

50 Pic Microcontroller Projects For Beginners And Experts

John Iovine has created his next masterwork with PIC Projects for Non-Programmers. Engineers and hobbyists new to the PIC who want to create something today will find a valuable resource in this book. By working through the accessible projects in this book, readers will use a symbolic compiler that allows them to create 'code' via flowcharts immediately, getting their projects up and running quickly! The ability to create applications with the PIC from day one makes this a real page turner and a highly satisfying introduction to microcontrollers for both novices and readers who need to build their skills. Gets readers up and running fast with a quick review of basics and then onto ten tried-and-tested projects No languages to learn! Simply drag and drop the icons, plug in the settings and the PIC will respond to the commands

Step by step guide to using Flowcode 4

Explore embedded programming, and get hands-on with real-world embedded projects relating to IoT, low-powered devices, and other complex systems using TinyGo and WebAssembly Key FeaturesBuild creative embedded apps with TinyGo using low-powered devices and microcontrollersUnderstand the practicality involved in integrating hardware and sensors while programming them using TinyGoUse TinyGo in modern browsers to display embedded applications' statistics on WebAssembly dashboardsBook Description While often considered a fast and compact programming language, Go usually creates large executables that are difficult to run on low-memory or low-powered devices such as microcontrollers or IoT. TinyGo is a new compiler that allows developers to compile their programs for such low-powered devices. As TinyGo supports all the standard features of the Go programming language, you won't have to tweak the code to fit on the microcontroller. This book is a hands-on guide packed full of interesting DIY projects that will show you how to build embedded applications. You will learn how to program sensors and work with microcontrollers such as Arduino UNO and Arduino Nano IoT 33. The chapters that follow will show you how to develop multiple real-world embedded projects using a variety of popular devices such as LEDs, 7-segment displays, and timers. Next, you will progress to build interactive prototypes such as a traffic lights system, touchless hand wash timer, and more. As you advance, you'll create an IoT prototype of a weather alert system and display those alerts on the TinyGo WASM dashboard. Finally, you will build a home automation project that displays stats on the TinyGo WASM dashboard. By the end of this microcontroller book, you will be equipped with the skills you need to build real-world embedded projects using the power of TinyGo. What you will learnDiscover a variety of TinyGo features and capabilities while programming your embedded devicesExplore how to use display devices to present your dataFocus on how to make TinyGo interact with multiple sensors for sensing temperature, humidity, and pressureProgram hardware devices such as Arduino Uno and Arduino Nano IoT 33 using TinyGoUnderstand how TinyGo works with GPIO, ADC, I2C, SPI, and MQTT network protocolsBuild your first TinyGo IoT and home automation prototypesIntegrate TinyGo in modern browsers using WebAssemblyWho this book is for If you are a Go developer who wants to program low-powered devices and hardware such as Arduino UNO and Arduino Nano IoT 33, or if you are a Go developer who wants to extend your knowledge of using Go with WebAssembly while programming Go in the browser, then this book is for you. Go hobbyist programmers who are interested in learning more about TinyGo by working through the DIY projects covered in the book will also find this hands-on guide useful.

This book presents a thorough introduction to the Microchip PIC® microcontroller family, including all of the PIC programming and interfacing for all the peripheral functions. A step-by-step approach to PIC assembly language programming is presented, with tutorials that demonstrate how to use such inherent development tools such as the Integrated Development Environment MPLAB, PIC18 C compiler, the IC2D in-circuit debugger, and several demo boards. Comprehensive coverage spans the topics of interrupts, timer functions, parallel I/O ports, various serial communications such as USART, SPI, I2C, CAN, A/D converters, and external memory expansion.

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. Microchip continually updates its product line with more capable and lower cost products. They also provide excellent development tools. Few books take advantage of all the work done by Microchip. 123 PIC Microcontroller Experiments for the Evil Genius uses the best parts, and does not become dependent on one tool type or version, to accommodate the widest audience possible.Building on the success of 123 Robotics Experiments for the Evil Genius, as well as the unbelievable sales history of Programming and Customizing the PIC Microcontroller, this book will combine the format of the evil genius title with the following of the microcontroller audience for a sure-fire hit.

PIC Projects

50 PIC Microcontroller Projects

Programming Embedded Systems

Microcontroller Projects in C for the 8051

Using LEDs, LCDs and GLCDs in Microcontroller Projects

Embedded Design by Interactive Simulation

CREATE FIENDISHLY FUN SPY TOOLS AND COUNTERMEASURES Fully updated throughout, this wickedly inventive guide is packed with a wide variety of stealthy sleuthing contraptions you can build yourself. 101 Spy Gadgets for the Evil Genius, Second Edition also shows you how to reclaim your privacy by targeting the very mechanisms that invade your space. Find out how to disable several spy devices by hacking easily available appliances into cool tools of your own, and even turn the tables on the snoopers by using gadgetry to collect information on them. Featuring easy-to-find, inexpensive parts, this hands-on guide helps you build your skills in working with electronics components and tools while you create an impressive arsenal of spy gear and countermeasures. The only limit is your imagination! 101 Spy Gadgets for the Evil Genius, Second Edition: Contains step-by-step instructions and helpful illustrations Provides tips for customizing the projects Covers the underlying principles behind the projects Removes the frustration factor--all required parts are listed Build these and other devious devices: Spy camera Infrared light converter Night vision viewer Phone number decoder Phone spammer jammer Telephone voice changer GPS tracking device Laser spy device Remote control hijacker Camera flash timer Portable alarm system Camera trigger hack Repeating camera timer Sound- and motion-activated cameras Camera zoom extender

Learn how to use microcontrollers without all the fills and math. This book uses a practical approach to show you how to develop embedded systems with 8 bit PIC microcontrollers using the XC8 compiler. It's your complete guide to understanding modern PIC microcontrollers. Are you tired of copying and pasting code into your embedded projects? Do you want to write your own code from scratch for microcontrollers and understand what your code is doing? Do you want to move beyond the Arduino? Then Programming PIC Microcontrollers with XC8 is for you! Written for those who want more than an Arduino, but less than the more complex microcontrollers on the market, PIC microcontrollers are the next logical step in your journey. You'll also see the advantage that MPLAB X offers by running on Windows, MAC and Linux environments. You don't need to be a command line expert to work with PIC microcontrollers, so you can focus less on setting up your environment and more on your application. What You'll Learn Set up the MPLAB X and XC8 compilers for microcontroller development Use GPIO and PPS Review UUSART and Software UART communications Use the eXtreme Low Power (XLP) options of microcontrollers Explore wireless communications with WIFI and Bluetooth Who This Book Is For Those with some basic electronic device and some electronic equipment and knowledge. This book assumes knowledge of the C programming language and basic knowledge of digital electronics though a basic overview is given for both. A complete newcomer can follow along, but this book is heavy on code, schematics and images and focuses less on the theoretical aspects of using microcontrollers. This book is also targeted to students wanting a practical overview of microcontrollers outside of the classroom.

Interfacing PIC Microcontrollers, 2nd Edition is a great introductory text for those starting out in this field and as a source reference for more experienced engineers. Martin Bates has drawn upon 20 years of experience of teaching microprocessor systems to produce a book containing an excellent balance of theory and practice with numerous working examples throughout. It provides comprehensive coverage of basic microcontroller system interfacing using the latest interactive software, Proteus VSM, which allows real-time simulation of microcontroller based designs and supports the development of new applications from initial concept to final testing and deployment. Comprehensive introduction to interfacing 8-bit PIC microcontrollers Designs updated for current software versions MPLAB v8 & Proteus VSM v8 Additional applications in wireless communications, intelligent sensors and more

One of the most thorough introductions available to the world's most popular microcontroller!

Demystify Coding with Embedded Programming

Embedded C Programming

PIC in Practice

Advanced PIC Microcontroller Projects in C

Microcontroller-Based Temperature Monitoring and Control

From USB to Rtos with the Pic18f Series

Describing the use of displays in microcontroller based projects, the author makes extensive use of real-world, tested projects. The complete details of each project are given, including the full circuit diagram and source code. The author explains how to program microcontrollers (in C language) with LED, LCD and GLCD displays; and gives a brief theory about the operation, advantages and disadvantages of each type of display. Key features: Covers topics such as: displaying text on LCDs, scrolling text on LCDs, simple GLCD based games, environmental monitoring using GLCDs (e.g. temperature displays) Uses C programming throughout the book - the basic principles of programming using C language and introductory information about PIC microcontroller architecture will also be provided Includes the highly popular PIC series of microcontrollers using the medium range PIC18 family of microcontrollers in the book. Provides a detailed explanation of Visual GLCD and Visual TFT with examples. Companion website hosting program listings and data sheets Contains the extensive use of visual aids for designing LED, LCD and GLCD displays to help readers to understand the details of programming the displays: screen-shots, tables, illustrations, and figures, as well as end of chapter exercises Using LEDs, LCDs, and GLCDs in Microcontroller Projects is an application oriented book providing a number of design projects making it practical and accessible for electrical & electronic engineering and computer engineering senior undergraduates and postgraduates. Practising engineers designing microcontroller based devices with LED, LCD or GLCD displays will also find the book of great use.

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

This book contains 50 fun and exciting projects for PIC microcontrollers such as a laser alarm, USB teething mouse, egg timer, youth repellent, sound switch, capacitive liquid level gauge, "finger in the water" sensor, guarding a room using a camera, mains light dimmer (110-240 volts), talking microcontroller and much more. You can use this book to build the projects for your own use. The clear explanations, schematics and even pictures of each project make this a fun activity. For each project the theory is discussed and why the project has been executed in that particular way. Several different techniques are discussed such as relay, alternating current control including mains, I2C, SPI, RS232, USB, pulse width modulation, rotary encoder, interrupts, infrared, analogue-digital conversion (and the other way around), 7-segment display and even CAN bus.

A practical guide to building PIC and STM32 microcontroller board applications with C and C++ programming Key FeaturesDiscover how to apply microcontroller boards in real life to create interesting IoT projectsCreate innovative solutions to help improve the lives of people affected by the COVID-19 pandemicDesign, build, program, and test microcontroller-based projects with the C and C++ programming languageBook Description We live in a world surrounded by electronic devices, and microcontrollers are the brains of these devices. Microcontroller programming is an essential skill in the era of the Internet of Things (IoT), and this book helps you to get up to speed with it by working through projects for designing and developing embedded apps with microcontroller boards.

DIY Microcontroller Projects for Hobbyists are filled with microcontroller programming C and C++ language constructs. You'll discover how to use the Blue Pill (containing a type of STM32 microcontroller) and Curiosity Nano (containing a type of PIC microcontroller) boards for executing your projects as PIC is a beginner-level board and STM-32 is an ARM Cortex-based board. Later, you'll explore the fundamentals of digital electronics and microcontroller board programming. The book uses examples such as measuring humidity and temperature in an environment to help you gain hands-on project experience. You'll build on your knowledge as you create IoT projects by applying more complex sensors. Finally, you'll find out how to plan for a microcontroller-based project and troubleshoot it. By the end of this book, you'll have developed a firm foundation in electronics and practical PIC and STM32 microcontroller programming and interfacing, adding valuable skills to your professional portfolio. What you will learnGet to grips with the basics of digital and analog electronicsDesign, build, program, and test a microcontroller-based systemUnderstand the importance and applications of STM32 and PIC microcontrollersDiscover how to connect sensors to microcontroller boardsFind out how to obtain sensor data via codingUse microcontroller boards in real life and practical projectsWho this book is for This STM32 PIC microcontroller book is for students, hobbyists, and engineers who want to explore the world of embedded systems and microcontroller programming. Beginners, as well as more experienced users of digital electronics and microcontrollers, will also find this book useful. Basic knowledge of digital circuits and C and C++ programming will be helpful but not necessary.

A Practical Approach

The ultimate project-based guide to building real-world embedded applications in C and C++ programming

Basic to Advanced

SD Card Projects Using the PIC Microcontroller

PIC Microcontroller Project in C

tinyAVR Microcontroller Projects for the Evil Genius

This book is a thoroughly practical way to explore the 8051 and discover C programming through project work. Through graded projects, Dogan Ibrahim introduces the reader to the fundamentals of microelectronics, the 8051 family, programming in C, and the use of a C compiler. The specific device used for examples is the AT89C2051 - a small, economical chip with re-writable memory, readily available from the major component suppliers. A working knowledge of microcontrollers, and how to program them, is essential for all students of electronics. In this rapidly expanding field many students and professionals at all levels need to get up to speed with practical microcontroller applications. Their rapid fall in price has made microcontrollers the most exciting and accessible new development in electronics for years - rendering them equally popular with engineers, electronics hobbyists and teachers looking for a fresh range of projects. Microcontroller Projects in C for the 8051 is an ideal resource for self-study as well as providing an interesting, enjoyable and easily mastered alternative to more theoretical textbooks. Practical projects that enable students and practitioners to get up and running straight away with 8051 microcontrollers A hands-on introduction to practical C programming A wealth of project ideas for students and enthusiasts

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.

* Details the PICmicro microcontroller * Covers designing the robot system, software development, and advanced programming * Explains microcontroller connections

* Expert assembly programmers: Learn how to write embedded control applications in C; Expert 8-bit programmers: Learn how to boost your applications with a powerful 16-bit architecture; Explore the world of embedded control experimenting with analog and digital peripherals, graphic, displays, video and sound--Cover.

30 Projects using PIC BASIC and PIC BASIC PRO

Embedded Computing and Mechatronics with the PIC32 Microcontroller

Programming PIC Microcontrollers with XC8

Programming 16-bit PIC Microcontrollers in C

With C and GNU Development Tools

For Beginners and Experts

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 IC2D in-circuit debugger, mikroCO 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

Combines the theory and the practice of applied digital control This book presents the theory and application of microcontroller based automatic control systems. Microcontrollers are single-chip computers which can be used to control real-time systems. Low-cost, single chip and easy to program, they have traditionally been programmed using the assembly language of the target processor. Recent developments in this field mean that it is now possible to program these devices using high-level languages such as BASIC, PASCAL, or C. As a result, very complex control algorithms can be developed and implemented on microcontrollers. Presenting a detailed treatment of low microcontrollers can be programmed and used in digital control applications, this book: * Introduces the basic principles of the theory of digital control systems. * Provides several working examples of real working mechanical, electrical and fluid systems. * Covers the implementation of control algorithms using microcontrollers. * Examines the advantages and disadvantages of various realization techniques. * Describes the use of MATLAB in the analysis and design of control systems. * Explains the sampling process, z-transforms, and the time response of discrete-time systems in detail. Practising engineers in industry involved with the design and implementation of computer control systems will find Microcontroller Based Applied Digital Control an invaluable resource. In addition, researchers and students in control engineering and electrical engineering will find this book an excellent research tool.

Microcontrollers are present in many new and existing electronic products, and the PIC microcontroller is a leading processor in the embedded applications market. Students and development engineers need to be able to design new products using microcontrollers, and this book explains from first principles how to use the universal development language C to create new PIC based systems, as well as the associated hardware interfacing principles. The book includes many source code listings, circuit schematics and hardware block diagrams. It describes the internal hardware of 8-bit PIC microcontroller, outlines the development systems available to write and test C programs, and shows how to use CCS C to create PIC firmware. In addition, simple interfacing principles are explained, a demonstration program for the PIC mechatronics development board provided and some typical applications outlined. *Focuses on the C programming language which is by far the most popular for microcontrollers (MCUs) *Features Proteus VSMg the most complete microcontroller simulator on the market, along with CCS PCM C compiler, both are highly compatible with Microchip tools *Extensive downloadable content including fully worked examples

Authored by two of the leading authorities in the field, this guide offers readers the knowledge and skills needed to achieve proficiency with embedded software.

with Interactive Hardware Simulation

Solar Energy Projects for the Evil Genius

C Programming for the PIC Microcontroller

Principles and Applications

PIC Microcontroller

Go beyond the jigsaw approach of just using blocks of code you don't understand and become a programmer who really understands how your code works. Starting with the fundamentals on C programming, this book walks you through where the C language fits with microcontrollers. Next, you'll see how to use the industrial IDE, create and simulate a project, and download your program to an actual PIC microcontroller. You'll then advance into the main process of a C program and see how to use the range of control registers inside the PIC. With C Programming for the PIC Microcontroller as your guide, you'll become a better programmer who can truly say they have written and understand the code they use. What You'll LearnUse the freely available MPLAX software Build a project and write a program using inputs from switches Create a variable delay with the oscillator sourceMeasure real-world signals using pressure, temperature, and speed inputsUse embedded programWho This Book Is For Hobbyists who want to move into the challenging world of embedded programming or students on an engineering course.

The Newnes Know It All Series takes the best of what our authors have written over the past few years and creates a one-stop reference for engineers involved in markets from communications to embedded systems and everywhere in this reference series as it is one of the most popular microcontrollers in the world and we have several superbly authored books on the subject. This material ranges from the basics to more a more advanced embedded engineer working with this microcontroller will be able to have any question answered by this compilation. He/she will also be able to work through real-life problems via the projects contained in the book. The Newnes Know It All Series presentation of theory, hard fact, and project-based direction will be a continual aid in helping the engineer to innovate in the workplace. Section I. An Introduction to PIC Microcontrollers Chapter 1. The PIC Microcontroller Family Chapter 2. Power Supply and the Clock Oscillator Section II. Programming PIC Microcontrollers using Assembly Language Chapter 4. Starting to Program-An Introduction to Assembler Chapter 5. Building Assembler Programs Chapter 6. Further Programming Techniques Chapter 7. Prototype Hardware Chapter 8. More PIC Applications and Devices Chapter 9. The PIC 1250x Series (8-pin PIC microcontrollers) Chapter 10. Intermediate Operations using the PIC 12F75 Chapter 11. Using Inputs Chapter 12. Digital Signal Processing using PicBasic Chapter 14. PicBasic and PicBasic Pro Programming Chapter 15. Simple PIC Projects Chapter 16. Moving On with the 16F876 Chapter 17. Communication Section IV. Programming PIC Microcontrollers using MBasic Chapter 18. MBasic Compiler and Development Boards Chapter 19. The Basics-Digital Input Chapter 20. The Basics-Output Chapter 21. Introductory Stepper Motors Chapter 22. Digital Temperature Sensors and Real-Time Programming PIC Microcontrollers using C Chapter 24. Getting Started Chapter 25. Programming Loops Chapter 26. More Loops Chapter 27. NUMB3RS Chapter 28. Interrupts Chapter 29. Taking a Look under the Hood over 900 pages of practical, hands-on content in one book! Huge market - as of November 2006 Microchip Technology Inc., a leading provider of microcontroller and analog semiconductors, produced its 5 BILLIONth PIC microcontroller! Several points of view, giving a unique perspective on the PIC microcontroller. This book is a collection of projects based around various microcontrollers from the PIC family. The reader is carefully guided through the book, from very simple to more complex projects in order to gradually build their knowledge about PIC microcontrollers and digital electronics in general. On completion of this book, the reader should be able to design and build their own projects and solve other practical problems in digital electronics. Many books in this area are theory based and do not give you any practical projects. This book is a hands-on guide to developing PIC microcontrollers. Courses are moving towards being more practically oriented and this book provides the ideal companion to students completing projects with PIC microcontrollers.

Teaches you things you need to know about the 16-bit PIC 24 chip. This title teaches you how to side-step common obstacles, solve real-world design problems efficiently, and optimize code for the PIC 24 features.

A practical guide to building embedded applications for low-powered devices, IoT, and home automation

Your Personal Introductory Course

123 PIC Microcontroller Experiments for the Evil Genius

Learning to Fly the PIC 24

A Project-based Approach

PIC

For the first time in a single reference, this book provides the beginner with a coherent and logical introduction to the hardware and software of the PIC32, bringing together key material from the PIC32 Reference Manual, Data Sheets, XC32 C Compiler User's Guide, Assembler and Linker Guide, MIPS32 CPU manuals, and Harmony documentation. This book also trains you to use the Microchip documentation, allowing better life-long learning of the PIC32. The philosophy is to get you started quickly, but to emphasize fundamentals and to eliminate "magic steps" that prevent a deep understanding of how the software you write connects to the hardware. Applications focus on mechatronics: microcontroller-controlled electromechanical systems incorporating sensors and actuators. To support a learn-by-doing approach, you can follow the examples throughout the book using the sample code and your PIC32 development board. The exercises at the end of each chapter help you put your new skills to practice. Coverage includes: A practical introduction to the C programming language Getting up and running quickly with the PIC32 An exploration of the hardware architecture of the PIC32 and differences among PIC32 families Fundamentals of embedded computing with the PIC32, including the build process, time- and memory-efficient programming, and interrupts A peripheral reference, with extensive sample code covering digital input and output, counter/timers, PWM, analog input, input capture, watchdog timer, and communication by the parallel master port, SPI, I2C, CAN, USB, and UART An introduction to the Microchip Harmony programming framework Essential topics in mechatronics, including interfacing sensors to the PIC32, digital signal processing, theory of operation and control of brushed DC motors, motor sizing and gearing, and other actuators such as stepper motors, RC servos, and brushless DC motors For more information on the book, and to download free sample code, please visit <http://www.nu32.org> Extensive, freely downloadable sample code for the NU32 development board incorporating the PIC32MX795F512H microcontroller Free online instructional videos to support many of the chapters

50 PIC Microcontroller ProjectsFor Beginners and Experts

Intelligent readers who want to build their own embedded computer systems-- installed in everything from cell phones to cars to handheld organizers to refrigerators-- will find this book to be the most in-depth, practical, and up-to-date guide on the market. Designing Embedded Hardware carefully steers between the practical and philosophical aspects, so developers can both create their own devices and gadgets and customize and extend off-the-shelf systems. There are hundreds of books to choose from if you need to learn programming, but only a few are available if you want to learn to create hardware. Designing Embedded Hardware provides software and hardware engineers with no prior experience in embedded systems with the necessary conceptual and design building blocks to understand the architectures of embedded systems. Written to provide the depth of coverage and real-world examples developers need, Designing Embedded Hardware also provides a road-map to the pitfalls and traps to avoid in designing embedded systems. Designing Embedded Hardware covers such essential topics as: The principles of developing computer hardware Core hardware designs Assembly language concepts Parallel I/O Analog-digital conversion Timers (internal and external) UART Serial Peripheral Interface Inter-Integrated Circuit Bus Controller Area Network (CAN) Data Converter Interface (DCI) Low-power operation This invaluable and eminently useful book gives you the practical tools and skills to develop, build, and program your own application-specific computers.

The PIC microcontroller from Microchip is one of the most widely used 8-bit microcontrollers in the world. In this book, the authors use a step-by-step and systematic approach to show the programming of the PIC18 chip. Examples in both Assembly language and C show how to program many of the PIC18 features such as timers, serial communication, ADC, and SPI.

PIC Microcontroller and Embedded Systems

PICAXE Microcontroller Projects for the Evil Genius

Programming in C

PIC Basic Projects

Programming the PIC Microcontroller with MBASIC

Creative DIY Microcontroller Projects with TinyGo and WebAssembly

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 gate 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 timer (using both cooperative and Round-robin scheduling) Unipolar stepper motor projects Bipolar stepper motor projects Closed-loop 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 circuit diagrams and 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 PIC16F27, PIC16F28, PIC16F29 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 PIC16F27, 16F28, PIC16F29 and the PIC12F627 models

Embedded Systems with PIC Microcontrollers: Principles and Applications is a hands-on introduction to the principles and practice of embedded system design using the PIC microcontroller. Packed with helpful examples and illustrations, the book provides an in-depth treatment of microcontroller design as well as programming in both assembly language and C, along with advanced topics such as techniques of connectivity and networking and real-time operating systems. In this one book students get all they need to know to be highly proficient at embedded systems design. This text combines embedded systems principles with applications, using the16F84A, 16F873A and the 18F242 PIC microcontrollers. Students learn how to apply the principles using a multitude of sample designs and design ideas, including a robot in the form of an autonomous guide vehicle. Coverage between software and hardware is fully balanced, with full presentation

given to microcontroller design and software programming, using both assembler and C. The book is accompanied by a companion website containing copies of all programs and software tools used in the text and a ' student ' version of the C compiler. This textbook will be ideal for introductory courses and lab-based courses on embedded systems, microprocessors using the PIC microcontroller, as well as more advanced courses which use the 18F series and teach C programming in an embedded environment. Engineers in industry and informed hobbyists will also find this book a valuable resource when designing and implementing both simple and sophisticated embedded systems using the PIC microcontroller. *Gain the knowledge and skills required for developing today's embedded systems, through use of the PIC microcontroller. *Explore in detail the 16F84A, 16F873A and 18F242 microcontrollers as examples of the wider PIC family. *Learn how to program in Assembler and C. *Work through sample designs and design ideas, including a robot in the form of an autonomous guided vehicle. *Accompanied by a CD-ROM containing copies of all programs and software tools used in the text and a ' student' version of the C complier.

PIC in Practice is a graded course based around the practical use of the PIC microcontroller through project work. Principles are introduced gradually, through hands-on experience, enabling students to develop their understanding at their own pace. Dave Smith has based the book on his popular short courses on the PIC for professionals, students and teachers at Manchester Metropolitan University. The result is a graded text, formulated around practical exercises, which truly guides the reader from square one. The book can be used at a variety of levels and the carefully graded projects make it ideal for colleges, schools and universities. Newcomers to the PIC will find it a painless introduction, whilst electronics hobbyists will enjoy the practical nature of this first course in microcontrollers. PIC in Practice introduces applications using the popular 16F84 device as well as the 16F627, 16F877, 12C508, 12C629 and 12C675. In this new edition excellent coverage is given to the 16F818, with additional information on writing and documenting software. Gentle introduction to using PICs for electronic applications Principles and programming introduced through graded projects Thoroughly up-to-date with new chapters on the 16F818 and writing and documenting programs

The Quintessential PIC® Microcontroller

Designing Embedded Hardware

Using Assembly and C for Pic18

An Introduction to Software and Hardware Interfacing

PIC Microcontrollers: Know It All

Programming Robot Controllers

FOLLOW THE SUN TO MORE EVIL FUN! Let the sun shine on your evil side - and have a wicked amount of fun on your way to becoming a solar energy master! In this guide, the popular Evil Genius format ramps up your understanding of powerful, important, and environmentally friendly solar energy - and shows you how to build real, practical solar energy projects you can use in your home, yard - even on the road! In Solar Energy Projects for the Evil Genius, high-tech guru Gavin Harper gives you everything you need to build more than 50 thrilling solar energy projects. You'll find complete, easy-to-follow plans, with clear diagrams and schematics, so you know exactly what's involved before you begin. Illustrated instructions and plans for 30 amazing pretested solar energy projects that assume no prior experience with energy science Explanations of the science and math behind each project Projects that progress in difficulty - from simple ones that may inspire science fair entries - all the way to converting a real home to solar energy Frustration-factor removal-needed parts are listed, along with sources-plus all the tools you'll need Solar Energy Projects for the Evil Genius provides you with complete plans, instructions, parts lists, and sources for: Crushed berries solar cell Solar "death ray" Solar powered hot dog cooker Solar furnace Sun-powered refrigerator Camping shower, oven, and more Hot recipes for solar cooking Water purifier Flashlight Garden lights Solar vehicle Environmentally friendly robot Much more!

This book guides a PIC user from their first sight of a PIC microcontroller to making the PIC work in the real world. Detailed examples show just how powerful and useful a PIC can be. Explanations are short and simple enough to let a reader get to grips with the PIC without fuss.

This hands-on book covers a series of exciting and fun projects with PIC microcontrollers. For example a silent alarm, a people sensor, a radar, a night buzzer, a VU meter, a RGB fader, a serial network, a poetry box and a sound super-compression. You can build over 50 projects for your own use. The clear explanations, schematics, and pictures of each project on a breadboard make this a fun activity. You can also use this book as a study guide. The technical background information in each project explains why the project is set up the way it is, including the use of datasheets. This way you'll learn a lot about the project and the microcontroller being used, and you can expand the project to suit your own need. . . . making it ideal for use in schools and colleges. This book can also be used as a reference guide. The explanation of the JAL programming language and all of the expansion libraries used is unique and found nowhere else. Using the index, you can easily locate projects that serve as examples for the main commands. But even after you have built all the projects it will still be a valuable reference guide to keep next to your PC. Four microcontrollers are discussed, the 12f675, 16f628, 16f876A, and 16f877, as well as how to migrate programs from one microcontroller to another. All software used in this book can be downloaded for free,

including all of the source code, a program editor, and the JAL open source programming language. This powerful and yet easy to learn language is used by hobbyists and professionals world-wide. A hardware kit is also available for purchase separately that contains all the parts to get you started, including a few microcontrollers. There is even a free support website with additional information, FAQ, and links.

CREATE FIENDISHLY FUN tinyAVR MICROCONTROLLER PROJECTS This wickedly inventive guide shows you how to conceptualize, build, and program 34 tinyAVR microcontroller devices that you can use for either entertainment or practical purposes. After covering the development process, tools, and power supply sources, tinyAVR Microcontroller Projects for the Evil Genius gets you working on exciting LED, graphics LCD, sensor, audio, and alternate energy projects. Using easy-to-find components and equipment, this hands-on guide helps you build a solid foundation in electronics and embedded programming while accomplishing useful--and slightly twisted--projects. Most of the projects have fascinating visual appeal in the form of large LED-based displays, and others feature a voice playback mechanism. Full source code and circuit files for each project are available for download. tinyAVR Microcontroller Projects for the Evil Genius: Features step-by-step instructions and helpful illustrations Allows you to customize each project for your own requirements Offers full source code for all projects for download Build these and other devious devices: Flickering LED candle Random color and music generator Mood lamp VU meter with 20 LEDs Celsius and Fahrenheit thermometer RGB dice Tengs on graphics display Spinning LED top with message display Contactless tachometer Electronic birthday blowout candles Fridge alarm Musical toy Batteryless infrared remote Batteryless persistence-of-vision toy Each fun, inexpensive Evil Genius project includes a detailed list of materials, sources for parts, schematics, and lots of clear, well-illustrated instructions for easy assembly. The larger workbook-style layout and convenient two-column format make following the step-by-step instructions a breeze. Make Great Stuff! TAB, an imprint of McGraw-Hill Professional, is a leading publisher of DIY technology books for makers, hackers, and electronics hobbyists.

Designing Embedded Systems with 32-Bit PIC Microcontrollers and MikroC

101 Spy Gadgets for the Evil Genius 2/E

Designing Embedded Systems with PIC Microcontrollers

Programming 8-bit PIC Microcontrollers in C

Interfacing PIC Microcontrollers

DIY Microcontroller Projects for Hobbyists

This book provides a hands-on introductory course on concepts of C programming using a PIC® microcontroller and CCS C compiler. Through a project-based approach, this book provides an easy to understand method of learning the correct and efficient practices to program a PIC® microcontroller in C language. Principles of C programming are introduced gradually, building on skill sets and knowledge. Early chapters emphasize the understanding of C language through experience and exercises, while the latter half of the book covers the PIC® microcontroller, its peripherals, and how to use those peripherals from within C in great detail. This book demonstrates the programming methodology and tools used by most professionals in embedded design, and will enable you to apply your knowledge and programming skills for any real-life application. Providing a step-by-step guide to the subject matter, this book will encourage you to alter, expand, and customize code for use in your own projects. A complete introduction to C programming using PIC microcontrollers, with a focus on real-world applications, programming methodology and tools Each chapter includes C code project examples, tables, graphs, charts, references, photographs, schematic diagrams, flow charts and compiler compatibility notes to channel your knowledge into real-world examples Online materials include presentation slides, extended tests, exercises, quizzes and answers, real-world case studies, videos and weblinks

Written specifically for readers with no prior knowledge of computing, electronics, or logic design. Uses real-world hardware and software products to illustrate the material, and includes numerous fully worked examples and self-assessment questions.

****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.***

WHIP UP SOME FIENDISHLY FUN PICAXE MICROCONTROLLER DEVICES "Ron has worked hard to explain how the PICAXE system operates through simple examples, and I'm sure his easy-to-read style will help many people progress with their PICAXE projects." --From the Foreword by Clive Seager, Revolution Education Ltd. This wickedly inventive guide shows you how to program, build, and debug a variety of PICAXE microcontroller projects. PICAXE Microcontroller Projects for the Evil Genius gets you started with programming and I/O interfacing right away, and then shows you how to develop a master processor circuit. From "Hello, World!" to "Hail, Octavius!" All the projects in Part I can be accomplished using either an M or M2 class PICAXE processor, and Part II adds 20X2-based master processor projects to the mix. Part III culminates in the creation of Octavius--a sophisticated robotics experimentation platform featuring a 40X2 master processor and eight breadboard stations which allow you to develop intelligent peripherals to augment Octavius' functioning. The only limit is your imagination! PICAXE Microcontroller Projects for the Evil Genius: Features step-by-step instructions and helpful photos and illustrations Allows you to customize each project for your purposes Offers all the programs in the book free for download Removes the frustration factor--all required parts are listed, along with sources Build these and other devious devices: Simple mini-stereo jack adapter USB5-PA3 PICAXE programming adapter Power supply Three-state digital logic probe 20X2 master processor circuit TV-R input module 8-bit parallel 16X2 LCD board Serialized 16X2 LCD Serialized 4X4 matrix keypad SPI 4-digit LED display Countdown timer Programmable, multi-function peripheral device and operating system Octavius--advanced robotics experimentation platform L298 dual DC motor controller board Each fun, inexpensive Evil Genius project includes a detailed list of materials, sources for parts, schematics, and lots of clear, well-illustrated instructions for easy assembly. The larger workbook-style layout and convenient two-column format make following the step-by-step instructions a breeze. Make Great Stuff! TAB, an imprint of McGraw-Hill Professional, is a leading publisher of DIY technology books for makers, hackers, and electronics hobbyists.

PIC Microcontrollers

PIC BASIC: Programming and Projects

Microcontroller Based Applied Digital Control

PIC Projects for Non-Programmers

Techniques and Applications of C and PIC MCUS