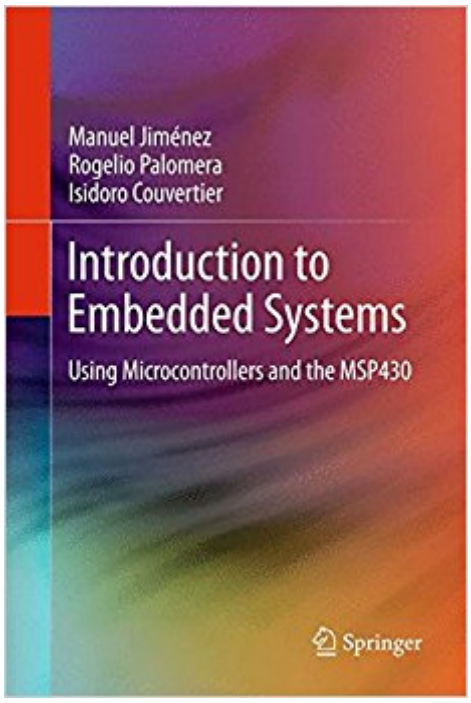
Introduction To Embedded Systems: Using Microcontrollers And The MSP430



Synopsis

This textbook serves as an introduction to the subject of embedded systems design, using microcontrollers as core components.Ã Â It develops concepts from the ground up, covering the development of embedded systems technology, architectural and organizational aspects of controllers and systems, processor models, and peripheral devices. Since microprocessor-based embedded systems tightly blend hardware and software components in a single application, the book also introduces the subjects of data representation formats, data operations, and programming styles.Ã Â The practical component of the book is tailored around the architecture of a widely used Texas InstrumentÃ¢â ¬â„¢s microcontroller, the MSP430 and a companion web site offers for download an experimenterÃ¢â ¬â„¢s kit and lab manual, along with Powerpoint slides and solutions for instructors.

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Customer Reviews

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Texas InstrumentÃ¢â ¬â„¢s microcontroller, the MSP430. InstructorÃ¢â ¬â„¢s supplemental materials available through the book web site include solutions to selected problems and exercises and power point slides for lectures. The site also includes materials for students that include links to application examples and to sites elsewhere in the web with applicationnotes, downloadable tools, and part suppliers.Ã Â Ã Â Ã Â Ã Â Ã Â Ã Â Ã Â Ã Â Ã Â Ã Â Ã Â Ã Â Provides textbook coverage of embedded systems, with an emphasis on the practical use of microcontrollers;
Ã Â Ã Â Ã Â Ã Â Ã Â Ã Â Ã Â Ã Â Ã Â Ã Â Covers embedded software fundamentals, including software planning, assembly language, and C-language program development;Ã Â Ã Â Ã Â Ã Â Ã Â Ã Â Ã Â Ã Â Ã Â Ã Â Ã Â Includes detailed treatment of embedded hardware fundamentals, discussing structure, interfacing and configuration of hardware building blocks;Ã Â Ã Â Ã Â Ã Â Ã Â Ã Â Ã Â Ã Â Ã Â Ã Â Ã Â Emphasizes examples and exercises that reflect real applications for embedded systems design;Ã Â Ã Â Ã Â Ã Â Ã Â Ã Â Ã Â Ã Â Ã Â Ã Â Ã Â Covers all MSP430 generations up to series x6xx.Ã Â

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One of the best books on Embedded Systems for Software Engineers. Especially suitable for people coming from a high-level software domain ("high-level" here meaning C/C++ level and NOT Web/Database etc.). Every aspect of an Embedded System is first explained in a general way (and extensively illustrated!) and then its realization in the MSP430 family is shown. However, because the principles are explained so clearly, you can apply it to learning any MCU family of your choice (of course, with the corresponding datasheets). One point to note is that this book deals only with "bare-metal" MCU programming and hence you will not find any discussions of RTOS and higher-level software layers. For experienced software engineers moving down into the embedded MCU domain, the challenge has always been understanding the various aspects of Hardware and how to interface to it without needing to get a EE/Electronics degree (of course, some amount of Electronics knowledge is needed). For them the real meat of the book starts from Chapter 6 and continues through to Chapter 10 (the end of the book). This book paired with a couple of others (listed below) will enable any "Software Engineer" to become an "Embedded Software Engineer"!On

the HW Side:1) The book being reviewed,2)Ã Â Designing Embedded Hardware: Create New Computers and DevicesÃ Â - This is another highly accessible book which explains the Hardware side very clearly.On the SW Side:1)Ã Â Embedded CÃ Â - One of the best books to get started with C programming for MCUs. Uses the 8051 family.2)Ã Â Patterns for Time-Triggered Embedded Systems: Building Reliable Applications with the 8051 Family of Microcontrollers (with CD-ROM)Ã Â _ This book is available for free on the author's company website. The subjects covered are very comprehensive and has lots and lots of code to study from (the best way to learn!).Finally, the publisher needs to bring out a low-price edition of this book to really help the students/hobbyists. Embedded Systems Development have gone "main-stream" thanks to Arduino etc. and thus every student/hobbyist will be well served by studying this book and getting their fundamentals clear.

Going through this book is a great experience. Most books teach you the theory about microcontrollers, but few of them go further.than that. Introduction to Embedded Systems: Using Microcontrollers and the MSP430 however, uses the MSP430 family to give you the experience of seeing actual examples, in real life, about the theory you are reading.In every topic on this book you will see the following pattern:Theory about important embedded systems/microcontrollers concepts --> How to apply that concept in real world using an MSP430, with real code (C and assembly language) in realistic applications.The book is well organized and very visual, allowing the user to visualize even the most abstract concepts.In my opinion, one of the best microcontrollers books of this generation and I would recommend it for an embedded systems course at university level.

A very comprehensive textbook, from numbering systems, microprocessor concepts, through extensive MSP430 coverage. Excellent coverage on IO, LCD and LED interfacing, motor interfacing, more. While I have used numerous TI Workshops and web content, am very pleased with purchasing this book, for its "University" quality content.

Love this book, great explanations and drawings to help reader understand. I love the size and how it looks. It is now my bible.

Very good book and explains thoroughly.

Book companion website: [...]This book does a good job of explaining the basics of microcomputer

architecture and how to interface MCU's with external peripherals such as LED's, motors, keypads, push buttons, etc. It also explains well how internal peripherals, such as Interrupts and Timers, work as well.Given that it is in it's first edition, it has some small grammatical errors, but they are minor and should be corrected for future editions of the book.Some ideas for chapters which should be added in the future are:- Chapter on basics of Digital Logic , for students who have not taken a course in digital circuits before. If this is not a possibility, then maybe an appendix with the truth tables of all major logic circuits would help.- Chapter on simple control systems for embedded systems. Some projects require knowledge of control systems, and having a chapter about it would come in handy. This is also something that other similar books, such as Embedded System Design by Frank Vahid, include.All in all, a very good introductory book for courses in embedded system and microprocessors/microcontrollers.