Cursor from XPM	192

Chapter 8: Menus and Toolbars 197

The Mechanics of a Menu Creation	197
Menu Types and Macros	203
The Standard GNOME Menu Layout	207
The Help Files	213
A Popup Menu	215
Creating a Toolbar	217
The Stock Icons	220
Non-Standard Icons	225
Disabling and Enabling Menu Items	228
Disabling and Enabling Toolbar Items	230
Hiding and Showing Menu Items	232
Hiding and Showing Toolbar Items	234
Radio Buttons in a Menu	237
Radio Buttons in a Toolbar	239
Toggle Buttons in a Menu	242
Toggle Buttons in a Toolbar	245

Part II: Step by Step

249

Chapter 9: The GnomeCanvas Widget 251

The GnomeCanvas Widget	251
The Mouse, the Event, and the Stacking Order	255
Events Passing Down to Canvas Items	259
Moving a Canvas Item	265
Canvas Images	269
Canvas Text	273
Grouping Items in a Canvas	276
Adding Widgets to a Canvas	280
Drawing Polygons on a Canvas	283
Canvas Affine Transforms	285

GdkEvent	288
Some Common Fields	291
GdkEvent	292
GdkEventAny	293
GdkEventButton	293
GdkEventClient	294
GdkEventConfigure	295
GdkEventCrossing	295
GdkEventDND	296
GdkEventExpose	296
GdkEventFocus	297
GdkEventKey	297
GdkEventMotion	298
GdkEventNoExpose	298
GdkEventProperty	299
GdkEventProximity	299
GdkEventSelection	299
GdkEventVisibility	300
Chapter 10: The Drawing Area and Graphic Primitives	303
Drawing Area Basics	304
One Pixel at a Time	306
Drawing and Filling Rectangles	309
Drawing and Filling Polygons	312
Drawing Circles, Ellipses, and Arcs	315
Drawing Text	319
Drawing a Pixmap	322
Resizing the Drawing Area	326
Drawing to Memory and Animation	329
Chapter 11: Color and the Graphics Context	335
The Architecture of Color	335
The Graphics Context	339
Setting the Color of a Widget	346
Line Styles in a Graphics Context	349
Stipple	357
Functions that Set Values in a GtkGC	362
A Dialog to Select Colors	367
Explanation of GtkStyle	371
Chapter 12: The Mouse and the Keyboard	375
Responding to Mouse Events	375
Grabbing and Releasing the Mouse	380
Reading Characters from the Keyboard	385
GNOME's Command-Line Options	391
Adding Command-Line Options	393

Chapter 13: Fonts	399
The Anatomy of a Font	399
The Names of the Fonts	401
The Font Picker Widget	403
Metrics and Font Placement	406
Chapter 14: Widget Tricks	415
Exploring a Widget	415
Talking to a Widget	419
Listening to a Widget	422
Create, Realize, Map, and Show	426
Create and Destroy	426
Show and Hide	426
Map and Unmap	427
Realize and Unrealize	427
Showing and Hiding a Button	427
The Styles of a Widget	429
Setting Widget Styles	433
Chapter 15: Applets	437
A Simplified Applet	437
An Applet That Launches an Application	439
Displaying Updated Information	440
The Applet Menu	443
Panel Orientation	445
Chapter 16: Drag, Drop, Copy, Cut, and Paste	449
A Simple Text Drag-and-Drop	449
Graphic Data Moved among Applications	452
Cut and Paste	460
Chapter 17: Multiple Document Interface (MDI)	465
A Simple MDI Window	465
MDI Menus and Display Modes	469
An MDI Window with a Toolbar	474
Chapter 18: Creating Your Own Widget	481
The Bar Graph Widget	481
Using the AgBargraph Widget	482
The AgBargraph Header File	484
The AgBargraph Widget	487
Widget Changes and Upgrades	502

Chapter 19: Configuration and Internationalization	505
Environmental Control	505
The Configuration File Format	506
The Configuration File Location	506
Reading and Writing a Configuration File	507
Storing and Retrieving a Vector	509
The Data Types of a Configuration File	510
Internationalization	514

Part III: References and Mechanics

519

Chapter 20: Configuration and Compilation	521
Install GNOME Source Code	521
Set Up the Development Directory	522
Macros	523
The configure.in File	523
The Text Files	526
The acconfig.h File	527
The autogen.sh Script	528
The Main Makefile.am File	529
The Source Directory	530
The Subordinate Makefile.am File	530
Running the autogen.sh Script	531

Chapter 21: The Widgets of GTK+

533

GtkAccelLabel	534
GtkAdjustment	535
GtkAlignment	536
GtkArrow	537
GtkAspectFrame	538
GtkBin	539
GtkBox	539
GtkButton	540
GtkButtonBox	540
GtkCalendar	541
GtkCheckButton	542
GtkCheckMenuItem	543
GtkCList	544
GtkClock	548
GtkColorSelection	549
GtkColorSelectionDialog	550
GtkCombo	551
GtkContainer	552
GtkCTree	554
GtkCurve	559

GtkData	560
GtkDial	561
GtkDialog	562
GtkDrawingArea	563
GtkEditable	563
GtkEntry	564
GtkEventBox	565
GtkFileSelection	566
GtkFixed	568
GtkFontSelection	569
GtkFontSelectionDialog	570
GtkFrame	572
GtkGammaCurve	573
GtkHandleBox	574
GtkHBox	575
GtkHButtonBox	576
GtkHPaned	576
GtkHRuler	577
GtkHScale	577
GtkHScrollbar	578
GtkHSeparator	579
GtkImage	580
GtkInputDialog	581
GtkInvisible	581
GtkItem	582
GtkItemFactory	583
GtkLabel	585
GtkLayout	585
GtkList	586
GtkListItem	588
GtkMenu	589
GtkMenuBar	591
GtkMenuItem	592
GtkMenuShell	592
GtkMisc	593
GtkNotebook	593
GtkObject	595
GtkOptionMenu	597
GtkPacker	598
GtkPaned	601
GtkPixmap	601
GtkPixmapMenuItem	602
GtkPlug	602
GtkPreview	602
GtkProgress	604
GtkProgressBar	605
GtkRadioButton	606

GtkRadioMenuItem	608
GtkRange	609
GtkRuler	610
GtkScale	610
GtkScrollbar	611
GtkScrolledWindow	611
GtkSeparator	612
GtkSocket	613
GtkSpinButton	613
GtkStatusbar	614
GtkTable	615
GtkTearOffMenuItem	616
GtkTed	617
GtkText	617
GtkTipsQuery	618
GtkToggleButton	619
GtkToolbar	619
GtkTooltips	621
GtkTree	622
GtkTreeItem	624
GtkVBox	625
GtkVButtonBox	625
GtkViewport	626
GtkVPaned	627
GtkVRuler	627
GtkVScale	628
GtkVScrollbar	629
GtkVSeparator	630
GtkWidget	631
GtkWindow	635
Chapter 22: The Widgets of GNOME	637
GnomeAbout	637
GnomeAnimator	638
GnomeApp	640
GnomeAppBar	641
GnomeCalculator	643
GnomeCanvas	644
GnomeCanvasEllipse	645
GnomeCanvasGroup	645
GnomeCanvasImage	645
GnomeCanvasItem	646
GnomeCanvasLine	647
GnomeCanvasPolygon	647
GnomeCanvasRE	648
GnomeCanvasRect	648

GnomeCanvasText	648
GnomeCanvasWidget	649
GnomeClient	649
GnomeColorPicker	653
GnomeDEntryEdit	655
GnomeDialog	656
GnomeDock	659
GnomeDockBand	663
GnomeDockItem	664
GnomeDockLayout	665
GnomeEntry	666
GnomeFileEntry	667
GnomeFontPicker	668
GnomeFontSelector	669
GnomeGuru	670
GnomeHRef	671
GnomeIconEntry	672
GnomeIconSelection	674
GnomeLess	675
GnomeMDI	676
GnomeMDIChild	677
GnomeMDIGenericChild	678
GnomeMessageBox	679
GnomeNumberEntry	681
GnomePaperSelector	682
GnomePixmap	683
GnomePixmapEntry	685
GnomePropertyBox	688
GnomeScores	692
GnomeSpell	693
GnomeStock	693
GnomeStockPixmapWidget	696
Chapter 23: Some Linux Mechanics	699
Linux Error Codes	699
Spawning Processes	700
Executing a Command Line	703
Pipes	703
Time	705
File Information	708
System Information	710
Chapter 24: Comparative Anatomy: Win32 and GNOME	715
A Win32 Program	715
A GNOME Program	718

A Point-by-Point Comparison	720
Initialization	720
The Main Window	720
Responding to Events	720
The Main Loop	721
Program Shutdown	721
Global Data	722
Appendix A: What's on the CD-ROM	725
CD Contents	725
Examples	726
GNOME	726
Tools	727
Appendix B: Setting Up for Software Development	729
Linux	729
gcc (egcs)	730
XFree86	730
autoconf and automake	731
GNOME, glib, GDK, and GTK+	731
Installing GTK+ from Source	732
Getting GTK+ and GNOME Source Files	732
Appendix C: Inheritance	735
Appendix D: Arg Setting and Getting	741
Appendix E: Enumerated Types	751
Appendix F: Signals	769
Appendix G: Functions by Return Type	783
Glossary	821
Index	827
End-User License Agreement	851
GNU General Public License	854
CD-ROM Installation Instructions	862