

Programming Microcontrollers Using Assembly Language

PIC Microcontrollers are a favorite in industry and with hobbyists. These microcontrollers are versatile, simple, and low cost making them perfect for many different applications. The 8-bit PIC is widely used in consumer electronic goods, office automation, and personal projects. Author, Dogan Ibrahim, author of several PIC books has now written a book using the PIC18 family of microcontrollers to create projects with SD cards. This book is ideal for those practicing engineers, advanced students, and PIC enthusiasts that want to incorporate SD Cards into their devices. SD cards are cheap, fast, and small, used in many MP3 players, digital and video cameras, and perfect for microcontroller applications. Complete with Microchip's C18 student compiler and using the C language this book brings the reader up to speed on the PIC 18 and SD cards, knowledge which can then be harnessed for hands-on work with the eighteen projects included within. Two great technologies are brought together in this one practical, real-world, hands-on cookbook perfect for a wide range of PIC fans. Eighteen fully worked SD projects in the C programming language Details memory cards usage with the PIC18 family

The Art of Assembly Language Programming Using PICmicro® Technology: Core Fundamentals thoroughly covers assembly language as used in programming the PIC Microcontroller (MCU.) Using the minimal instruction set characteristic of all PICmicro® products, the author elaborates on how to execute loops, control timing and disassembles code from C mnemonics. Detailed memory maps assist the reader with tricky areas of code. Math routines are carefully dissected to enhance understanding of minute code changes. Appendices are provided on basic math routines to supplement the readers' background. In depth coverage is further provided on paging techniques, unique to the PICmicro® 16C57 series controller. This book is written for an audience with a broad range of skill levels, relevant to both the absolute beginner and the skilled C embedded programmer. A supplemental appendix on 'Working with a Consultant' provides advice on working with consultants, in general, and on selecting an appropriate consultant within the microchip design consultant program. With this book you will learn: the symbols and terminology used by programmers and engineers in microprocessor applications; how to program using assembly language through examples and applications; how to program a microchip microprocessor, selecting the processor with minimal memory, and therefore minimal cost options; how to locate resources for more in-depth material content; and how to convert higher level language ICs to a lower level language. Teaches how to start writing simple code, e.g., PICmicro® 10FXXX and 12FXXX Offers unique and novel approaches to add your personal touch using PICmicro® 'bread and butter' enhanced mid-range 16FXXX and 18FXXX processors Teaches new coding and math knowledge to help build your skill sets Shows how to dramatically reduce product cost by achieving 100% control Demonstrates how to gain optimization over C programming, reduce code space, tighten up timing loops, reduce the size of microcontrollers required and lower overall product cost

Offers a systematic approach to PIC programming and interfacing using Assembly and C languages. Offering numerous examples and a step-by-step approach, it covers both the Assembly and C programming languages and devotes separate chapters to interfacing with peripherals such as Timers, LCD, Serial Ports, Interrupts, Motors and more. A unique chapter on hardware design of the PIC system and the PIC trainer round out coverage.Systematic coverage of the PIC18 family of Microcontrollers. Assembly language and C language programming and interfacing techniques. Thorough coverage of Architectures and Assembly language programming of the PIC18. Thorough coverage of C language programming of the PIC18. Separate chapters on programming and interfacing the PIC with peripherals - Includes information on how to interface the PIC with LCD, keyboard, ADC, DAC, Sensors, Serial Ports, Timers, DC and Stepper Motors, Optoisolators, and RTC. Covers how to program each peripheral, first using the Assembly language and then using the C language.Those involved with PIC programming and interfacing using Assembly and C languages.

This book is ideal for the engineer, technician, hobbyist and student who have knowledge of the basic principles of PIC microcontrollers and want to develop more advanced applications using the 18F series. The architecture of the PIC 18FXXX series as well as typical oscillator, reset, memory, and input-output circuits is completely detailed. After giving an introduction to programming in C, the book describes the project development cycle in full, giving details of the process of editing, compilation, error handling, programming and the use of specific development tools. The bulk of the book gives full details of tried and tested hands-on projects, such as the I2C BUS, USB BUS, CAN BUS, SPI BUS and real-time operating systems. A clear introduction to the PIC 18FXXX microcontroller's architecture 20 projects, including developing wireless and sensor network applications, using I2C BUS, USB BUS, CAN BUS and the SPI BUS, which give the block and circuit diagram, program description in PDL, program listing and program description Numerous examples of using developmental tools: simulators, in-circuit debuggers (especially ICD2) and emulators

An Introduction to Assembly Language Programming Using the AVR Butterfly and Its ATmega 169 Microcontroller

Practical Embedded Controllers

Fundamentals of Digital Logic and Microcontrollers

Microcontrollers

For the Motorola 6812

Architecture, Programming, and Interfacing for the Freescale 68HC12

ARM designs the cores of microcontrollers which equip most "embedded systems" based on 32-bit processors. Cortex M3 is one of these designs, recently developed by ARM with microcontroller applications in mind. To conceive a particularly optimized piece of software (as is often the case in the world of embedded systems) it is often necessary to know how to program in an assembly language. This book explains the basics of programming in an assembly language, while being based on the architecture of Cortex M3 in detail and developing many examples. It is written for people who have never programmed in an assembly language and is thus didactic and progresses step by step by defining the concepts necessary to acquiring a good understanding of these techniques.

Publisher's Note: Products purchased from Third Party sellers are not guaranteed by the publisher for quality, authenticity, or access to any online entitlements included with the product. Create your own STM32 programs with ease! Get up and running programming the STM32 line of microcontrollers from STMicroelectronics using the hands-on information contained in this easy-to-follow guide. Written by an experienced electronics hobbyist and author, Programming with STM32: Getting Started with the Nucleo Board and C/C++ features start-to-finish projects that clearly demonstrate each technique. Discover how to set up a stable development toolchain, write custom programs, download your programs to the development board, and execute them. You will even learn how to work with external servos and LED displays! •Explore the features of STM32 microcontrollers from STMicroelectronics•Configure your Nucleo-64 Microcontroller development board•Establish a toolchain and start developing interesting applications •Add specialized code and create cool custom functions•Automatically generate C code using the STM32CubeMX application•Work with the ARM Cortex Microcontroller Software Interface Standard and the STM hardware abstraction layer (HAL).•Control servos, LEDs, and other hardware using PWM•Transfer data to and from peripheral devices using DMA•Generate waveforms and pulses through your microcontroller's DAC

The Microchip PIC family of microcontrollers is the most popular series of microcontrollers in the world. However, no microcontroller is of any use without software to make it perform useful functions. This comprehensive reference focuses on designing with Microchip's mid-range PIC line using MBASIC, a powerful but easy to learn programming language. It illustrates MBASIC's abilities through a series of design examples, beginning with simple PIC-based projects and proceeding through more advanced designs. Unlike other references however, it also covers essential hardware and software design fundamentals of the PIC microcontroller series, including programming in assembly language when needed to supplement the capabilities of MBASIC. Details of hardware/software interfacing to the PIC are also provided. BENEFIT TO THE READER: This book provides one of the most thorough introductions available to the world's most popular microcontroller, with numerous hardware and software working design examples which engineers, students and hobbyists can directly apply to their design work and studies. Using MBASIC, it is possible to develop working programs for the PIC in a much shorter time frame than when using assembly language. Offers a complete introduction to programming the most popular microcontroller in the world, using the MBASIC compiler from a company that is committed to supporting the book both through purchases and promotion Provides numerous real-world design examples, all carefully tested

*Provides practical guidance and essential theory making it ideal for engineers facing a design challenge or students devising a project *Includes real-world design guides for implementing a microcontroller-based control systems *Requires only basic mathematical and engineering background as the use of microcontrollers is introduced from first principles Engineers involved in the use of microcontrollers in measurement and control systems will find this book an essential practical guide, providing design principles and application case studies backed up with sufficient control theory and electronics to develop their own systems. It will also prove invaluable for students and experimenters seeking real-world project work involving the use of a microcontroller. Unlike the many introductory books on microcontrollers Dogan Ibrahim has used his engineering experience to write a book based on real-world applications. A basic mathematical and engineering background is assumed, but the use of microcontrollers is introduced from first principles. Microcontroller-Based Temperature Monitoring and Control is an essential and practical guide for all engineers involved in the use of microcontrollers in measurement and control systems. The book provides design principles and application case studies backed up with sufficient control theory and electronics to develop your own systems. It will also prove invaluable for students and experimenters seeking real-world project work involving the use of a microcontroller. Techniques for the application of microcontroller-based control systems are backed up with the basic theory and mathematics used in these designs, and various digital control techniques are discussed with reference to digital sample theory. The first part of the book covers temperature sensors and their use in measurement, and includes the latest non-invasive and digital sensor types. The second part covers sampling procedures, control systems and the application of digital control algorithms using a microcontroller. The final chapter describes a complete microcontroller-based temperature control system, including a full software listing for the programming of the controller.

Microcontroller: Features and Applications

Programming PIC Microcontrollers Using PICBASIC

The AVR Microcontroller and Embedded Systems

Programming with STM32: Getting Started with the Nucleo Board and C/C++

PIC BASIC: Programming and Projects

30 Projects using PIC BASIC and PIC BASIC PRO

This book was written with the novice or intermediate 8052 developer in mind. Assuming no prior knowledge of the 8052, it takes the reader step-by-step through the architecture including discussions and explanations of concepts such as internal RAM, external RAM, Special Function Registers (SFRs), addressing modes, timers, serial I/O, and interrupts. This is followed by an in-depth section on assembly language which explains each instruction in the 8052 instruction set as well as related concepts such as assembly language syntax, expressions, assembly language directives, and how to implement 16-bit mathematical functions. The book continues with a thorough explanation of the 8052 hardware itself, reviewing the function of each pin on the microcontroller and follows this with the design and explanation of a fully functional single board computer-every section of the schematic design is explained in detail to provide the reader with a full understanding of how everything is connected, and why. The book closes with a section on hardware interfacing and software examples in which the reader will learn about the SBCMON monitor program for use on the single board computer, interfacing with a 4x4 keypad, communicating with a 16x2 LCD in direct-connect as well as memory-mapped fashion, utilizing an external serial EEPROM via the SPI protocol, and using the I2C communication standard to access an external real time clock. The book takes the reader with absolutely no knowledge of the 8052 and provides him with the information necessary to understand the architecture, design and build a functioning circuit based on the 8052, and write software to operate the 8052 in assembly language.

This book introduces basic programming of ARM Cortex chips in assembly language and the fundamentals of embedded system design. It presents data representations, assembly instruction syntax, implementing basic controls of C language at the assembly level, and instruction encoding and decoding. The book also covers many advanced components of embedded systems, such as software and hardware interrupts, general purpose I/O, LCD driver, keypad interaction, real-time clock, stepper motor control, PWM input and output, digital input capture, direct memory access (DMA), digital and analog conversion, and serial communication (USART, I2C, SPI, and USB). The book has the following features: Emphasis on structured programming and top-down modular design in assembly language Line-by-line translation between C and ARM assembly for most example codes Mixture of C and assembly languages, such as a C program calling assembly subroutines, and an assembly program calling C subroutines Implementation of context switch between multiple concurrently running tasks according to a round-robin scheduling algorithm"

This completely updated second edition of MICROCONTROLLERS: FROM ASSEMBLY LANGUAGE TO C USING THE PIC24 FAMILY covers assembly language, C programming, and hardware interfacing for the Microchip PIC24 family, a recently updated microcontroller family from Microchip. Hardware interfacing topics include parallel port usage, analog-to-digital conversion, digital-to-analog conversion, the serial peripheral bus (SPI), the inter-integrated circuit bus (I2C), asynchronous serial communication, and timers. Assembly language programming is covered in the context of the PIC24 instruction set, and no initial knowledge of assembly language programming is assumed. Specific hardware interfacing topics covered are parallel IO, analog-to-digital/digital-to-analog conversion, pulse width modulation, timer usage for IO polling, and industry standard serial interface standards. Interfacing examples include external devices such as pushbutton switches, LEDs, serial EEPROMs, liquid crystal displays (LCDs), keypads, rotary encoders, external digital-to-analog converters, DC motors, servos, temperature sensors, and IR receivers. Master the PIC24 family with MICROCONTROLLERS: FROM ASSEMBLY LANGUAGE TO C USING THE PIC24 FAMILY.

Mes1 Architectural Overview | Memory Organization | Instruction Set And Addressing Modes | Structure Of Assembly Language | I/O Ports Programming | Simple Programs | Timers | Serial Communication | Interuppt Structure | Data Acquisition System | Software

Basic to Advanced

Design and Troubleshooting with the Motorola 68HC11

ARM Assembly Language Programming With STM32 Microcontrollers

Embedded Systems with Arm Cortex-M3 Microcontrollers in Assembly Language and C

A Complete Notebook on PIC Microcontrollers

Core Fundamentals

The situation we find ourselves today in the field of microcontrollers had its beginnings in the development of technology of integrated circuits. This development has enabled to store hundreds of thousands of transistors into one chip. That was a precondition for the manufacture of microprocessors and the first computers were made by adding external peripherals such as memory, input/output lines, timers, and others to it. Further increasing of package density resulted in creating an integrated circuit that contained both processors and peripherals. That is how the first chip containing a microcomputer later known as a microcontroller has developed. If you have not done it so far then it is high time to learn what the microcontrollers are and how they operate. Numerous illustrations and practical examples along with a detailed description of the PIC16F887 will make you enjoy your work with the PIC microcontrollers

This book offers a quick and easy way to learn low-level programming of ARM microcontrollers using Assembly Language. The material of the book aims at those who has some experience in programming and wants to learn how to get more control over microcontroller hardware and software.Low-level programming comes into the category of more advanced programming and involves some knowledge of a target microcontroller. The material of this book is based upon the popular STM32 Cortex-M4 microcontrollers. It would be nice to have the datasheet, Programming and Reference Manuals on the particular STM32 microcontroller on hand while reading this book.All examples are developed using the NUCLEO-L476RG development board equipped with the STM32L476RG T6 Cortex microcontroller. The program code is developed using a free STM32CubeIDE version 1.4.2.The programming techniques described in this guide can also be applied to other development boards equipped with Cortex-M4/M7/L4 microcontrollers (STM32F4xx, STM32F7, etc.) with corresponding changes in source code. To develop the low-level code, the Assembler Language of STM32CubeIDE was used. This assembly language supports a subset of the ARM Thumb-2 instruction set that is a mix of 16- and 32-bit instructions designed to be very efficient when using together with high-level languages.

The "M-CORE" family of microprocessors is the latest 32-bit integrated circuit from Motorola designed to be a multi-purpose "micro-controller." The processor architecture has been designed for high performance and cost-sensitive embedded control applications with particular emphasis on reduced power consumption. This is the first book on the programming of the new language instruction set using the M-CORE chip. Embedded Microcontroller Interfacing for M-CORE Systems is the third of a trio of books by G. Jack Lipovski from the University of Texas. The first two books are on assembly language programming for the new Motorola 6812 16-bit microcontroller, and were written to be textbooks and professional references. This book was written at the request of the Motorola design team for the professional users of its new and very successful M-CORE chip microcontrollers. Written with the complete cooperation and input of the M-CORE design engineers at their headquarters in Austin, Texas, this book covers all aspects of the programming software and hardware of the M-CORE chip. * First introductory level book on the Motorola MoCORE * Teaches engineers how a computer executes instructions * Shows how a high-level programming language converts to assembler language * Teaches the reader how a microcontroller is interfaced to the outside world * Hundreds of examples are used throughout the text * Over 200 homework problems give the reader in-depth practice * A CD-ROM with HIWARE's C++ compiler is included with the book * A complete summary chapter on other available microcontrollers

A thorough revision that provides a clear understanding of the basic principles of microcontrollers using C programming and PIC18F assembly language This book presents the fundamental concepts of assembly language programming and interfacing techniques associated with typical microcontrollers. As part of the second edition's revisions, PIC18F assembly language and C programming are provided in separate sections so that these topics can be covered independent of each other if desired.

This extensively updated edition includes a number of fundamental topics. Characteristics and principles common to typical microcontrollers are emphasized. Interfacing techniques associated with a basic microcontroller such as the PIC18F are demonstrated from chip level via examples using the simplest possible devices, such as switches, LEDs, Seven-Segment displays, and the hexadecimal keyboard. In addition, interfacing the PIC18F with other devices such as LCD displays, ADC, and DAC is also included. Furthermore, topics such as CCP (Capture, Compare, PWM) and Serial I/O using C along with simple examples are also provided. Microcontroller Theory and Applications with the PIC18F, 2nd Edition is a comprehensive and self-contained book that emphasizes characteristics and principles common to typical microcontrollers. In addition, the text: Includes increased coverage of C language programming with the PIC18F I/O and interfacing techniques Provides a more detailed explanation of PIC18F timers, PWM, and Serial I/O using C Illustrates C interfacing techniques through the use of numerous examples, most of which have been implemented successfully in the laboratory This new edition of Microcontroller Theory and Applications with the PIC18F is excellent as a text for undergraduate level students of electrical/computer engineering and computer science.

PIC Microcontroller and Embedded Systems

SD Card Projects Using the PIC Microcontroller

Programming the ARM® Cortex®-M4-based STM32F4 Microcontrollers with Simulink®

PIC Basic Projects

Designing Embedded Systems with 32-Bit PIC Microcontrollers and MikroC

Using Assembly and C

This book introduces basic programming of ARM Cortex chips in assembly language and the fundamentals of embedded system design. It presents data representations, assembly instruction syntax, implementing basic controls of C language at the assembly level, and instruction encoding and decoding. The book also covers many advanced components of embedded systems, such as software and hardware interrupts, general purpose I/O, LCD driver, keypad interaction, real-time clock, stepper motor control, PWM input and output, digital input capture, direct memory access (DMA), digital and analog conversion, and serial communication (USART, I2C, SPI, and USB).

Microcontrollers exist in a wide variety of models with varying structures and numerous application opportunities. Despite this diversity, it is possible to find consistencies in the architecture of most microcontrollers. Microcontrollers: Fundamentals and Applications with PIC focuses on these common elements to describe the fundamentals of microcontroller design and programming. Using clear, concise language and a top-bottom approach, the book describes the parts that make up a microcontroller, how they work, and how they interact with each other. It also explains how to program medium-end PICs using assembler language. Examines analog as well as digital signals This volume describes the structure and resources of general microcontrollers as well as PIC microcontrollers, with a special focus on medium-end devices. The authors discuss memory organization and structure, and the assembler language used for programming medium-end PIC microcontrollers. They also explore how microcontrollers can acquire, process, and generate digital signals, explaining available techniques to deal with parallel input or output, peripherals, resources for real-time use, interrupts, and the specific characteristics of serial data interfaces in PIC microcontrollers. Finally, the book describes the acquisition and generation of analog signals either using resources inside the chip or by connecting peripheral circuits. Provides hands-on clarification Using practical examples and applications to supplement each topic, this volume provides the tools to thoroughly grasp the architecture and programming of microcontrollers. It avoids overly specific details so readers are quickly led toward design implementation. After mastering the material in this text, they will understand how to efficiently use PIC microcontrollers in a design process.

Introduction to Microcontrollers is a comprehensive, introductory text/reference for electrical and computer engineers and students with little experience with a high-level programming language. It systematically teaches the programming of a microcontroller in assembly language, as well as C and C++. This books also covers the principles of good programming practice through top-down design and the use of data structures. It is suitable as an introductory text for a first course on microcomputers that demonstrates what a small computer can do. Shows how a computer executes instructions; Shows how a high-level programming language converts to assembler language; Shows how a microcontroller is interfaced to the outside world; Hundreds of examples, experiments, "brain-teasers" and motivators; More than 20 exercises at the end of each chapter

This practical tutorial reviews the essentials of C programming for microcontrollers and examines in detail the issues faced when writing C code. Included is a CD-ROM for Windows containing all C code used in the book, compilers of popular microcontrollers, and a fully searchable electronic version of the book. 35 line drawings.

From Assembly Language to C Using the PIC24 Family

A Key to Program Microcontroller System

Programming Microcontrollers Using Assembly Language

PIC Microcontroller Projects in C

Some Assembly Required

Assembly Language Programming with the AVR Microcontroller

PIC BASIC is the simplest and quickest way to get up and running - designing and building circuits using a microcontroller. Dogan Ibrahim's approach is firmly based in practical applications and project work, making this a toolkit rather than a programming guide. No previous experience with microcontrollers is assumed - the PIC family of microcontrollers, and in particular the popular reprogrammable 16X84 device, are introduced from scratch. The BASIC language, as used by the most popular PIC compilers, is also introduced from square one, with a simple code used to illustrate each of the most commonly used instructions. The practicalities of programming and the scope of using a PIC are then explored through 22 wide ranging electronics projects. The simplest quickest way to get up and running with microcontrollers Makes the PIC accessible to students and enthusiasts Project work is at the heart of the book - this is not a BASIC primer.

PIC microcontrollers are used worldwide in commercial and industrial devices. The 8-bit PIC which this book focuses on is a versatile work horse that completes many designs. An engineer working with applications that include a microcontroller will no doubt come across the PIC sooner rather than later. It is a must to have a working knowledge of this 8-bit technology. This book takes the novice from introduction of embedded systems through to advanced development techniques for utilizing and optimizing the PIC family of microcontrollers in your device. To truly understand the PIC, assembly and C programming language must be understood. The author explains both with sample code and examples, and makes the transition from the former to the latter an easy one. This is a solid building block for future PIC endeavors. New to the 2nd Edition: *Include end of chapter questions/activities moving from introductory to advanced *More worked examples *Includes PowerPoint slides for instructors *Includes all code snips on a companion web site for ease of use *A survey of 16/32-bit PICs *A project using ZigBee *Covers both assembly and C programming languages, essential for optimizing the PIC *Amazing breadth of coverage moving from introductory to advanced topics covering more and more complex microcontroller families *Details MPLAB and other Microchip design tools

This comprehensive tutorial assumes no prior experience with PICBASIC. It opens with an introduction to such basic concepts as variables, statements, operators, and structures. This is followed by discussion of the two most commonly used PICBASIC compilers. The author then discusses programming the most common version of the PIC microcontroller, the 15F84. The remainder of the book examines several real-world examples of programming PICs with PICBASIC. In keeping with the integrated nature of embedded technology, both hardware and software are discussed in these examples; circuit details are given so that readers may replicate the designs for themselves or use them as the starting points for their development efforts. *Offers a complete introduction to programming the world's most commonly used microcontroller, the Microchip PIC, with the powerful but easy to use PICBASIC language *Gives numerous design examples and projects to illustrate important concepts *Accompanying CD contains the source files and executables discussed in the book as well as an electronic version of the book

This book will help the technician, engineer and user understand the microcontroller-based systems along with the most common problems and their solutions. This book covers design, specification, programming, installation, configuration and of course troubleshooting. · An engineer's guide to the design, applications and troubleshooting of microcontroller-based systems · The introductory chapters on embedded microcontroller architecture and programming are written at the right level with an applications focus for practicing engineers · A highly topical book with a wide readership involved with product design and industrial processes including control systems

From Assembly Language to C Using the PIC18Fxx2

The Avr Microcontroller and Embedded Systems Using Assembly and C

Programming Microcontrollers in C

Principles and Applications

Programming the PIC Microcontroller with MBASIC

Embedded Systems with Arm Cortex-M Microcontrollers in Assembly Language and C: Third Edition

A microcontroller is a compact, integrated circuit designed to govern a specific operation in an embedded system. A typical microcontroller includes a processor, memory, and input/output (I/O) peripherals on a single chip. When they first became available, microcontrollers solely used Assembly language. Today, the C programming language (and some other high-level languages) can be used as well. Some of advanced microcontrollers support another programming technique as well: Graphical programming. In graphical programming, the user does not write any code but draws the block diagram of the system he wants. Then a software converts the drawn block diagram into a suitable code for the target device. Programming microcontrollers using graphical programming is quite easier than programming in C or Assembly. You can implement a complex system within hours with graphical programming while its implementation in C may take months. These features make the graphical programming an important option for engineers. This book study the graphical programming of STM32F4 high-performance microcontrollers with the aid of Simulink and Waijung blockset. Students of engineering (for instance, electrical, biomedical, mechatronics and robotic to name a few), engineers who work in industry, and anyone who want to learn the graphical programming of STM32F4 can benefit from this book. Prerequisite for this book is the basic knowledge of MATLAB Simulink.

Ted Van Sickle spent over fifteen years at Motorola as a microcontroller specialist. He now consults and teaches classes on software design and programming for microcontroller systems. He holds a MSEE from the University of Michigan. Introduces microcontrollers and describes their programming environment, offering tips on coding for microcontrollers Describes techniques to get maximum performance from your code Discusses the differences between 8-bit and larger microcontrollers, giving application examples and providing details on using different compilers

This book is a first course in microprocessors using the PIC18Fxx2 microprocessor with the only prerequisites being basic digital design and exposure to either C or C++ programming. The topic coverage is wide, with a mixture of software and hardware topics.

For courses in Embedded System Design, Microcontroller's Software and Hardware, Microprocessor Interfacing, Microprocessor Assembly Language Programming, Peripheral Interfacing, Senior Project Design, Embedded System programming with C. The AVR Microcontroller and Embedded Systems: Using Assembly and C features a step-by-step approach in covering both Assembly and C language programming of the AVR family of Microcontrollers. It offers a systematic approach in programming and interfacing of the AVR with LCD, keyboard, ADC, DAC, Sensors, Serial Ports, Timers, DC and Stepper Motors, Opto-isolators, and RTC. Both Assembly and C languages are used in all the peripherals programming. In the first 6 chapters, Assembly language is used to cover the AVR architecture and starting with chapter 7, both Assembly and C languages are used to show the peripherals programming and interfacing.

From USB to RTOS with the PIC 18F Series

Microcontroller-Based Temperature Monitoring and Control

ARM Cortex-M3

The Art of Assembly Language Programming Using PIC® Technology

Single and Multi-Chip Microcontroller Interfacing

Microcontroller Theory and Applications with the PIC18F

The AVR Microcontroller and Embedded Systems: Using Assembly and C features a step-by-step approach in covering both Assembly and C language programming of the AVR family of Microcontrollers. It offers a systematic approach in programming and interfacing of the AVR with LCD, keyboard, ADC, DAC, Sensors, Serial Ports, Timers, DC and Stepper Motors, Opto-isolators, and RTC. Both Assembly and C languages are used in all the peripherals programming. In the first 6 chapters, Assembly language is used to cover the AVR architecture and starting with chapter 7, both Assembly and C languages are used to show the peripherals programming and interfacing.

A family of internationally popular microcontrollers, the Atmel AVR microcontroller series is a low-cost hardware development platform suitable for an educational environment. Until now, no text focused on the assembly language programming of these microcontrollers. Through detailed coverage of assembly language programming principles and technique

Updated to reflect the latest advances in the field, the Sixth Edition of Fundamentals of Digital Logic and Microcontrollers further enhances its reputation as the most accessible introduction to the basic principles and tools required in the design of digital systems. Features updates and revision to more than half of the material from the previous edition Offers an all-encompassing focus on the areas of computer design, digital logic, and digital systems, unlike other texts in the marketplace Written with clear and concise explanations of fundamental topics such as number system and Boolean algebra, and simplified examples and tutorials utilizing the PIC18F4321 microcontroller Covers an enhanced version of both combinational and sequential logic design, basics of computer organization, and microcontrollers

The new generation of 32-bit PIC microcontrollers can be used to solve the increasingly complex embedded system design challenges faced by engineers today. This book teaches the basics of 32-bit C programming, including an introduction to the PIC 32-bit C compiler. It includes a full description of the architecture of 32-bit PICs and their applications, along with coverage of the relevant development and debugging tools. Through a series of fully realized example projects, Dogan Ibrahim demonstrates how engineers can harness the power of this new technology to optimize their embedded designs. With this book you will learn: The advantages of 32-bit PICs The basics of 32-bit PIC programming The detail of the architecture of 32-bit PICs How to interpret the Microchip data sheets and draw out their key points How to use the built-in peripheral interface devices, including SD cards, CAN and USB interfacing How to use 32-bit debugging tools such as the ICD3 in-circuit debugger, mikroCD in-circuit debugger, and Real Ice emulator Helps engineers to get up and running quickly with full coverage of architecture, programming and development tools Logical, application-oriented structure, progressing through a project development cycle from basic operation to real-world applications Includes practical working examples with block diagrams, circuit diagrams, flowcharts, full software listings an in-depth description of each operation

AVR Microcontroller and Embedded Systems: Pearson New International Edition

Connecting PIC (Peripheral Interface Controllers) Microcontrollers to Programmable Intelligent Computers with Diagrams

Learning By Example

Architecture, Assembly Language, and Hardware Interfacing

Explore ATiny Microcontrollers Using C and Assembly Language

Introduction to Microcontrollers

Extensively revised and updated to encompass the latest developments in the PIC 18FXXX series, this book demonstrates how to develop a range of microcontroller applications through a project-based approach. After giving an introduction to programming in C using the popular mikroC Pro for PIC and MPLAB XC8 languages, this book describes the project development cycle in full. The book walks you through fully tried and tested hands-on projects, including many new, advanced topics such as Ethernet programming, digital signal processing, and Rfid technology. This book is ideal for engineers, technicians, hobbyists and students who have knowledge of the basic principles of PIC microcontrollers and want to develop more advanced applications using the PIC18F series. This book Includes over fifty projects which are divided into three categories: Basic, Intermediate, and Advanced. New projects in this edition: Logic probe Custom LCD font design Hi/Lo game Generating various waveforms in real-time Ultrasonic height measurement Frequency counter Reaction timer GPS projects Closed-loop ON/OFF temperature control Bluetooth projects (master and slave) Rfid projects Clock using Real-time-clock (RTC) chip RTC alarm project Graphics LCD (GLCD) projects Barometer+thermometer+altimeter project Plotting temperature on GLCD Ethernet web browser based control Ethernet UDP based control Digital signal processing (Low Pass Filter design) Automotive LIN bus project Automotive CAN bus project Multitasking projects (using both cooperative and Round-robin scheduling) Unipolar stepper motor projects Bipolar stepper motor projects Closed-loop ON/OFF DC motor control A clear introduction to the PIC 18FXXX microcontroller's architecture Covers developing wireless and sensor network applications, SD card projects, and multi-tasking; all demonstrated with the block and circuit diagram, program description in PDL, program listing, and program description Includes more than 50 basic, intermediate, and advanced projects

Covering the PIC BASIC and PIC BASIC PRO compilers, PIC Basic Projects provides an easy-to-use toolkit for developing applications with PIC BASIC. Numerous simple projects give clear and concrete examples of how PIC BASIC can be used to develop electronics applications, while larger and more advanced projects describe program operation in detail and give useful insights into developing more involved microcontroller applications. Including new and dynamic models of the PIC microcontroller, such as the PIC16F627, PIC16F628, PIC16F629 and PIC12F627, PIC Basic Projects is a thoroughly practical, hands-on introduction to PIC BASIC for the hobbyist, student and electronics design engineer. Packed with simple and advanced projects which show how to program a variety of interesting electronic applications using PIC BASIC Covers the new and powerful PIC16F627, 16F628, PIC16F629 and the PIC12F627 models

The AVR microcontroller from Atmel (now Microchip) is one of the most widely used 8-bit microcontrollers. Arduino Uno is based on AVR microcontroller. It is inexpensive and widely available around the world. This book combines the two. In this book, the authors use a step-by-step and systematic approach to show the programming of the AVR chip. Examples in both Assembly language and C show how to program many of the AVR features, such as timers, serial communication, ADC, SPI, I2C, and PWM. The text is organized into two parts: 1) The first 6 chapters use Assembly language programming to examine the internal architecture of the AVR. 2) Chapters 7-18 uses both Assembly and C to show the AVR peripherals and I/O interfacing to real-world devices such as LCD, motor, and sensor. The first edition of this book published by Pearson used ATmega32. It is still available for purchase from Amazon. This new edition is based on ATmega328 and the Arduino Uno board. The appendices, source codes, tutorials and support materials for both books are available on the following websites: <http://www.NicerLand.com/> and http://www.MicroDigitalEd.com/AVR/AVR_books.htm

Single and Multi-Chip Microcontroller Interfacing teaches the principles of designing and programming microcontrollers that will be used in a wide variety of electronic and mechanical devices, machines and systems.

Applications are wide, ranging from controlling an automobile to measuring, controlling and displaying your home's temperature. The book utilizes the new Motorola 68HC12 microcontroller as the primary example throughout. This new microprocessor is the latest development in mid-level 16-bit microcontrollers that will be used world wide due to its low cost and ease of programming. The book features the most popular programming languages--C and C++--in describing basic and advanced techniques. The 68HC12 will replace many of the existing 8-bit microprocessors currently used in applications and teaching. First book available on the new Motorola 68HC12 microcontroller Thorough discussion of C and C++ programming of I/O ports and synchronization mechanisms Concrete discussion of applications of the popular, readily available, inexpensive and well-designed 68HC12 Many examples and over 200 problems at the end of each chapters Separate sections describing object-oriented interfacing This book is ideal for professional engineers as well as students in university courses in micro-processors/microcontrollers in departments of electrical engineering, computer engineering or computer science; It is also appropriate for advanced technical school courses. The book will also be a valuable professional reference for electrical engineers and mechanical engineers in industry working with the design of electronic and electromechanical devices and systems

Assembly Language Programming

Designing Embedded Systems with PIC Microcontrollers

Using Assembly and C for PIC18

Fundamentals and Applications with PIC

The 8051/8052 Microcontroller

AVR Architecture and Programming