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3.6 Semiconductors and the Active Building Blocks of Processors and Memory3.7 Putting It All Together: The Integrated Circuit (IC); 3.8 Summary; Chapter 3 Problems; Chapter 4. Embedded Processors; 4.1 ISA Architecture Models; 4.2 Internal Processor Design; 4.3 Processor Performance; 4.4 Reading a Processor's Datasheet; 4.5 Summary; Chapter 4 Problems; Chapter 5. Board Memory; 5.1 Read-Only Memory (ROM); 5.2 Random-Access Memory (RAM); 5.3 Auxiliary Memory; 5.4 Memory Management of External Memory; 5.5 Board Memory and Performance; 5.6 Summary; Chapter 5 Problems
Chapter 6. Board I/O (Input/Output)6.1 Managing Data: Serial vs. Parallel I/O; 6.2 Interfacing the I/O Components; 6.3 I/O and Performance; 6.4 Summary; Chapter 6 Problems; Chapter 7. Board Buses; 7.1 Bus Arbitration and Timing; 7.2 Integrating the Bus with Other Board Components; 7.3 Bus Performance; 7.4 Summary; Chapter 7 Problems; Section III: Embedded Software Introduction; Chapter 8. Device Drivers; 8.1 Example 1: Device Drivers for Interrupt-Handling; 8.2 Example 2: Memory Device Drivers; 8.3 Example 3: On-board Bus Device Drivers; 8.4 Board I/O Driver Examples; 8.5 Summary Chapter 8 ProblemsChapter 9. Embedded Operating Systems; 9.1 What Is a Process?; 9.2 Multitasking and Process Management; 9.3 Memory Management; 9.4 I/O and File System Management; 9.5 OS Standards Example: POSIX (Portable Operating System Interface); 9.6 OS Performance Guidelines; 9.7 OSes and Board Support Packages (BSPs); 9.8 Summary; Chapter 9 Problems; Chapter 10. Middleware and Application Software; 10.1 What Is Middleware?; 10.2 What Is an Application?; 10.3 Middleware Examples; 10.4 Application Layer Software Examples; 10.5 Summary; Chapter 10 Problems
Section IV: Putting It All Together: Design and Development

Sommario/riassunto

This comprehensive textbook provides a broad and in-depth overview of embedded systems architecture for engineering students and embedded systems professionals. The book is well suited for undergraduate embedded systems courses in electronics/electrical engineering and engineering technology (EET) departments in universities and colleges, as well as for corporate training of employees.The book is a readable and practical guide covering embedded hardware, firmware, and applications. It clarifies all concepts with references to current embedded technology as it exists in the industry tod