## Contents

	Figures, Tables, and Listings vii
Preface	About This Book ix
	Related Documentation xi Format of a Typical Chapter xi Conventions Used in This Book xii Special Fonts xii Types of Notes xii Bit Numbering and Word Size xii Assembly-Language Information xiv Development Environment xiv For More Information xv
Chapter 1	Introduction to PowerPC System Software 1-1
	Overview of the PowerPC System Software The 68LC040 Emulator 1-6 Emulator Operation 1-7 Emulator Limitations 1-8 Coprocessors 1-9 Instruction Timings 1-9 Deleted Instructions 1-9 Unsupported Instruction Features 1-10 Instruction Caches 1-10 Address Error Exceptions 1-10 Bus Error Exceptions 1-11 Memory-Mapped I/O Locations 1-11 Mixed Mode 1-13 Cross-Mode Calls 1-14 Routine Descriptors 1-15 Memory Considerations 1-19 The PowerPC Native Environment 1-19 Fragments 1-20 The Structure of Fragments 1-22 Imports and Exports 1-23 The Table of Contents 1-26 Special Routines 1-29 Fragment Storage 1-30 Executable Resources 1-34

Calling Conventions 1-41 The 680x0 Calling Conventions 1-42 The PowerPC Calling Conventions 1-43 Parameter Passing **Import Libraries** 1-50 The Organization of Memory 1-52 File Mapping 1-53 The System Partition 1-56 **Application Partitions** 1-57 Data Alignment 1-63 Compatibility and Performance 1-65 Patches 1-66 The Memory Manager 1-68 **Performance Tuning** 1-70 **Mode Switches** 1-71 **Routine Parameters** 1-72

## Chapter 2 Mixed Mode Manager 2-1

About the Mixed Mode Manager 2-4 **External Code Procedure Pointers** 2-5 2-7 Mode Switches Calling PowerPC Code From 680x0 Code 2-8 Calling 680x0 Code From PowerPC Code 2-12 Using the Mixed Mode Manager Specifying Procedure Information 2-14 Using Universal Procedure Pointers 2-21 Using Static Routine Descriptors 2-22 2-24 **Executing Resource-Based Code** Mixed Mode Manager Reference 2-26 Constants Routine Descriptor Flags 2-27 **Procedure Information** 2-27 Routine Flags 2-34 **Instruction Set Architectures** 2-35 **Data Structures** 2-36 **Routine Records** 2-36 **Routine Descriptors** 2-37 Mixed Mode Manager Routines 2-38 Creating and Disposing of Routine Descriptors 2-39 Calling Routines via Universal Procedure Pointers 2-42 **Determining Instruction Set Architectures** 

	Data Types 2-48 Mixed Mode Manager Routines 2-49
Chapter 3	Code Fragment Manager 3-1
	About the Code Fragment Manager Fragments 3-4 Import Library Searching 3-5 Version Checking 3-7 Using the Code Fragment Manager 3-10 Loading Code Fragment Resource 3-12 Getting Information About Exported Symbols 3-14 Code Fragment Manager Reference 3-15 Data Structures 3-15 Fragment Initialization Block 3-15 Fragment Location Record 3-16 Memory Location Record 3-17 Disk Location Record 3-17 Segment Location Record 3-18 Code Fragment Manager Routines 3-18 Loading Fragments 3-19 Unloading Fragments 3-23 Finding Symbols 3-24 Fragment-Defined Routines 3-26 Resources 3-28 The Code Fragment Resource 3-28 Summary of the Code Fragment Manager 3-32 C Summary 3-32 Constants 3-32 Data Types 3-33 Code Fragment Manager Routines 3-35 Result Codes 3-35
Chapter 4	Exception Manager 4-1
	About the Exception Manager 4-3 Exception Contexts 4-4 Types of Exceptions 4-5

Summary of the Mixed Mode Manager

2-45

2-45

C Summary

Constants

2-45

Using the Exception Manager 4-6 Installing an Exception Handler 4-6 Writing an Exception Handler 4-7 **Exception Manager Reference** 4-9 Constants 4-9 **Exception Kinds** 4-9 Memory Reference Kinds 4-11 **Data Structures** 4-12 Machine Information Records 4-12 Register Information Records 4-12 Floating-Point Information Records 4-14 Memory Exception Records 4-15 **Exception Information Records** 4-16 **Exception Manager Routines** 4-17 **Application-Defined Routines** 4-17 Summary of the Exception Manager 4-19 C Summary 4-19 Constants 4-19 Data Types 4-19 **Exception Manager Routines** 4-22 **Application-Defined Routines** 4-22

## Glossary GL-1

## Index IN-1