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Electronics World

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Wireless Sensor Networks

Some Assembly Required

C Programming for Arduino

Sams Teach Yourself Arduino Programming in 24 Hours

International Conference on Advancements of Medicine and Health Care through
Technology; 23 - 26 September 2009 Cluj-Napoca, Romania

STRUCTURED COMPUTER ORGANIZATION

Arduino Robotics

The Avr Microcontroller and Embedded Systems Using Assembly and C
Robot Programming

Embedded C Programming and the Atmel Avr (Book Only)

Personal Inertial Navigation System

Arduino Software Internals

Smart Home Applications realized with Scratch

Beginning Arduino Programming

Practical Arduino

Introduction to Embedded Systems, Second Edition

Pro Arduino

Journal of Vibration Testing and System Dynamics

Make

Arduino Workshop

Open-Source Electronics Platforms

Real-Time C++
The Transmitted Word
Programming Interactivity
Fog Computing in the Internet of Things

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BANKS FRENCH

Electronics World McGraw Hill
Professional

This book highlights state-of-the-art research on big data and the Internet of Things (IoT), along with related areas to ensure efficient and Internet-compatible IoT systems. It not only discusses big data security and privacy challenges, but also energy-efficient approaches to improving virtual machine placement in cloud computing environments. Big data

and the Internet of Things (IoT) are ultimately two sides of the same coin, yet extracting, analyzing and managing IoT data poses a serious challenge. Accordingly, proper analytics infrastructures/platforms should be used to analyze IoT data. Information technology (IT) allows people to upload, retrieve, store and collect information, which ultimately forms big data. The use of big data analytics has grown tremendously in just the past few years. At the same time, the IoT has entered the public consciousness, sparking people's imaginations as to what a fully

connected world can offer. Further, the book discusses the analysis of real-time big data to derive actionable intelligence in enterprise applications in several domains, such as in industry and agriculture. It explores possible automated solutions in daily life, including structures for smart cities and automated home systems based on IoT technology, as well as health care systems that manage large amounts of data (big data) to improve clinical decisions. The book addresses the security and privacy of the IoT and big data technologies, while also revealing the impact of IoT technologies on several scenarios in smart cities design. Intended as a comprehensive introduction, it offers in-depth analysis and provides scientists, engineers and

professionals the latest techniques, frameworks and strategies used in IoT and big data technologies.

Introduction to Embedded Systems
Apress

It's not enough to just build your Arduino projects; it's time to actually learn how things work! This book will take you through not only how to use the Arduino software and hardware, but more importantly show you how it all works and how the software relates to the hardware. *Arduino Software Internals* takes a detailed dive into the Arduino environment. We'll cover the Arduino language, hardware features, and how makers can finally ease themselves away from the hand holding of the Arduino environment and move towards coding in plain AVR C++ and talk to the

microcontroller in its native language.
What You'll Learn: How the Arduino Language interfaces with the hardware, as well as how it actually works in C++; How the compilation system works, and how kit can be altered to suit personal requirements; A small amount of AVR Assembly Language; Exactly how to set up and use the various hardware features of the AVR without needing to try and decode the data sheets - which are often bug ridden and unclear; Alternatives to the Arduino IDE which might give them a better workflow; How to build their own Arduino clone from scratch. Who This Book Is For: No expertise is required for this book! All you need is an interest in learning about what you're making with Arduinos and how they work. This book is also useful

for those looking to understand the AVR microcontroller used in the Arduino boards. In other words, all Makers are welcome!
Hydroinformatics No Starch Press
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
Advances in Automation, Signal Processing, Instrumentation, and Control

Springer Nature
 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 Tengou 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. *Control of Discrete-Event Systems* Delmar Pub Today, embedded systems are widely deployed in just about every piece of machinery from toasters to spacecrafts, and embedded system designers face many challenges. They are asked to

produce increasingly complex systems using the latest technologies, but these technologies are changing faster than ever. They are asked to produce better quality designs with a shorter time-to-market. They are asked to implement increasingly complex functionality but, more importantly, to satisfy numerous other constraints. To achieve these current goals, the designer must be aware of such design constraints and, more importantly, the factors that have a direct effect on them. One of the challenges facing embedded system designers is the selection of the optimum processor for the application in hand: single-purpose, general-purpose, or application specific. Microcontrollers are one member of the family of the application specific processors. Digital

System Design concentrates on the use of a microcontroller as the embedded system's processor and how to use it in many embedded system applications. The book covers both the hardware and software aspects needed to design using microcontrollers and is ideal for undergraduate students and engineers that are working in the field of digital system design.

AVR Programming Simon and Schuster
Create your own Arduino-based designs, gain in-depth knowledge of the architecture of Arduino, and learn the user-friendly Arduino language all in the context of practical projects that you can build yourself at home. Get hands-on experience using a variety of projects and recipes for everything from home automation to test equipment. Arduino

has taken off as an incredibly popular building block among ubicomp (ubiquitous computing) enthusiasts, robotics hobbyists, and DIY home automation developers. Authors Jonathan Oxer and Hugh Blemings provide detailed instructions for building a wide range of both practical and fun Arduino-related projects, covering areas such as hobbies, automotive, communications, home automation, and instrumentation. Take Arduino beyond "blink" to a wide variety of projects from simple to challenging Hands-on recipes for everything from home automation to interfacing with your car engine management system Explanations of techniques and references to handy resources for ubiquitous computing projects Supplementary material

includes a circuit schematic reference, introductions to a range of electronic engineering principles and general hints & tips. These combine with the projects themselves to make Practical Arduino: Cool Projects for Open Source Hardware an invaluable reference for Arduino users of all levels. You'll learn a wide variety of techniques that can be applied to your own projects.

Wearable Robots Springer

This textbook serves as an introduction to the subject of embedded systems design, using microcontrollers as core components. It develops concepts from the ground up, covering the development of embedded systems technology, architectural and organizational aspects of controllers and systems, processor models, and

peripheral devices. Since microprocessor-based embedded systems tightly blend hardware and software components in a single application, the book also introduces the subjects of data representation formats, data operations, and programming styles. The practical component of the book is tailored around the architecture of a widely used Texas Instrument's microcontroller, the MSP430 and a companion web site offers for download an experimenter's kit and lab manual, along with Powerpoint slides and solutions for instructors.

Digital System Design Springer

Modern cars are more computerized than ever. Infotainment and navigation systems, Wi-Fi, automatic software updates, and other innovations aim to

make driving more convenient. But vehicle technologies haven't kept pace with today's more hostile security environment, leaving millions vulnerable to attack. The *Car Hacker's Handbook* will give you a deeper understanding of the computer systems and embedded software in modern vehicles. It begins by examining vulnerabilities and providing detailed explanations of communications over the CAN bus and between devices and systems. Then, once you have an understanding of a vehicle's communication network, you'll learn how to intercept data and perform specific hacks to track vehicles, unlock doors, glitch engines, flood communication, and more. With a focus on low-cost, open source hacking tools such as Metasploit, Wireshark, Kayak, can-utils, and

ChipWhisperer, The Car Hacker's Handbook will show you how to: -Build an accurate threat model for your vehicle -Reverse engineer the CAN bus to fake engine signals -Exploit vulnerabilities in diagnostic and data-logging systems -Hack the ECU and other firmware and embedded systems -Feed exploits through infotainment and vehicle-to-vehicle communication systems -Override factory settings with performance-tuning techniques -Build physical and virtual test benches to try out exploits safely If you're curious about automotive security and have the urge to hack a two-ton computer, make The Car Hacker's Handbook your first stop.

[tinyAVR Microcontroller Projects for the Evil Genius](#) Apress

Bachelor Thesis from the year 2017 in the subject Computer Science - Programming, grade: 2,0, University of Applied Sciences Technikum Vienna, language: English, abstract: For many years, smart home applications have played a major role in our households. Real-time monitoring everywhere via the web, retracting the awning at sunset or lighting tasks by movement: the versatility and flexible adaptation is normally reserved for more expensive systems. The aim of this thesis is to develop a radio board that offers the possibility to integrate all devices in the frequency range of 433 MHz due to a learning function except modules using rolling code or hopping code. Furthermore, a software interface to the programming language Scratch was

developed, with which children and programming beginners can already program simple smart home applications without prior knowledge. In addition to the hardware and software requirements, the design of the circuit on a breadboard, the test of the prototype and the implementation of the software are described in this thesis. Finally, a simple smart home scenario will be programmed with the visual programming language Scratch. Arduino in Action L& H Scientific Publishing

Control of Discrete-event Systems provides a survey of the most important topics in the discrete-event systems theory with particular focus on finite-state automata, Petri nets and max-plus algebra. Coverage ranges from

introductory material on the basic notions and definitions of discrete-event systems to more recent results. Special attention is given to results on supervisory control, state estimation and fault diagnosis of both centralized and distributed/decentralized systems developed in the framework of the Distributed Supervisory Control of Large Plants (DISC) project. Later parts of the text are devoted to the study of congested systems through fluidization, an over approximation allowing a much more efficient study of observation and control problems of timed Petri nets. Finally, the max-plus algebraic approach to the analysis and control of choice-free systems is also considered. Control of Discrete-event Systems provides an introduction to discrete-event systems

for readers that are not familiar with this class of systems, but also provides an introduction to research problems and open issues of current interest to readers already familiar with them. Most of the material in this book has been presented during a Ph.D. school held in Cagliari, Italy, in June 2011.

Arduino For Dummies CRC Press

Start programming robots NOW! Learn hands-on, through easy examples, visuals, and code This is a unique introduction to programming robots to execute tasks autonomously. Drawing on years of experience in artificial intelligence and robot programming, Cameron and Tracey Hughes introduce the reader to basic concepts of programming robots to execute tasks without the use of remote controls.

Robot Programming: A Guide to Controlling Autonomous Robots takes the reader on an adventure through the eyes of Midamba, a lad who has been stranded on a desert island and must find a way to program robots to help him escape. In this guide, you are presented with practical approaches and techniques to program robot sensors, motors, and translate your ideas into tasks a robot can execute autonomously. These techniques can be used on today's leading robot microcontrollers (ARM9 and ARM7) and robot platforms (including the wildly popular low-cost Arduino platforms, LEGO® Mindstorms EV3, NXT, and Wowee RS Media Robot) for your hardware/Maker/DIY projects. Along the way the reader will learn how to: Program robot sensors and motors

Program a robot arm to perform a task
 Describe the robot's tasks and
 environments in a way that a robot can
 process using robot S.T.O.R.I.E.S.
 Develop a R.S.V.P. (Robot Scenario
 Visual Planning) used for designing the
 robot's tasks in an environment Program
 a robot to deal with the "unexpected"
 using robot S.P.A.C.E.S. Program robots
 safely using S.A.R.A.A. (Safe
 Autonomous Robot Application
 Architecture) Approach Program robots
 using Arduino C/C++ and Java languages
 Use robot programming techniques with
 LEGO® Mindstorms EV3, Arduino, and
 other ARM7 and ARM9-based robots.
[The Car Hacker's Handbook](#) Springer
 Atmel's AVR microcontrollers are the
 chips that power Arduino, and are the
 go-to chip for many hobbyist and

hardware hacking projects. In this book
 you'll set aside the layers of abstraction
 provided by the Arduino environment
 and learn how to program AVR
 microcontrollers directly. In doing so,
 you'll get closer to the chip and you'll be
 able to squeeze more power and
 features out of it. Each chapter of this
 book is centered around projects that
 incorporate that particular
 microcontroller topic. Each project
 includes schematics, code, and
 illustrations of a working project.
 Program a range of AVR chips Extend
 and re-use other people's code and
 circuits Interface with USB, I2C, and SPI
 peripheral devices Learn to access the
 full range of power and speed of the
 microcontroller Build projects including
 Cylon Eyes, a Square-Wave Organ, an

AM Radio, a Passive Light-Sensor Alarm, Temperature Logger, and more
Understand what's happening behind the scenes even when using the Arduino IDE
Arduino Wearable Projects "O'Reilly Media, Inc."

Written as a practical Packt book brimming with engaging examples, C Programming for Arduino will help those new to the amazing open source electronic platform so that they can start developing some great projects from the very start. This book is great for people who want to learn how to design & build their own electronic devices. From interaction design art school students to the do-it-yourself hobbyist, or even simply people who want to learn electronics, this book will help by adding a new way to design autonomous but

connected devices.

Internet of Things and Big Data Analytics
Toward Next-Generation Intelligence
MDPI

So, you've created a few projects with Arduino, and now it's time to kick it up a notch. Where do you go next? With Pro Arduino, you'll learn about new tools, techniques, and frameworks to make even more ground-breaking, eye-popping projects. You'll discover how to make Arduino-based gadgets and robots interact with your mobile phone. You'll learn all about the changes in Arduino 1.0, you'll create amazing output with openFrameworks, and you'll learn how to make games with the Gameduino. You'll also learn advanced topics, such as modifying the Arduino to work with non-standard Atmel chips and Microchip's

PIC32. Rick Anderson, an experienced Arduino developer and instructor, and Dan Cervo, an experienced Arduino gadgeteer, will give you a guided tour of advanced Arduino capabilities. If it can be done with an Arduino, you'll learn about it here.

The Hardware Hacker Pearson Education Projections for advances in medical and biological technology will transform medical care and treatment. This in great part is due to the result of the interaction and collaboration between medical sciences and engineering. These advances will result in substantial progress in health care and in the quality of life of the population. Frequently however, the implications of technologies in terms of increasing recurrent costs, additional required

support services, change in medical practice and training needs are underestimated. As a result, the widespread irrational use of technologies leads to a wastage of scarce resources and weakens health systems performance. To avoid such problems, a systematic and effective Health Technology System must be developed and introduced, requiring the support and commitment of decision makers of all levels of the health system. The MediTech2009 conference aims to provide a special opportunity for the Romanian professionals involved in basic research, R&D, industry and medical applications to exchange their know-how and build up collaboration in one of the most human field of science and techniques. The conference is intended

to be an international forum for researchers and practitioners interested in the advance in, and applications of biomedical engineering to exchange the latest research results and ideas in the areas covered by the topics (and not only!). We believe the reader will find the proceedings an impressive document of progress to date in this rapidly changing field.

Wireless Sensor Networks Maker Media, Inc.

Bring your ideas to life with the latest Arduino hardware and software. Arduino is an affordable and readily available hardware development platform based around an open source, programmable circuit board. You can combine this programmable chip with a variety of sensors and actuators to sense your

environment around you and control lights, motors, and sound. This flexible and easy-to-use combination of hardware and software can be used to create interactive robots, product prototypes and electronic artwork, whether you're an artist, designer or tinkerer. Arduino For Dummies is a great place to start if you want to find out about Arduino and make the most of its incredible capabilities. It helps you become familiar with Arduino and what it involves, and offers inspiration for completing new and exciting projects. • Covers the latest software and hardware currently on the market • Includes updated examples and circuit board diagrams in addition to new resource chapters • Offers simple examples to teach fundamentals needed to move

onto more advanced topics • Helps you grasp what's possible with this fantastic little board Whether you're a teacher, student, programmer, hobbyist, hacker, engineer, designer, or scientist, get ready to learn the latest this new technology has to offer!

Some Assembly Required Springer Science & Business Media

The Arduino is a cheap, flexible, open source microcontroller platform designed to make it easy for hobbyists to use electronics in homemade projects. With an almost unlimited range of input and output add-ons, sensors, indicators, displays, motors, and more, the Arduino offers you countless ways to create devices that interact with the world around you. In *Arduino Workshop*, you'll learn how these add-ons work and how

to integrate them into your own projects. You'll start off with an overview of the Arduino system but quickly move on to coverage of various electronic components and concepts. Hands-on projects throughout the book reinforce what you've learned and show you how to apply that knowledge. As your understanding grows, the projects increase in complexity and sophistication. Among the book's 65 projects are useful devices like: - A digital thermometer that charts temperature changes on an LCD -A GPS logger that records data from your travels, which can be displayed on Google Maps - A handy tester that lets you check the voltage of any single-cell battery - A keypad-controlled lock that requires a secret code to open You'll also

learn to build Arduino toys and games like: - An electronic version of the classic six-sided die - A binary quiz game that challenges your number conversion skills - A motorized remote control tank with collision detection to keep it from crashing Arduino Workshop will teach you the tricks and design principles of a master craftsman. Whatever your skill level, you'll have fun as you learn to harness the power of the Arduino for your own DIY projects. Uses the Arduino Uno board

C Programming for Arduino No Starch Press

Infrastructure for Homeland Security Environments Wireless Sensor Networks helps readers discover the emerging field of low-cost standards-based sensors that promise a high order of spatial and

temporal resolution and accuracy in an ever-increasing universe of applications. It shares the latest advances in science and engineering paving the way towards a large plethora of new applications in such areas as infrastructure protection and security, healthcare, energy, food safety, RFID, ZigBee, and processing. Unlike other books on wireless sensor networks that focus on limited topics in the field, this book is a broad introduction that covers all the major technology, standards, and application topics. It contains everything readers need to know to enter this burgeoning field, including current applications and promising research and development; communication and networking protocols; middleware architecture for wireless sensor networks; and security

and management. The straightforward and engaging writing style of this book makes even complex concepts and processes easy to follow and understand. In addition, it offers several features that help readers grasp the material and then apply their knowledge in designing their own wireless sensor network systems:

- * Examples illustrate how concepts are applied to the development and application of * wireless sensor networks
- * Detailed case studies set forth all the steps of design and implementation needed to solve real-world problems
- * Chapter conclusions that serve as an excellent review by stressing the chapter's key concepts
- * References in each chapter guide readers to in-depth discussions of individual topics

This book is ideal for

networking designers and engineers who want to fully exploit this new technology and for government employees who are concerned about homeland security. With its examples, it is appropriate for use as a coursebook for upper-level undergraduates and graduate students.

Sams Teach Yourself Arduino Programming in 24 Hours GRIN Verlag

Design, code, and build exciting wearable projects using Arduino tools

About This Book Develop an interactive program using sensors and actuators suitable with wearables

Understand wearable programming with the help of hands-on projects

Explore different wearable design processes in the Arduino platform and customize them to fit your individual needs

Who This Book Is For This book is intended for readers

who are familiar with the Arduino platform and want to learn more about creating wearable projects. No previous experience in wearables is expected, although a basic knowledge of Arduino programming will help. What You Will Learn Develop a basic understanding of wearable computing Learn about Arduino and its compatible prototyping platforms suitable for creating wearables Understand the design process surrounding the creation of wearable objects Gain insight into the materials suitable for developing wearable projects Design and create projects including interactive bike gloves, GPRS locator watch, and more using various kinds of electronic components Discover programming for interactivity Learn how to connect and interface wearables' with

Bluetooth and WiFi Get your hands dirty with your own personalized designs In Detail The demand for smart wearable technologies is becoming more popular day by day. The Arduino platform was developed keeping wearables, such as watches that track your location or shoes that count the miles you've run, in mind. It is basically an open-source physical computing platform based on a simple microcontroller board and a development environment in which you create the software for the board. If you're interested in designing and creating your own wearables, this is an excellent platform for you. This book provides you with the skills and understanding to create your own wearable projects. The book covers different prototyping boards which are

compatible with the Arduino platform and are suitable for creating wearable projects. Each chapter of the book covers a project in which knowledge and skills are introduced gradually, making the book suitable for all kinds of readers. You begin your journey with understanding electronic components, including LEDs and sensors, to get yourself up to scratch and comfortable with different components. You will then gain hands-on experience by creating your very first wearable project, a pair of interactive bike gloves that help you cycle at night. This is followed by a project making your own funky LED glasses and a cool GPS watch. You'll also delve into other projects including creating your own keyless doorlock, wearable NFC tags, a fitness-tracking

device, and a WiFi-enabled spark board. The final project is a compilation of the previous concepts used where you make your own smart watch with fitness tracking, internet-based notifications, GPS, and of course time telling. Style and approach This is a project-based book that introduces each project to the reader step-by-step. Each project starts out by covering all the components individually, and then explains how to combine them into interactive objects. Each project contains an easy-to-follow guide to design and implement the electronics into wearable objects.

[International Conference on Advancements of Medicine and Health Care through Technology; 23 - 26 September 2009 Cluj-Napoca, Romania](#)
Apress

Summary Arduino in Action is a hands-on guide to prototyping and building electronics using the Arduino platform. Suitable for both beginners and advanced users, this easy-to-follow book begins with the basics and then systematically guides you through projects ranging from your first blinking LED through connecting Arduino to devices like game controllers or your iPhone. About the Technology Arduino is an open source do-it-yourself electronics platform that supports a mind-boggling collection of sensors and actuators you can use to build anything you can imagine. Even if you've never attempted a hardware project, this easy-to-follow book will guide you from your first blinking LED through connecting Arduino to your iPhone. About this Book Arduino

in Action is a hands-on guide to prototyping and building DIY electronics. You'll start with the basics—unpacking your board and using a simple program to make something happen. Then, you'll attempt progressively more complex projects as you connect Arduino to motors, LCD displays, Wi-Fi, GPS, and Bluetooth. You'll explore input/output sensors, including ultrasound, infrared, and light, and then use them for tasks like robotic obstacle avoidance. Arduino programs look a lot like C or C++, so some programming skill is helpful. What's Inside Getting started with Arduino—no experience required! Writing programs for Arduino Sensing and responding to events Robots, flying vehicles, Twitter machines, LCD displays, and more! Purchase of the print book

includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Authors Martin Evans is a professional developer, a lifelong electronics enthusiast, and the creator of an Arduino-based underwater ROV. Joshua Noble is an author and creative technologist who works with smart spaces. Jordan Hochenbaum uses Arduino to explore musical expression and creative interaction. Table of Contents Part 1 Getting started Chapter

1 Hello Arduino Chapter 2 Digital input and output Chapter 3 Simple projects: input and output Part 2 Putting Arduino to work Chapter 4 Extending Arduino Chapter 5 Arduino in motion Chapter 6 Object detection Chapter 7 LCD displays Chapter 8 Communications Chapter 9 Game on Chapter 10 Integrating the Arduino with iOS Chapter 11 Making wearables Chapter 12 Adding shields Chapter 13 Software integration