<table>
<thead>
<tr>
<th>Chapter 6</th>
<th>More Process Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1</td>
<td>Introduction 89</td>
</tr>
<tr>
<td>6.2</td>
<td>Process Suspension And Resumption 89</td>
</tr>
<tr>
<td>6.3</td>
<td>Self-Suspension And Information Hiding 90</td>
</tr>
<tr>
<td>6.4</td>
<td>The Concept Of A System Call 91</td>
</tr>
<tr>
<td>6.5</td>
<td>Interrupt Control With Disable And Restore 93</td>
</tr>
<tr>
<td>6.6</td>
<td>A System Call Template 94</td>
</tr>
<tr>
<td>6.7</td>
<td>System Call Return Values SYSERR And OK 95</td>
</tr>
<tr>
<td>6.8</td>
<td>Implementation Of Suspend 95</td>
</tr>
<tr>
<td>6.9</td>
<td>Suspending The Current Process 97</td>
</tr>
<tr>
<td>6.10</td>
<td>Suspend Return Value 97</td>
</tr>
<tr>
<td>6.11</td>
<td>Process Termination And Process Exit 98</td>
</tr>
<tr>
<td>6.12</td>
<td>Process Creation 101</td>
</tr>
<tr>
<td>6.13</td>
<td>Other Process Manager Functions 106</td>
</tr>
<tr>
<td>6.14</td>
<td>Summary 108</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 7</th>
<th>Coordination Of Concurrent Processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1</td>
<td>Introduction 111</td>
</tr>
<tr>
<td>7.2</td>
<td>The Need For Synchronization 111</td>
</tr>
<tr>
<td>7.3</td>
<td>A Conceptual View Of Counting Semaphores 113</td>
</tr>
<tr>
<td>7.4</td>
<td>Avoidance Of Busy Waiting 113</td>
</tr>
<tr>
<td>7.5</td>
<td>Semaphore Policy And Process Selection 114</td>
</tr>
<tr>
<td>7.6</td>
<td>The Waiting State 115</td>
</tr>
<tr>
<td>7.7</td>
<td>Semaphore Data Structures 116</td>
</tr>
<tr>
<td>7.8</td>
<td>The Wait System Call 117</td>
</tr>
<tr>
<td>7.9</td>
<td>The Signal System Call 118</td>
</tr>
<tr>
<td>7.10</td>
<td>Static And Dynamic Semaphore Allocation 119</td>
</tr>
<tr>
<td>7.11</td>
<td>Example Implementation Of Dynamic Semaphores 120</td>
</tr>
<tr>
<td>7.12</td>
<td>Semaphore Deletion 121</td>
</tr>
<tr>
<td>7.13</td>
<td>Semaphore Reset 123</td>
</tr>
</tbody>
</table>
Chapter 13  Real-Time Clock Management

13.1  Introduction  215
13.2  Timed Events  216
13.3  Real-Time Clocks And Timer Hardware  216
13.4  Handling Real-Time Clock Interrupts  217
13.5  Delay And Preemption  218
13.6  Emulating A Real-Time Clock With A Timer  219
13.7  Implementation Of Preemption  219
13.8  Efficient Management Of Delay With A Delta List  220
13.9  Delta List Implementation  221
13.10  Putting A Process To Sleep  223
13.11  Timed Message Reception  226
13.12  Awakening Sleeping Processes  230
13.13  Clock Interrupt Processing  231
13.14  Clock Initialization  232
13.15  Interval Timer Management  233
13.16  Perspective  235
13.17  Summary  235

Chapter 14  Device-Independent Input and Output

14.1  Introduction  239
14.2  Conceptual Organization Of I/O And Device Drivers  240
14.3  Interface And Driver Abstractions  241
14.4  An Example I/O Interface  242
14.5  The Open-Read-Write-Close Paradigm  243
14.6  Bindings For I/O Operations And Device Names  244
14.7  Device Names In Xinu  245
14.8  The Concept Of A Device Switch Table  245
14.9  Multiple Copies Of A Device And Shared Drivers  246
14.10  The Implementation Of High-Level I/O Operations  249
14.11  Other High-Level I/O Functions  251
14.12  Open, Close, And Reference Counting  255
14.13  Null And Error Entries In Devtab  257
14.14  Initialization Of The I/O System  258
14.15  Perspective  262
14.16  Summary  263

Chapter 15  An Example Device Driver

15.1  Introduction  267
15.2  The Try Abstraction  267
21.3 Myriad Naming Schemes 498
21.4 Naming System Design Alternatives 500
21.5 A Syntactic Namespace 500
21.6 Patterns And Replacements 501
21.7 Prefix Patterns 501
21.8 Implementation Of A Namespace 502
21.9 Namespace Data Structures And Constants 502
21.10 Adding Mappings To The Namespace Prefix Table 503
21.11 Mapping Names With The Prefix Table 505
21.12 Opening A Named File 509
21.13 Namespace Initialization 510
21.14 Ordering Entries In The Prefix Table 513
21.15 Choosing A Logical Namespace 514
21.16 A Default Hierarchy And The Null Prefix 515
21.17 Additional Object Manipulation Functions 515
21.18 Advantages And Limits Of The Namespace Approach 516
21.19 Generalized Patterns 517
21.20 Perspective 518
21.21 Summary 518

Chapter 22 System Initialization

22.1 Introduction 521
22.2 Bootstrap: Starting From Scratch 521
22.3 Operating System Initialization 522
22.4 Booting An Alternative Image On The E2100L 523
22.5 Xinu Initialization 524
22.6 System Startup 527
22.7 Transforming A Program Into A Process 531
22.8 Perspective 532
22.9 Summary 532

Chapter 23 Exception Handling

23.1 Introduction 535
23.2 Exceptions, Traps, And Illegal Interrupts 535
23.3 Implementation Of Panic 536
23.4 Perspective 537
23.5 Summary 538