Figures, Tables, and Listings

Chapter 1	Introduction to QuickDraw 1-1				
	Figure 1-1	A grayscale image representing bits in memory 1-6			
	Figure 1-2	The QuickDraw global coordinate plane 1-7			
	Figure 1-3	A window's local and global coordinate systems 1-8			
	Figure 1-4	The coordinate plane 1-8			
	Figure 1-5	Points and pixels 1-9			
	Figure 1-6	Drawing a line 1-10			
	Figure 1-7	Lines drawn with different bit patterns and pen sizes 1-12			
	Figure 1-8	A rectangle 1-12			
	Figure 1-9	An oval 1-13			
	Figure 1-10	An arc and a wedge 1-14			
	Figure 1-11	A rounded rectangle 1-15			
	Figure 1-12	A polygon 1-15			
	Figure 1-13	Two regions 1-16			
	Figure 1-14	A simple QuickDraw picture 1-16			
	Figure 1-15	Filling and framing various shapes 1-17			
	Figure 1-16	A two-screen system 1-21			
	Figure 1-17	The GDevice record and pixel map for a 4-bit video card 1-22			
	Figure 1-18	The indexed-pixel path 1-24			
	Figure 1-19	The direct-pixel path 1-25			
	Figure 1-20	The job dialog box for a StyleWriter printer 1-26			
	Figure 1-21	The job dialog box for a LaserWriter printer 1-27			
Chapter 2	Basic Quick[Draw 2-1			
	Figure 2-1	The GrafPort record and the BitMap record 2-8			
	Figure 2-2	A bit image 2-9			
	Figure 2-3	Relationship of the boundary rectangle and the port rectangle to the global coordinate system 2-10			
	Figure 2-4	Comparing the boundary rectangle, port rectangle, visible region, and clipping region 2-12			
	Listing 2-1	Initializing QuickDraw 2-16			
	Listing 2-2	Using the Window Manager to create a basic graphics port 2-17			
	Listing 2-3	Saving and restoring a graphics port 2-18			
	Listing 2-4	Changing global coordinates to local coordinates 2-19			
	Figure 2-5	Moving a document relative to its window 2-21			
	Listing 2-5	Using ScrollRect to scroll the bits displayed in the window 2-22			
	Figure 2-6	Updating the contents of a scrolled window 2-24			
	Figure 2-7	Restoring the window origin of the port rectangle to a horizontal coordinate of 0 and a vertical coordinate of 0 2-25			
	Table 2-1	QuickDraw global variables 2-36			
	Table 2-2	Initial values of a basic graphics port 2-38			
	Figure 2-8	Scrolling the image in a rectangle by using the ScrollRect			

Figure 3-1	A graphics pen 3-4				
Figure 3-2	A bit pattern 3-5				
Figure 3-3	Windows filled with the predefined bit patterns 3-7				
Table 3-1	Effect of Boolean transfer modes on 1-bit pixels 3-9				
Figure 3-4	Examples of Boolean transfer modes 3-10				
Figure 3-5	Using the LineTo procedure 3-17				
Listing 3-1	Drawing lines with the LineTo and Line procedures 3-18				
Figure 3-6	Drawing lines 3-18				
Figure 3-7	Using the LineTo and Line procedures 3-19				
Figure 3-8	Resizing the pen 3-19				
Listing 3-2	Using the PenSize procedure 3-20				
Table 3-2	The global variables for five predefined bit patterns 3-20				
Figure 3-9	Changing the pen pattern 3-21				
Listing 3-3	Using the PenPat procedure to change the pattern of the graphics pen 3-21				
Figure 3-10	Two ways to specify a rectangle 3-22				
Figure 3-11	Drawing rectangles 3-22				
Listing 3-4	Using the FrameRect procedure to draw rectangles 3-23				
Figure 3-12	Painting and filling rectangles 3-23				
Listing 3-5	Using the PaintRect and FillRect procedures 3-24				
Figure 3-13	Drawing ovals 3-25				
Listing 3-6	Using the FrameOval procedure to draw ovals 3-25				
Figure 3-14	Drawing an arc and a wedge 3-26				
Listing 3-7	Using the FrameArc and PaintArc procedures 3-26				
Listing 3-8	Creating and drawing a region 3-28				
Figure 3-15	A shape created by a region 3-28				
Listing 3-9	Creating a clipping region and filling it with a pattern 3-29				
Figure 3-16	Filling a clipping region 3-30				
Listing 3-10	Creating a triangular polygon 3-30				
Table 3-3	QuickDraw routines for calculating and manipulating rectangles 3-31				
Table 3-4	QuickDraw routines for calculating and manipulating regions 3-32				
Figure 3-17	Shrinking images between graphics ports 3-33				
Listing 3-11	Using the CopyBits procedure to copy between two windows 3-33				
Figure 3-18	Forty-five-degree angles as returned by the PtToAngle procedure 3-57				
Figure 3-19	Oval width and height in rounded rectangles 3-63				
Figure 3-20	Using angles to define the radii for arcs and wedges 3-72				
Figure 3-21	Using PaintArc to paint a 45° angle 3-74				
Figure 3-22	Framing and painting polygons 3-82				
Figure 3-23	Using ScalePt and MapPt 3-105				
Figure 3-24	A source image and its resulting mask produced by the SeedFill procedure 3-109				
Figure 3-25	Parameters for the SeedFill and CalcMask procedures 3-110				
Figure 3-26	A source image and the resulting mask produced by the CalcMask procedure 3-111				
Figure 3-27	Using CopyBits to stretch an image 3-113				

	Figure 3-29 Figure 3-30	Format of a compiled pattern ('PAT') resource 3-140 Format of a compiled pattern list ('PAT#') resource 3-141		
Chapter 4	Color QuickE	Color QuickDraw 4-1		
	Figure 4-1	The color graphics port 4-7		
	Figure 4-2	The pixel map 4-10		
	Figure 4-3	Translating a 48-bit RGBColor record to an 8-bit pixel value on an indexed device 4-14		
	Figure 4-4	Translating an 8-bit pixel value on an indexed device to a 48-bit RGBColor record 4-15		
	Figure 4-5	Translating a 48-bit RGBColor record to a 32-bit pixel value on a direct device 4-15		
	Figure 4-6	Translating a 48-bit RGBColor record to a 16-bit pixel value on a direct device 4-16		
	Figure 4-7	Translating a 32-bit pixel value to a 48-bit RGBColor record 4-16		
	Figure 4-8	Translating a 16-bit pixel value to a 48-bit RGBColor record 4-17		
	Listing 4-1	Using the Window Manager to create a color graphics port 4-20		
	Listing 4-2	Changing the foreground color 4-22		
	Figure 4-9	Drawing with two different foreground colors (on a grayscale screen) 4-23		
	Figure 4-10	Using ResEdit to create a pixel pattern resource 4-24		
	Listing 4-3	Rez input for a pixel pattern resource 4-24		
	Listing 4-4	Using pixel patterns to paint and fill 4-25		
	Figure 4-11	Painting and filling rectangles with pixel patterns 4-25		
	Figure 4-12	Copying pixel images with the CopyBits procedure 4-27		
	Figure 4-13	Copying pixel images with the CopyMask procedure 4-29		
	Figure 4-14	Copying pixel images with the CopyDeepMask procedure 4-31		
	Table 4-1	Boolean source modes with colored pixels 4-33		
	Listing 4-5	Using CopyBits to produce coloration effects 4-35		
	Table 4-2	Arithmetic modes in a 1-bit environment 4-41		
	Figure 4-15	Difference between highlighting and inverting 4-42		
	Listing 4-6	Setting the highlight bit 4-42		
	Listing 4-7	Using highlighting for text 4-43		
	Table 4-3	Initial values in the CGrafPort record 4-64		
	Table 4-4	The colors defined by the global variable QDColors 4-71		
	Table 4-5	The default color tables for grayscale graphics devices 4-92		
	Table 4-6	The default color tables for color graphics devices 4-93		
	Figure 4-16	Format of a compiled pixel pattern ('ppat') resource 4-103		
	Figure 4-17	Format of a compiled color table ('clut') resource 4-104		
	Figure 4-18	Format of a compiled color icon ('cicn') resource 4-106		

Standard patterns

3-128

Figure 3-28

Chapter 5	Graphics Devic	es 5-1	
	Figure 5-1	The GDevice record 5-5	
	Listing 5-1	Using the DeviceLoop procedure 5-8	
	Listing 5-2	Drawing into different screens 5-9	
	Listing 5-3	Zooming a window 5-10	
01 1 0	0"	hitaa Maradala	
Chapter 6	Offscreen Graphics Worlds 6-1		
	Listing 6-1	Using a single offscreen graphics world and the CopyBits procedure 6-5	
	Listing 6-2	Using two offscreen graphics worlds and	
		the CopyMask procedure 6-10	
Chapter 7	Pictures 7-1		
onaptor :			
	Figure 7-1	A picture of a party hat 7-4	
	Figure 7-2	The Picture record 7-5	
	Listing 7-1	Creating and drawing a picture 7-11 A simple picture 7-12	
	Figure 7-3 Listing 7-2	A simple picture 7-12 Opening and drawing a picture from disk 7-13	
	Listing 7-2 Listing 7-3	Replacing QuickDraw's standard low-level	
	Listing 7 5	picture-reading routine 7-15	
	Listing 7-4	Determining whether a graphics port is color or basic 7-16	
	Listing 7-5	A custom low-level procedure for spooling a picture from disk 7-16	
	Listing 7-6	Pasting in a picture from the scrap 7-17	
	Listing 7-7	Adjusting the destination rectangle for a picture 7-18	
	Listing 7-8	Drawing a picture stored in a resource file 7-20	
	Listing 7-9	Saving a picture as a 'PICT' file 7-21	
	Listing 7-10	Replacing QuickDraw's standard low-level picture-writing routine 7-22	
	Listing 7-11	A custom low-level routine for spooling a picture to disk 7-23	
	Listing 7-12	Looking for color profile comments in a picture 7-25	
	Table 7-1	Routine selectors for an application-defined color-picking method 7-61	
	Figure 7-4	Structure of a compiled picture ('PICT') resource 7-68	
Chapter 8	Cursor Utilities	8-1	
	Figure 8-1	Hot spots in cursors 8-4	
	Listing 8-1	Initializing the Cursor Utilities 8-6	
	Figure 8-2	The standard arrow cursor 8-8	
	Figure 8-3	The I-beam, crosshairs, plus sign, and wristwatch cursors 8-8	
	Figure 8-4	A window and its arrow and I-beam regions 8-9	
	Figure 8-5	Changing the cursor from the I-beam cursor to the arrow cursor 8-10	
	Listing 8-2	Changing the cursor 8-10	

	Listing 8-4 Table 8-1 Figure 8-8 Figure 8-9	Animating a cursor with the SpinCursor procedure 8-15 Cursor appearance 8-17 Format of a compiled cursor ('CURS') resource 8-34 Format of a compiled color cursor ('crsr') resource 8-35		
	Figure 8-10	Format of a compiled animated cursor ('acur') resource 8-37		
Chapter 9	Printing Man	ager 9-1		
	Figure 9-1	A standard File menu for an application 9-5		
	Figure 9-2	The style dialog box for a StyleWriter printer 9-6		
	Figure 9-3	The style dialog box for a LaserWriter printer 9-7		
	Figure 9-4	The job dialog box for a StyleWriter printer 9-7		
	Figure 9-5	The job dialog box for a LaserWriter printer 9-8		
	Figure 9-6	Page and paper rectangles 9-10		
	Figure 9-7	A TPrint record 9-12		
	Figure 9-8	The print status dialog box for a LaserWriter printer driver printing in the background 9-13		
	Figure 9-9	A status dialog box with the LaserWriter printer driver's print status dialog box 9-14		
	Listing 9-1	Reading a document's TPrint record 9-17		
	Listing 9-2	A sample printing loop 9-20		
	Figure 9-10	How the PrJobMerge procedure works 9-26		
	Listing 9-3	Checking whether the current printer driver supports the PrGeneral procedure 9-29		
	Figure 9-11	Sample resolutions for a PostScript printer and a QuickDraw printer 9-30		
	Listing 9-4	Using the getRslDataOp and setRslOp opcodes with the PrGeneral procedure 9-31		
	Listing 9-5	Using the getRotnOp opcode with the PrGeneral procedure to determine page orientation 9-33		
	Listing 9-6	Using the draftBitsOp opcode with the PrGeneral procedure for enhanced draft-quality printing 9-34		
	Figure 9-12	A print job dialog box with additional checkboxes 9-35		
	Listing 9-7	Installing an initialization function to alter the print job dialog box 9-37		
	Listing 9-8	Adding items to a print job dialog box 9-37		
	Listing 9-9	An idle procedure 9-40		
	Table 9-1	Values for the 1Param1 parameter when using the iPrDevCt1 control constant 9-83		
Appendix A	Picture Opco	odes A-1		
	Table A-1	Data types for picture opcodes A-4		
	Table A-2	Opcodes for extended version 2 and version 2 pictures A-5		
	Listing A-1	Data for the BkPixPat, PnPixPat, and FillPixPat opcodes A-17		

The 'CURS' resources for an animated globe cursor

Animating a cursor with the RotateCursor procedure

An 'acur' resource for an animated cursor

8-13

8-15

Figure 8-6

Figure 8-7

Listing 8-3

Listing A-2	Data for the BitsRect and PackBitsRect opcodes A-17		
Listing A-3	Data for the BitsRgn and PackBitsRgn opcodes A-18		
Table A-3	Opcodes for version 1 pictures A-18		
Listing A-4	Creating and drawing an extended version 2 picture A-22		
Figure A-1	A picture A-23		
Listing A-5	A decompiled extended version 2 picture A-23		
Listing A-6	A decompiled version 2 picture A-24		
Listing A-7	A decompiled version 1 picture A-25		
Using Picture	e Comments for Printing B-1		
Table B-1			
Table B-1	Names, values, and data sizes for picture comments B-5 Low-level QuickDraw routines disabled		
Table D-Z	by the PostScriptBegin comment B-9		
Listing B-1	Synchronizing QuickDraw and the PostScript driver B-10		
Listing B-2	Flushing the buffer for a PostScript printer driver B-11		
Figure B-1	The line layout error between a bitmapped font		
ga. o	and a PostScript font B-12		
Figure B-2	Major and minor glyphs B-13		
Figure B-3	Distributing layout error to the major glyphs B-13		
Figure B-4	Distributing layout error among major and minor glyphs B-14		
Figure B-5	Using the LineLayoutOff and LineLayoutOn picture comments B-15		
Listing B-3	Disabling line layout by using the LineLayoutOff and StringBegin picture comments B-17		
Figure B-6	Variations in text alignment B-18		
Listing B-4	Displaying rotated text using picture comments B-21		
Figure B-7	Types of polygons B-23		
Listing B-5	Creating polygons B-26		
Listing B-6	Drawing polygons B-27		
Figure B-8	QuickDraw and PostScript polygons B-29		
Listing B-7	Using picture comments to rotate graphics B-31		
Listing B-8 Using the RotateCenter, RotateBegin, and			
	RotateEnd picture comments B-32		
Listing B-9	Using the DashedLine picture comment B-34		
Figure B-9	Changing the pen width using the SetLineWidth picture comment B-36		
Listing B-10	Using the SetLineWidth picture comment B-37		
Listing B-11	Sending PostScript code directly to the printer B-39		

Appendix B