About This Book

This book, *Inside Macintosh: Imaging With QuickDraw,* describes how to create images, display them in black and white or color, and print them using QuickDraw—the imaging engine available on all Macintosh computers. The chapters in this book and the information they contain are summarized here.

- "Introduction to QuickDraw" introduces you to the terms, concepts, and capabilities of QuickDraw.
- "Basic QuickDraw" describes how to create and manage the basic graphics port—the drawing environment in which your application can create graphics and text in either black and white or eight basic colors.
- "QuickDraw Drawing" explains the routines and data structures—common to both basic QuickDraw and Color QuickDraw—that your application can use to draw lines, rectangles, rounded rectangles, ovals, arcs, wedges, polygons, and regions, and to copy images from one graphics port to another. This chapter also describes the routines that you can use to perform calculations and other manipulations of these shapes—including comparing them and finding their unions and intersections.
- "Color QuickDraw" describes the version of QuickDraw that provides a range of color and grayscale capabilities to your application. You should read this chapter if your application needs to use shades of gray or more colors than the eight predefined colors provided by basic QuickDraw.
- "Graphics Devices" describes how Color QuickDraw manages video devices so that your application can draw to a window's graphics port without regard to the capabilities of the screen—even if the window spans more than one screen.
- "Offscreen Graphics Worlds" describes how you can improve your application's appearance and performance by constructing images in offscreen graphics worlds before drawing them onscreen.
- "Pictures" describes how to create and draw QuickDraw pictures, which are sequences of saved drawing commands that your application can share among documents, even among documents created by other applications.
- "Cursor Utilities" describes how to create and use cursors, including color and animated cursors, for indicating the relative mouse location onscreen and for indicating when your application is performing a lengthy task.
- "Printing Manager" describes how your application can print by creating a printing graphics port and drawing into it using QuickDraw routines. This chapter also explains how to implement the user interface that helps users when they wish to print.

- Appendix A, "Picture Opcodes," describes opcodes used by the `DrawPicture` procedure to determine what object to draw or what mode to change for subsequent drawing. Your application generally should not read or write picture opcodes directly but should instead use the QuickDraw routines described in the chapter "Pictures" for generating and processing the opcodes. Picture opcodes are listed in this appendix for your application's debugging purposes.
- Appendix B, "Using Picture Comments for Printing," describes how your application can use picture comments to instruct printer drivers to perform graphics operations that QuickDraw does not support.

Most applications draw in windows, which are rectangular areas that are usually subsets of the screen. Each window represents its own QuickDraw graphics port. When you create a window, the Window Manager uses QuickDraw to create a graphics port in which the window's contents are displayed. This book describes how to draw inside a window. See the chapter "Window Manager" in *Inside Macintosh: Macintosh Toolbox Essentials* for a complete description of creating and managing the windows inside which your application draws.

In addition to the features described in this book, QuickDraw also provides extensive text support. However, most of that support is not described in this book; for information on handling text in your application, see instead *Inside Macintosh: Text*.

If you are new to programming for the Macintosh computer, you should also read *Inside Macintosh: Overview* for an introduction to general concepts of Macintosh programming.

Format of a Typical Chapter

The chapters in this book follow a standard structure. For example, the chapter "Color QuickDraw" contains these sections:

- "About Color QuickDraw." This section introduces the drawing environment provided by Color QuickDraw, the data structure with which your application specifies colors to Color QuickDraw, and the manner in which Color QuickDraw translates the colors that your application specifies into colors on the user's screen.
- "Using Color QuickDraw." Using code samples and step-by-step instructions, this section describes how to use Color QuickDraw to accomplish the basic tasks necessary for drawing in color.

- "Color QuickDraw Reference." This section provides a complete reference to the data structures, routines, and resources that your application can use to draw with Color QuickDraw. Each routine description also follows a standard format, which presents the routine declaration followed by a description of every parameter of the routine. Some routine descriptions also give additional descriptive information, such as assembly-language information or result codes.
- "Summary of Color QuickDraw." This section provides the Pascal and C interfaces for the constants, data structures, routines, and result codes associated with Color QuickDraw drawing. It also includes relevant assembly-language interface information.

Conventions Used in This Book

Inside Macintosh uses various conventions to present information. Words that require special treatment appear in specific fonts or font styles. Certain information uses special formats so that you can scan it quickly.

Special Fonts

All code listings, reserved words, and names of actual data structures, fields, constants, parameters, and routines are shown in Courier (`this is Courier`).

Words that appear in ***boldface*** are key terms or concepts and are defined in the glossary.

Types of Notes

There are several types of notes used in this book.

Note
A note like this contains information that is interesting but possibly not essential to an understanding of the main text. (An example appears on page 2-3 in the chapter "Basic QuickDraw.") ◆

IMPORTANT
A note like this contains information that is essential for an understanding of the main text. (An example appears on page 2-4 in the chapter "Basic QuickDraw.") ▲

▲ **WARNING**
Warnings like this indicate potential problems that you should be aware of as you design your application. Failure to heed these warnings could result in system crashes or loss of data. (An example appears on page 2-31 in the chapter "Basic QuickDraw.") ▲

Empty Strings

This book occasionally instructs you to provide an empty string in routine parameters and resources. How you specify an empty string depends on what language and development environment you are using. In Rez input files and in C code, for example, you specify an empty string by using two double quotation marks (""), and in Pascal you specify an empty string by using two single quotation marks ('').

Assembly-Language Information

Inside Macintosh provides information about the trap macro and routine selector for specific routines like this:

Trap macro	Selector
`_QDExtensions`	$00E0010

In "Assembly-Language Summary" at the end of a chapter, *Inside Macintosh* presents information about the fields of data structures in
this format:

0	`baseAddr`	long	bitmap base address
4	`rowBytes`	word	row bytes (must be even)
6	`bounds`	8 bytes	boundary rectangle

The left column indicates the byte offset of the field from the beginning of the data structure. The second column shows the field name as defined in the MPW assembly-language interface files; the third column indicates the size of that field. The fourth column provides a brief description of the use of the field. For a complete description of each field, see "Data Structures" in the main text of the chapter.

The Development Environment

The system software routines described in this book are available using Pascal, C, or assembly-language interfaces. How you access these routines depends on the development environment you are using. When showing system software routines, this book uses the Pascal interface available with the Macintosh Programmer's Workshop (MPW).

All code listings in this book are shown in Pascal (except for listings that describe resources, which are shown in Rez-input format). They show methods of using various routines and illustrate techniques for accomplishing particular tasks. All code listings have been compiled and, in many cases, tested. However, Apple Computer, Inc., does not intend for you to use these code samples in your application. You can find the location of code listings in the list of figures, tables, and listings. If you know the name of a particular routine (such as `MyDrawLines`) shown in a code listing, you can find the page on which the routine occurs by looking under the entry "sample routines" in the index of this book.

To make the code listings in this book more readable, they show only limited error handling. You need to develop your own techniques for handling errors.

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