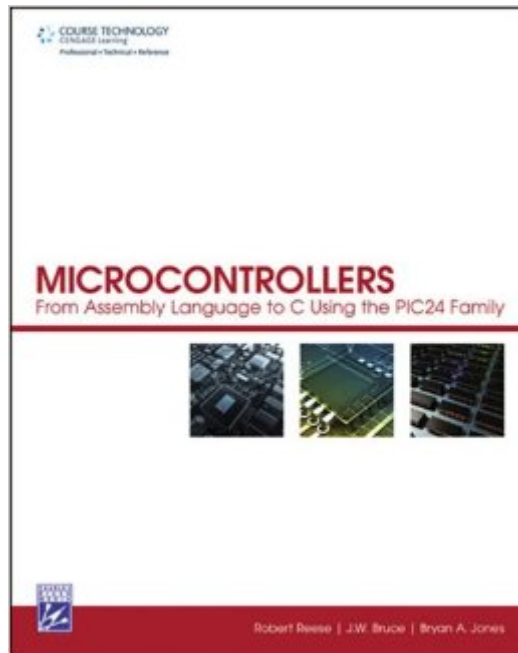# Microcontrollers: From Assembly Language To C Using The PIC24 Family

Synopsis

Microcontrollers: From Assembly Language to C Using the PIC24 Family provides an introduction to microprocessors and microcontrollers for either the student or hobbyist. It begins by discussing simple microprocessor architecture concepts, moves to assembly language programming in a C language context, then covers fundamental hardware interfacing topics such as parallel IO, asynchronous serial IO, synchronous serial I/O (I2C and SPI), interrupt-driven IO, timers, analog-to-digital conversion, and digital-toanalog conversion. Programming topics are discussed using both assembly language and C, while hardware interfacing examples use C to keep code complexity low and improve clarity. This bookâ ™s C examples on hardware interfacing strive for code clarity first and optimization second, providing a gentle learning curve and ensuring understanding of the key concepts. The bookâ ™s numerous examples include complete schematics and working code to operate a number of useful peripherals, including temperature sensors, LCD displays, a robot, and a reflow oven, providing a good starting point for your designs. Numerous lab experiments are included in the appendices. Visit www.reesemicro.com to obtain supplementary information on the text, the latest version of the library and example code with accompanying documentation, and links to courses which use this text. In addition, an online discussion group promotes interaction with the authors and a forum to discuss PIC24-based projects.

Book Information

File Size: 30624 KB

Print Length: 838 pages

Publisher: Course Technology PTR; 1 edition (December 29, 2008)

Publication Date: February 1, 2013

Language: English

ASIN: B00B7RFN0M

Text-to-Speech: Enabled

X-Ray: Not Enabled

Word Wise: Not Enabled

Lending: Not Enabled

Enhanced Typesetting: Not Enabled

Best Sellers Rank: #1,008,116 Paid in Kindle Store (See Top 100 Paid in Kindle Store)   #48 inÂ Books > Computers & Technology > Hardware & DIY > Microprocessors & System Design >

Customer Reviews

I have read fairly major parts of the book, and looked at a fair amount of the code.In general, the code is well-enough documented.The kernel code is pretty simple too - which is as it should be. You want an RTOS to be simple and stripped down.The book goes into a lot of detail that is useful to a beginner. You can learn a lot about embedded systems from this one book, but a knowledge of C and any assembly language would really help.Having actual device driver code is useful, too, both because you have running code and as examples of device drivers. You can compare the code to the hardware registers and better understand why specific choices are made in register bit selections.The only reason I have not yet used this RTOS is we are on a tight deadline on a PIC24 project and I do not have time until the project is done. I have over 34 years experience in the computer field, with the last 25 in embedded systems.If my actual experience with the running code is good, we are going to make this RTOS a basic toll in our toolbox. I also like the choice of the MPLAB C compiler, which is ANSI compliant, unlike the CCS compiler.The book could use a few more schematics, and deal with issues like power monitors (external supervisors), etc. These are the things that differentiate a standard embedded system from a really good one.The book also does not seem to take into account the errata for the various chips. It could have the errata on a few major chips, and talk about the work-arounds. This would give the reader a sense of the types of hardware bugs that can occur and how to deal with them. Beginners do not normally think about these types of problems, so some examples would be a good start.

As a student of computer and control systems engineering, I am constantly looking for good books based on microcontrollers and electronics. Most of the books that I have seen, up to this point, have neglected to mention several important components regarding either the software or hardware portions of microcontrollers causing me to find another book to supplement the previous book. In all, I wind up having to use 5 or 6 different books to get a full understanding of the microcontroller theory and operation.However, I recently came across the "Microcontrollers From Assembly to C Using the PIC24 Family" by Professors Robert Reece, J.W. Bruce, and Bryan Jones. This book encompasses all of what 6 books did for me. I certainly wished that I had came across this book first!The one thing that really struck the home run for me on this book was that it has/uses excellent examples. It details what each instruction does and literally points out what its function is -- and it

does this in both C and assembly! And if that is not enough, it compares the C code to the assembly instruction. VERY IMPRESSIVE.The explanations of how microcontrollers work, specifically the PIC24 family, is such that a person with little to no experience can easily grasp the concepts. This book is also a fantastic reference for the more experienced microcontroller users. I personally have worked with the Atmel 8051 and Cypress' PSoC. I got this book because I wanted to expand my knowledge of embedded systems.Whether you are a hobbyist, or a student dealing with microcontrollers, or an expert in the field, this book is a great tool to have regarding the understanding of the PIC24 microcontroller. I am very pleased. Thank you professors Reese, Bruce, and Jones for doing such a great job!

As a student of Dr Reese, I can attest that this book is the closest thing you will get to a university course in printed form. There is a dizzying amount of information available about the PIC24, only some of which is useful. Though useful, the tutorials and manuals distributed by Microchip are extrememly terse and dense. They are a sharp contrast to this book, which lucidly walks through the concepts needed to begin development for the microcontroller. Every step, example, and concept is clearly explained; the information that you would have spent hours Googling for (to find a *decent* writeup anyway) is all here, curated by professional electrical engineers.A few notes.First, if you are familiar with C, you will have a very easy time with this book, as it assumes you know a little bit of C. If you know C++, that will do fine.Second, for our class, we are using the dsPIC33EP128GP502 (in a DIP package of course). These are pin-compatible with the chip the book uses. If you are a student you can likely get some samples from Microchip for little to no cost.Third, once you've completed the course, the book has enough useful information (and suitable diagrams cribbed from Microchip's documentation) that it is a fantastic reference manual.My only complaint is that the bootloader interface software that is supplied with the book is *not* compatible with Linux, which disappointed me, perhaps more than it should have. However, if you're using Windows, this isn't a problem. Additionally, the code is open source (this pleased me greatly!) so perhaps it could be ported.Overall, there's no reason you shouldn't buy this book if you're interested in PICs.

Download to continue reading...

Microcontrollers: From Assembly Language to C Using the PIC24 Family Beginner's Guide to Programming the PIC24/dsPIC33: Using the Microstick and Microchip C Compiler for PIC24 and dsPIC33 (Volume 1) PC Assembly Language: learn how computer work easy ways to learn assembly language Body Language: Body Language Training - Attract Women & Command Respect, by Mastering Your High Status Body Language (Body Language Attraction, Body

Language ... Language Secrets, Nonverbal Communication) Applying PIC18 Microcontrollers: Architecture, Programming, and Interfacing using C and Assembly Embedded Systems with ARM Cortex-M Microcontrollers in Assembly Language and C Embedded Systems with ARM Cortex-M3 Microcontrollers in Assembly Language and C Some Assembly Required: Assembly Language Programming with the AVR Microcontroller Fundamentals of Microcontrollers and Applications in Embedded Systems with PIC Microcontrollers The Gun Digest Book of Firearms Assembly/Disassembly Part I - Automatic Pistols: Pt. 1 (Gun Digest Book of Firearms Assembly/Disassembly: Part 1 Automatic Pistols) The Gun Digest Book of Tactical Weapons Assembly/Disassembly (Gun Digest Book of Firearms Assembly/Disassembly) The Gun Digest Book of Revolvers Assembly/Disassembly (Gun Digest Book of Firearms Assembly/Disassembly) Gun Digest Book of Revolvers Assembly/Disassembly (Gun Digest Book of Firearms Assembly/Disassembly) The Gun Digest Book of Firearms Assembly/Disassembly Part V - Shotguns: Shotguns Pt.5 (Gun Digest Book of Firearms Assembly/Disassembly: Part 5 Shotguns) A Communication from Sir Charles Brisbane, K.C.B. Governor of Saint Vincent: To the House of Assembly of That Colony, Enclosing Lord Bathurst's ... Assembly; and a Letter Depicting the Alarm Assembly Language for the IBM PC Family (3rd Edition) 68000 Family Assembly Language Programming BODY LANGUAGE : Decoding Alpha Male Body Language, Instantly Attract Any Woman Without Saying a Single word. (Body Language 101, Alpha male, Attract woman, ... Seduce Women, Eye Contact, Body Language) Practical Digital Signal Processing using Microcontrollers Introduction to Embedded Systems: Using Microcontrollers and the MSP430