

Figures, Tables, and Listings

Preface

About This Book xi

Chapter 1

Introduction to Memory Management 1-1

Figure 1-1	Memory organization with several applications open	1-5
Figure 1-2	Organization of an application partition	1-7
Figure 1-3	The application stack	1-9
Figure 1-4	A fragmented heap	1-10
Figure 1-5	A compacted heap	1-11
Figure 1-6	Organization of an application's A5 world	1-12
Figure 1-7	Using temporary memory allocated from unused RAM	1-14
Figure 1-8	A pointer to a nonrelocatable block	1-17
Figure 1-9	A handle to a relocatable block	1-19
Figure 1-10	Purging and reallocating a relocatable block	1-22
Figure 1-11	Allocating a nonrelocatable block	1-23
Figure 1-12	An effectively partitioned heap	1-26
Listing 1-1	Locking a block to avoid dangling pointers	1-30
Listing 1-2	Creating a fake handle	1-35
Listing 1-3	Increasing the amount of space allocated for the stack	1-40
Listing 1-4	Setting up your application heap and stack	1-42
Listing 1-5	Determining whether allocating memory would deplete the memory cushion	1-43
Listing 1-6	Allocating relocatable blocks	1-44
Listing 1-7	Allocating nonrelocatable blocks	1-45
Listing 1-8	Allocating a dialog record	1-45
Listing 1-9	Creating an emergency memory reserve	1-46
Listing 1-10	Checking the emergency memory reserve	1-47
Listing 1-11	Determining whether allocating memory would deplete the memory cushion	1-47
Listing 1-12	Reallocating the emergency memory reserve	1-48
Listing 1-13	A grow-zone function that releases emergency storage	1-49

Chapter 2

Memory Manager 2-1

Listing 2-1	Reading the value of a system global variable	2-8
Listing 2-2	Changing the value of a system global variable	2-9
Listing 2-3	Determining whether temporary-memory routines are available	2-12
Listing 2-4	Calling a procedure by address	2-13
Listing 2-5	Creating a subzone of the original application heap zone	2-15
Listing 2-6	A purge-warning procedure	2-17
Listing 2-7	Installing a purge-warning procedure	2-18
Listing 2-8	A purge-warning procedure that calls the Resource Manager's procedure	2-19

Figure 2-1	A block header in a 24-bit zone	2-22
Figure 2-2	A block header in a 32-bit zone	2-23

Chapter 3

Virtual Memory Manager 3-1

Figure 3-1	24-bit Memory Manager logical address space	3-6
Figure 3-2	32-bit Memory Manager logical address space	3-8
Figure 3-3	The physical address space on a Macintosh IIci with 8 MB of RAM	3-10
Listing 3-1	Translating logical to physical addresses	3-19

Chapter 4

Memory Management Utilities 4-1

Figure 4-1	The Memory control panel	4-4
Table 4-1	Caches available in MC680x0 microprocessors	4-9
Figure 4-2	Initializing a status code	4-11
Figure 4-3	Reading stale data	4-12
Figure 4-4	Reading invalid instructions	4-13
Listing 4-1	A sample grow-zone function	4-15
Listing 4-2	Passing A5 to a notification response procedure	4-16
Listing 4-3	Setting up and restoring the A5 register at interrupt time	4-17
Listing 4-4	Structure of the QuickDraw global variables	4-18
Listing 4-5	Copying the QuickDraw global variables into a record	4-19
Listing 4-6	A control's draw routine using the calling application's QuickDraw patterns	4-19
Listing 4-7	Stripping the program counter	4-21
Listing 4-8	Stripping addresses in time-critical code	4-23
Listing 4-9	Calculating the <code>StripAddress</code> mask	4-23
Listing 4-10	Translating 24-bit to 32-bit addresses	4-24