Programming the Internet of Things: Learn how to program the Internet of Things with this hands-on guide. By breaking down IoT programming challenges into step-by-step tasks, author and educator Tommy King shows you how to learn and build your own IoT solution from device to cloud. This practical book walks you through tooling, development environment setup, solution design, and implementation. You'll learn how to design your ecosystem, as well as how to tackle integration challenges that crop up when implementing your own IoT solution. Whether you're an engineer or a student learning the basics of the IoT, this tech-savvy executive book incorporating a companion embassy on an IoT journey, or a programmer building your own smart house solution, this practical book will help you get started. Design an end-to-end solution that implements an IoT use case. Set up an IoT-centric development and testing environment. Organize your software design by creating abstractions in Python and Java using MQTT, CoAP, and other protocols to connect IoT devices and services. Create a custom JSON-based data format that's consumable across a range of platforms and services. Use cloud services to support your IoT ecosystem and provide business value for stakeholders.

Emerging Trends and Applications of the Internet of Things Use the Raspberry Pi and modern computing techniques to build industrial Internet of Things systems. Principles and theoretical aspects of IoT technologies combine with hands-on projects leading to detailed descriptions of several industrial IoT applications. This book presents real-life IoT applications based on the Raspberry Pi, beyond the relatively simplistic demos built for educational purposes or hobbies. Your journey will take you from being an enthusiast to actually deploying IoT applications. What You Will Learn: Connect an Arduino device to the Internet Creating an Arduino circuit that senses temperature Publishing data collected from an Arduino to a server to an MQTT broker Setting up channels in Xively Setting up an app in IBM Bluematrix Using Node-RED to define complex flows Publishing data visualization in IoT explore you could go in any direction according to your specific development needs and desires. Readers are introduced to the building blocks of IoT, and then deploy those principles to building a variety of useful projects. Projects in the book gradually introduce the reader to key topics such as internet connectivity with Arduino, common IoT protocols, custom web visualization, and Android apps that receive sensor data on-demand and in real-time. IoT development enthusiasts of all ages will enjoy this book by its side when developing Android-based devices. What You'll Learn: Connect an Arduino device to the Internet. Creating an Arduino circuit that senses temperature. Publishing data collected from an Arduino to a server to an MQTT broker. Setting up channels in Xively. Setting up an app in IBM Bluematrix. Using Node-RED to define complex flows. Publishing data visualization in IoT. book. This book explores not only the relatively simplistic demos built for educational purposes or hobbyists, but also the incredible potential of this technology to transform the way we live and work. It covers everything from the basics of IoT development to more advanced topics such as advanced networking and secure communication. The book is designed to be accessible to beginners while also providing valuable insights for experienced developers. Whether you're just getting started with IoT or looking to expand your knowledge, this book has something for you.
Programming the Internet of Things Radio frequency identification (RFID) is a technology that is rapidly gaining popularity due to its several benefits in a wide area of applications like inventory tracking, supply chain management, automated manufacturing, healthcare, etc. The benefits of implementing RFID technologies can be seen in terms of increased operational efficiency, improved asset management, reduced costs, etc. (companies provide to the customers). Leading to considerable operational and strategic benefits, RFID technology continues to bring new levels of intelligence and information, strengthening the experience of all participants in this research domain, and serving as a valuable authentication technology. We hope this book will be useful for engineers, researchers and industry personnel, and provide them with some new ideas to address current and future issues they might be facing.

Installing Your IoT Platform McKinsey Global Institute predicts Internet of Things (IoT) could generate up to $11.1 trillion a year in economic value by 2025. Gartner Research Company expects 20 billion inter-connected devices by 2020 and, as per Gartner, the IoT will have a significant impact on the economy by transforming many enterprises into digital businesses and facilitating new business models, improving efficiency and increasing employee and customer engagement. It's clear from above and our research that the IoT is a game changer and will have huge positive impact in foreseeable future. In order to harvest the benefits of IoT revolution, we need to consider what better the mission of your IoT project must be, and how to guide a new team with the skills and tools to fully utilize IoT capabilities. The book introduces essential IoT concepts from the perspectives of full-scale software development with the emphasis on creating niche blue ocean products. It also: Outlines a fundamental full stack architecture for IoT Describes various development technologies in each IoT layer Explains IoT solution development from Product management perspective Extensively covers security and applicable threat models as part of IoT stack The book provides details of several IoT reference architectures with emphasis on data integration, edge analytics, cluster architectures and closed loop responses.

Demystifying Internet of Things Security Develop a variety of projects and connect them to microcontrollers and web servers using the lightweight messaging protocol MQTT Key Features Leverage the power of MQTT to build a pet food dispenser, e-ink to-do list, and a pro-activity cube Learn about technologies like laser cutting, 3D printing, and PCB production for building robust prototypes Explore practical uses cases to gain an in-depth understanding of MQTT Book Description MQ Telemetry Transport (MQTT) is a lightweight messaging protocol for smart devices that can be used to build exciting, highly scalable Internet of Things (IoT) projects. This book will get you started with a quick introduction to the concepts of IoT and MQTT and explain how the latter can help you build your own internet-connected prototypes. As you advance, you’ll gain insights into how microcontrollers communicate, and you’ll get to grips with the different messaging protocols and techniques involved. Once you are well-versed with the essential concepts, you’ll be able to put what you’ve learned into practice by building three projects from scratch, including an automatic pet food dispenser and a smart e-ink to-do display. You’ll also discover how to present your own prototypes professionally. In addition to this, you’ll learn how to use technologies from third-party web service providers, along with other rapid prototyping technologies, such as laser cutting, 3D printing, and PCB production. By the end of this book, you’ll have gained hands-on experience in using MQTT to build your own IoT prototypes. What you will learn Exploring IoT with Arduino Outlining your project with MQTT Describing your decisions in a smart way Creating basic IoT prototypes Discover how you can make websites interact with your prototypes Learn about MQTT servers, libraries, and apps Explore tools such as laser cutting and 3D printing in order to build robust prototype cases Who this book is for If you are an IoT developer or enthusiast who wants to start building IoT prototypes using MQTT, this book is for you. Basic knowledge of programming with Arduino will be useful.

Building the Internet of Things Summary A hands-on guide that will teach you how to design and implement scalable, flexible, and open IoT solutions using web technologies. This book focuses on providing the right balance of theory, code samples, and practical examples to enable you to successfully connect all sorts of devices to the web and to expose their services and data over REST APIs. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Because the Internet of Things is still new, there is no universal application protocol. Fortunately, the IoT can take advantage of the web, where IoT protocols connect applications thanks to universal and open APIs. About the Book Building the Web of Things is a guide to using cutting-edge web technologies to build the IoT. This step-by-step book teaches you how to use web protocols to connect real-world devices to the web, including the Semantic and Social Web. Along the way you’ll gain vital concepts as you follow instructions for making Web of Things devices. By the end, you’ll have the practical skills you need to implement your own web-connected products and services. What’s Inside Introduction to IoT protocols and devices Connect electronic actuators and sensors (GPIO) to a Raspberry Pi Implement standard REST and Pub/Sub APIs with Node.js on embedded systems Learn about IoT protocols like MQTT and CoAP and integrate them to the Web of Things Use the Semantic Web (JSON-LD, RDFa, etc.) to discover and find Web Things Share Things via Social Networks to create the Social Web of Things Build a web-based smart home with HTTP and WebSocket Compose physical mashups with EVERYTHING, Node-RED, and IFTTT About the Reader For both seasonned programmers and those with only basic programming skills. About the Authors Dominique Guinard and Vlad Trifa pioneers and cofounders of Evrythng, a company that powers billions of Web of Things, Table of Contents 1.0 BASICS OF THE IOT AND THE WOT From the Internet of Things to the Web of Things Hello, World Web Wide Web of Things Node.js for the Web of Things Getting started with embedded systems Building networks of Things PART 2 BUILDING THE WOT Access: Web APIs for Things Implementing Web Things Find: Describe and discover Web Things Share: Securing and sharing Web Things Hands-On Internet of Things with MQTT This book describes the building blocks and introductory business models for Internet of Things (IoT). The author provide an overview of the entire IoT architecture and constituent layers, followed by detail description of each block. Various inter-connecting technologies and sensors are discussed in context of IoT networks. In addition to this, concepts of Big Data and Fog Computing are presented and characterized as per data generated by vast IoT applications. Smart parking system and context aware services are presented as an hybrid model of cloud and Fog Afterwards, various IoT applications and business models are discussed. Finally, author summarizes the IoT building blocks and identify research issues in each, and suggest potential research projects worthy of pursuing.

The Internet of Things: Breakthroughs in Research and Practice The ubiquity of modern technologies has allowed for increased connectivity between people and devices across the globe. This connected infrastructure of networks creates numerous opportunities for applications and uses. The Internet of Things: Breakthroughs in Research and Practice is an authoritative reference source for the latest academic material on the interconnectivity of networks and devices in the digital era and examines best practices for integrating this advanced connectivity across multiple fields. Featuring extensive coverage on innovative perspectives, such as secure computing, regulatory standards, and trust management, this book is ideally designed for engineers, researchers, professionals, graduate students, and practitioners seeking scholarly insights on the Internet of Things. Commercial and Industrial Internet of Things Applications with the Raspberry Pi A project-based guide to enhance your capability to build smart IoT projects About This Book Learn how to extract and analyse data from physical devices and build smart IoT projects Master the skills of building enticing projects such as a neural network autonomous car, computer vision from a camera, and cloud-based IoT applications This project-based guide leverages revolutionary computing chips such as Raspberry Pi and Arduino, and so on Learn each on making one project, then this book will lead you to have a basic knowledge of Python.What You Will Learn” Implement data science in your IoT projects and build a smart temperature controller” Create a simple machine learning application and implement decision system concepts” Develop a vision machine using OpenCV” Build a robotic car with manual and automatic control” Implement speech modules with your own voice commands for IoT projects” Connect IoT to a cloud-based servers”DetailInternet of Things (IoT) is a groundbreaking technology that involves connecting EVERYTHING, a physical-scale全社会 to the powerful billions of Web of Things. Table of Contents 1.0 BASICS OF THE IOT AND THE WOT From the Internet of Things to the Web of Things Hello, World Web Wide Web of Things Node.js for the Web of Things Getting started with embedded systems Building networks of Things PART 2 BUILDING THE WOT Access: Web APIs for Things Implementing Web Things Find: Describe and discover Web Things Share: Securing and sharing Web Things Hands-On Internet of Things with MQTT This book describes the building blocks and introductory business models for Internet of Things (IoT). The author provide an overview of the entire IoT architecture and constituent layers, followed by detail description of each block. Various inter-connecting technologies and sensors are discussed in context of IoT networks. In addition to this, concepts of Big Data and Fog Computing are presented and characterized as per data generated by vast IoT applications. Smart parking system and context aware services are presented as an hybrid model of cloud and Fog Afterwards, various IoT applications and business models are discussed. Finally, author summarizes the IoT building blocks and identify research issues in each, and suggest potential research projects worthy of pursuing.

Building the Internet of Things with the Arduino Apress is proud to announce that Rethinking the Internet of Things was a 2014 Jolt Award Finalist, the highest honor for a programming book. And the amazing part is that there is no code in the book. Over the next decade, most devices connected to the Internet will not be used by people in the familiar way that personal computers, tablets and smart phones are. Billions of interconnected devices will be monitoring the environment, transportation systems, factories, farms, forests, utilities, soil and weather conditions, oceans and resources. Many of these sensors and actuators will be networked into autonomous networks, with much of the information being exchanged machine-to-machine directly and without human involvement. Machine-to-machine communications are typically terse. Most sensors and actuators will report small pieces of information in “chirps”. Burdening these devices with current network protocol stacks is inefficient, unnecessary and unduly increases their cost of ownership. This must change. The architecture of the Internet of Things must...
evolve now by incorporating simpler protocols toward at the edges of the network, or remain forever inefficient. Rethinking the Internet of Things describes reasons why we must rethink current approaches to the Internet of Things. Appropriate architectures that will coexist with existing networking protocols are described in detail. What will be asked of the PWocket of Integrations{box, Wi-Fi, and Devices, along with their interconnections, is explored. What you’ll learn Discusses the difference between the “normal” Internet and the Internet of Things. Describes a new architecture and its components in the “chirp” context. Explains the shortcomings of IP for IoT. Describes the anatomy of the IoT. Describes how to build a suitable network to maximize the amazing potential of the IoT. Who this book is for Thought leaders, executives, architectural, standards and development leaders in the evolving IoT industry. Corporations and organizations whose commercial products could be adapted simply to be functioning devices on the IoT, could save as much as $100 billion dollars in unnecessary costs and development expenses. Why this book was written by leading experts in the field of the Internet of Things (IoT). The preface introduces the idea of a new, simplified architectural approach that draws on nature. Chapter 1: Different Out Here Chapter Goal: Reader should understand the difference between traditional Internet networking and the Internet of Things. What are the unique characteristics of the IoT that demand a new architecture? Why traditional architectures such as IP are a poor fit. Characterized architectural approaches Chapter Goal: The reader will understand what makes an architecture different. The differences between the two architectures will be explored. What will be learned Reader will learn the characteristics and functionality of the Propagator node in the IoT Architecture. Some communications principles are introduced which will be more fully explored in Chapter 6. Chapter 2: Small, Big, Data, and Human Interaction Chapter Goal: Reader will understand the role of Integrator functions in the IoT, the point in the IoT where humans interact to gain information from IoT data and to set parameters and control end devices. An explanation of zones of interest and neighborhoods, with a discussion of incorporating “small data” from chips into big data analysis. Chapter 6: An Architecture for the Frontier Chapter Goal: Reader will gain an understanding of the challenges inherent in a communications architecture for the massive scale of the IoT. Exploiting the opportunities inherent in a machine-to-machine environment, a much simpler architecture is described in detail that readily scales to the required scope. This chapter adds technical depth to ideas introduced in Chapters 3-5. Chapter 7: IoT Examples and Applications Chapter Goal: Reader will learn about current and emerging applications in the Internet of Things. Reference will be made to new applications enabled by the simplified architecture described in this book that are difficult or not possible with traditional networking protocols. Chapter B: Interplay between the Internet of Things and the IoT Deployment. Standards based versus ad hoc approaches, call for industry cooperation and consortia. Intermediate incremental steps to broader adoption.

Building the Internet of Things The widespread availability of technologies has increased exponentially in recent years. This has created more connectivity and innovation in the way we conduct our lives. Emerging Trends and Applications are an essential reference for anyone looking to understand and implement the latest scholarly research on the surge of connectivity between computing devices in modern society, as well as the benefits and challenges of this. Featuring extensive coverage on a broad range of topics such as cloud computing, spatial cognition, and ultrasonic sensing, this book is ideally designed for researchers, professionals, and academicians seeking current research on upcoming advances in the Internet of Things (IoT).

Internet of Things Build amazing Internet of Things projects using the ESP8266 Wi-Fi chip About This Book Get to know the powerful and low cost ESP8266 and build interesting projects in the field of Internet of Things Configure your ESP8266 to the cloud and explore the networkable modules that will be utilized in the IoT projects This step-by-step guide teaches you the basics of IoT with ESP8266 and makes your life easier Who This Book Is For This book is for those who want to build powerful and inexpensive IoT projects using the ESP8266 Wi-Fi chip, including those who are new to IoT, or those who already have experience with other platforms such as Arduino or Raspberry Pi. ESP8266 boards communicate with each other via the cloud Send notifications to users of the ESP8266 via email, text, or push notifications Build a physical device that indicates the current price of Bitcoin Build a simple home automation system that can be controlled from the cloud Create your own cloud platform to control ESP8266 devices In Detail The Internet of Things (IoT) is the network of objects such as physical things embedded with electronics, software, sensors, and connectivity, enabling data exchange. ESP8266 is a low cost WiFi microcontroller chip that has the ability to empower IoT and helps the exchange of information among various connected objects. ESP8266 consists of networkable microcontroller modules, and with this low cost, ESP8266 is booming. This book will help you get started with the ESP8266 WiFi chip platform and get you building exciting projects. Kickstarter with an introduction to the ESP8266 chip, we will demonstrate how to build a simple LED using the ESP8266. You will then learn how to read, send, and monitor data from the cloud. Next, you’ll learn how to control your devices remotely from anywhere in the world. Furthermore, you’ll get to know how to use the ESP8266 to interact with web services such as Twitter and Facebook. Finally, you’ll be introduced to the world of machine-to-machine communication. The latter part of the book focuses more on projects, including a door lock controlled from the cloud, building a physical Bitcoin ticker, and doing wireless gardening. You’ll learn how to build a cloud-based ESP8266 home automation system and a cloud-controlled ESP8266 robot. Finally, you’ll discover how to build your own cloud platform to control ESP8266 devices. With this book, you will be able to create and program Internet of Things projects using the ESP8266 WiFi chip. Style and approach This is a step-by-step guide that provides great IoT projects with ESP8266. All the key concepts are explained with the help of examples and demonstrations of the projects.

Getting Started with the Internet of Things Discover how to build your own smart Internet of Things projects and bring a new degree of interconnectivity to your world About This Book Learn how to extract and analyze data from physical devices and build smart IoT projects Master the skills of building emerging projects such as a neural network autonomous car, computer vision through a camera, and cloud-based IoT applications This project-based guide leverages revolutionary computing chips such as Raspberry Pi, Arduino, and so on Who This Book Is For If you are hobbyist who is keen on making smart IoT projects, then this book is for you. You should have a basic knowledge of Python. What You Will Learn Implement data science in your IoT projects and build a smart temperature controller Create a simple machine learning application and implement decision system concepts Develop a vision machine using OpenCV Build a robot car with manual and automatic control Learn common ESP8266 modules with your ESP8266 to build projects in Detail Internet of Things Build amazing Internet of Things projects using the ESP8266 Wi-Fi chip About this book The amazing part is that there is no code in the book. Over the next decade, most devices connected to the Internet will not be people in the familiar way that personal computers, tablets and smart phones are. Billions of interconnected devices will be monitoring the environment, transportation systems, factories, farms, forests, and urban and other conditions, as well as interacting with resources, read and write into databases, and disseminate the information being exchanged machine-to-machine directly and without human involvement. Machine-to-machine communications are typically terse. Most sensors and actuators will report or act upon small pieces of information.”chirps”. Burdening these devices with current network protocol stacks is inefficient, unnecessary and unduly increases their cost of ownership. This must change. The architecture of the Internet of Things must evolve now by incorporating simpler protocols toward at the edges of the network, or remain forever inefficient. Rethinking the Internet of Things describes reasons why we must rethink current approaches to the Internet of Things. Appropriate architectures that will coexist with existing networking protocols are described in detail. An architecture comprised of integrator.
Enabling the Internet of Things

Connect your organization to the Internet of Things with solid strategy and a proven implementation plan Building Internet of Things provides front-line business decision makers with a practical handbook for capitalizing on this latest transformation. Focusing on the business implications of Internet of Things (IoT), this book describes the sheer impact, spread, and opportunities arising every day, and how business leaders can implement IoT today to realize tangible business advantages. The discussion delves into IoT from a business, strategy and organizational standpoint, and includes use-cases that illustrate the ripple effect that this latest disruption brings; you’ll learn how to fashion a viable IoT plan that works with your organization's strategy and direction, and how to implement that strategy successfully by integrating IoT into your organization tomorrow. For business managers, the biggest question surrounding the Internet of Things is what to do with it. This book examines the way IoT is being used today—and will be used in the future—to help you craft a robust plan for your organization. Grasp the depth and breadth of the Internet of Things Create a secure IoT recipe that aligns with your company’s strategy Capitalize on advances while avoiding disruption from others Leverage the technical, organizational, and social impact of IoT In the past five years, the Internet of Things has become the new frontier of technology that has everyone asking what the future holds. The Internet of Things (IoT) introduces a new business model that promises to transform the way we live and work, and offers businesses the opportunity to be at the forefront of innovation and growth.

Rethinking the Internet of Things

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Building Arduino Projects for the Internet of Things Summary A hands-on guide that will teach how to design and implement scalable, flexible, and open IoT solutions to solve business challenges. This book will teach you the essential techniques, best practices, and practical examples to enable you to successfully build and deploy IoT projects. It includes sections on building IoT projects using the Arduino platform and provides the foundational knowledge needed to implement IoT projects.

Building the Web of Things 60 recipes will help you build smart IoT solutions and surprise yourself with captivating IoT projects you thought only existed in Bond movies! About This Book: This book offers key solutions and advice to address the hiccup faced when working on Arduino-based IoT projects in the real world. Take your existing skills and capabilities to the next level by building challenging IoT applications with ease. Be the tech disruptor you always wanted to be with key recipes that help you solve Arduino IoT related problems smarter and faster. Put IoT to work through recipes on building Arduino-based devices that take control of your home, health, and life! Who This Book Is For: This book is primarily for tech enthusiasts and early IoT adopters who would like to make the most of IoT and address the challenges encountered while developing IoT-based applications with Arduino. This book is also good for developers with basic electronics knowledge who need help to successfully build Arduino projects. What You Will Learn: Monitor several Arduino boards simultaneously - Tweet sensor data directly from your Arduino to Twitter - Use the Arduino IDE to generate POKE protocol messages and send them over your own network - Control your entire home from a single dashboard - Make a GPS tracker that you can track in Google Maps - Build a live camera that streams directly from your robot - Use the Arduino IDE to control wall directly from virtual buttons - Navigate, plot your location, and build a map - Build the IoT aware virtual camera

Meta Products Break down the misconceptions of the Internet of Things by examining the different security building blocks available in Intel Architecture (IA) based IoT platforms. This open access book reviews the threat pyramid, secure boot, chain of trust, and the SW stack leading up to defense-in-depth. The IoT presents unique challenges in implementing security and Intel has both CPU and Isolated Security Engine capabilities to simplify it. This book explores the challenges to secure these devices to make them immune to different threats originating from within and outside the network. The requirements and robustness rules to protect the asset are no single blanket security recipe. Demystifying Internet of Things Security would present roadblocks for security professionals and provides overview of different security solutions What You’ll Learn: secure devices, immunizing against different threats originating from inside and outside the network Gather an overview of the different security building blocks available in Intel Architecture (IA) based IoT platforms Understand the threat pyramid, secure boot, chain of trust, and the software stack leading up to defense-in-depth. Who This Book Is For: Strategists, developers, architects, and managers in the embedded and Internet of Things (IoT) space trying to understand and implement the security in the IoT devices/platforms.
Internet of Things: Learn how to program the Internet of Things with this hands-on guide. By breaking down IoT programming complexities in step-by-step, building-block fashion, author and educator Andy King shows you how to design and build your own full-stack, end-to-end IoT solution—from device to cloud. This practical book is for beginners experimenting with a typical IoT architecture implementation. You'll learn about the Internet of Things from basic principles to how to tackle integration challenges that crop up when implementing your own IoT solution. Whether you’re an engineering student learning the basics of the IoT, a tech-savvy executive looking to better understand the nuances of IoT technology stacks, or a programmer building your own smart house solution, this practical book will help you get started. Design an end-to-end solution that implements an IoT use case Set up an IoT-centric development and testing environment Organize your software design by creating abstractions in Python and Java Use MQTT, CoAP, and other protocols to connect IoT devices and services Create a custom JASON-based data format that’s consumable across a range of platforms and services Use cloud services to support your IoT ecosystem and provide business value for stakeholders

**Smart Internet of Things Projects**

Get started programming Rust applications for the Internet of Things (IoT). This book is a programming skills migration book that teaches you the Rust programming techniques most useful for IoT applications. You'll step through from server to board development in creating a set of IoT applications. In Rust for the IoT, you'll learn how to build a modern server side application using Rust on the backend. Then you'll use Docker and Kubernetes to deploy these to a managed cloud. Finally you will use a Raspberry Pi with a SenseHat and Camera to capture the world around you and send that information to the cloud. While you will be able to follow along without any cloud or hardware, to make the most of it we recommend a cloud and IoT connected Raspberry Pi. After building the framework and installing the necessary Python packages, you'll then deploy a modern Rust backend complete with handling eventual consistency and interacting via a Graphql interface Use the Raspberry Pi to set up a cloud to cloud IoT device that can easily deploy around the house. Capture temperature, video, and use the interactive joystick to interact with the software you've created using OpenCV to perform facial detection from the Pi's camera and save that information to the cloud. Create deployable helm charts for the cloud, and for the device create complete SOCs that allow you to easily deploy the Pi's OS + custom software. This book is for you who need to have a basic understanding of cloud applications at a minimum and as a basis of Rust coding. This book is for those interested in or working with the IoT and the Raspberry Pi who want to learn how to use Rust for work for them.

**Building Internet Of Things With The Arduino**

This is a global network that links physical objects using Cloud computing, web applications, and network communications. It allows devices to communicate with each other, access information on the Internet, store and retrieve data, and interact with users, creating smart, pervasive and always-connected environments. Despite the Internet of Things being a relatively new concept, there are already a few open platforms available that enable remote and seamless management and visualization of sensor data: Cosm, Nimbits, and ThingSpeak are just a few examples. And Arduino works with all of them. The Arduino is an incredibly flexible micro-controller and development environment that cannot only be used to control devices, but can also be used as a source of sensor data by users, has led to the development of a variety of hardware extensions and software libraries that enable wired and wireless communication with the Internet. Arduino is the ideal open hardware platform for experimenting with the world of the Internet of Things. Make your Arduino talk to the world! This book will provide you with all the information you need to design and create your own Internet of Things (IoT) applications using the Arduino platform. More specifically, you will learn: About the Internet of Things and Cloud Computing concepts that allow you to create a Cloud (like Cosm, Nimbits and many more) The basic usage of Arduino environment for creating your own embedded projects at low cost How to connect your Arduino with your Android phone and send data over the Internet How to connect your Arduino directly to the Internet and talk to the Cloud to reprogram your Arduino microcontroller remotely through the Cloud Detailed Table of Contents can be found at: [http://www.buildinginternetofthings.com Updated version (v1.1): Contains corrections, improvements and updates about IoT Platforms](http://www.buildinginternetofthings.com)

Rethinking the Internet of Things

Grab the top spot in your industry by seizing the power of IoT Smart products are everywhere. They're in our homes, in our pockets. People love these products. But what they love more is what these products do—and for anyone running a business today, outcomes are the key. The Internet of Things (IoT) is the point of connection between products and the results they deliver—it's where products become software. IoT Inc. explains everything you need to know to position your company within this powerful new network. And once you do, you'll leave the competition in the dust. Founder and president of IoT Inc, Ruston Thompson has helped companies develop strategies for a decade where the IoT concept has already existed. This essential guide provides an in-depth look into IoT—how it works and how it is transforming business; methods for seeing your own business, customers, and competitors through the lens of IoT, and a deep dive into how to develop and implement a powerful IoT strategy. IoT isn't a new business trend. It's the new way of business. Period. The IoT wave is heading for your industry. You can either meet it head-on, and ride it to success, or you can turn your back and let it swamp you. This is your playbook for transforming your company into a major player in the IoT Outcome economy.

The Internet of Things

This book explains the key feature to develop a complex and stable network that helps to gather the data to optimize the asset performance and maximize the production in the Industries leveraging on the cloud infrastructure and services. By the end, you can design the Industrial IoT network and the architecture for processing its data in the cloud.

**Practical Internet of Things with JavaScript Meta Products**

These next generation consumer products. These products consist of both a physical and a web part. Internet of Things with ESP8266 The Internet of Things (IoT) is a global network that links physical objects using Cloud computing, web applications, and network communications. It allows devices to communicate with each other, access information on the Internet, store and retrieve data, and interact with users, creating smart, pervasive and always-connected environments. Despite the Internet of Things being a relatively new concept, there are already a few open platforms available that enable remote and seamless management and visualization of sensor data: Cosm, Nimbits, and ThingSpeak are just a few examples. And Arduino works with all of them. The Arduino is an incredibly flexible micro-controller and development environment that cannot only be used to control devices, but can also be used as a source of sensor data by users, has led to the development of a variety of hardware extensions and software libraries that enable wired and wireless communication with the Internet. Arduino is the ideal open hardware platform for experimenting with the world of the Internet of Things. Make your Arduino talk to the world! This book will provide you with all the information you need to design and create your own Internet of Things (IoT) applications using the Arduino platform. More specifically, you will learn: About the Internet of Things and Cloud Computing concepts that allow you to create a Cloud (like Cosm, Nimbits and many more) The basic usage of Arduino environment for creating your own embedded projects at low cost How to connect your Arduino with your Android phone and send data over the Internet How to connect your Arduino directly to the Internet and talk to the Cloud How to reprogram your Arduino microcontroller remotely through the Cloud Detailed Table of Contents can be found at: [http://www.buildinginternetofthings.com Updated version (v1.1): Contains corrections, improvements and updates about IoT Platforms](http://www.buildinginternetofthings.com)

Building Arduino Projects for the Internet Of Things

Gain a strong foundation of Arduino-based device development, from which you can go in any direction according to your specific development needs and desires. You'll build Arduino-powered devices for everyday use, and then connect those devices to the Internet. You'll be introduced to the building blocks of IoT, and then deploy those principles to building a variety of useful projects. Projects in the books gradually introduce the reader to key topics such as internet connectivity with Arduino, common IoT protocols, custom web visualization, and Android apps that receive sensor data on-demand and in realtime. IoT device enthusiasts of all ages will want this book by their side when developing Android-based devices. If you're one of the many who have decided to build your own Arduino-powered devices for IoT applications, then Building Arduino Projects for the Internet of Things is exactly what you need. This book is your single resource—a guidebook for the eager-to-learn Arduino enthusiast—that teaches logically, methodically, and practically how the Arduino works and what you can build with it. Written by a software developer and solution architect who got tired of hunting and gathering various lessons for Arduino development as he taught himself all about the topic. For Arduino enthusiasts, this book not only opens up the world of IoT concepts, you will also learn many techniques that likely would not be obvious if not for experience with such a diverse group of applications. What You'll Learn Create an Arduino circuit that senses temperature Publish data collected from an Arduino to a server and to an MQTT broker Set up channels in Xively Using Node-RED to define complex flows Publish data as JSON-based data format that's consumable across a range of platforms and services Use cloud services to support your IoT ecosystem and provide business value for stakeholders

Building the Web of Things

"If we had computers that knew everything there was to know about things—using data they gathered without any help from us—we would be able to track and count everything, and greatly reduce waste, loss, and cost. We would know when things needed replacing, repairing or recalling, and whether they were fresh or past their best. The Internet of Things has the potential to change the world, just as the Internet did. Maybe even more so.”—Kevin Ashton, originator of the term, Internet of Things An examination of the concept and unimagined potential unleashed by the Internet of Things (IoT) with IPv6 and MIPv6 What is the Internet of Things? How can it help my organization? What is the cost of deploying such a system? What are the security implications? Building the Internet of the...
Building the Internet of Things with IPv6 and MIPv6 Unleash the power of the Raspberry Pi 3 board to create interesting IoT projects Key Features Learn how to interface various sensors and actuators with the Raspberry Pi 3 and send this data to the cloud. Explore the possibilities offered by the IoT by using the Raspberry Pi to control an XNUCLEO D410ZI-G package. Book Description The book is designed to introduce you to IoT and Raspberry Pi 3. It will help you create interesting projects, such as setting up a weather station and measuring temperature and humidity using sensors; it will also show you how to send sensor data to cloud for visualization in real-time. Then we shift our focus to leveraging IoT for accomplishing complex tasks, such as facial recognition using the Raspberry Pi camera module, AWS Rekognition, and the AWS S3 service. Furthermore, you will master security aspects by building a security system to protect your premises from intruders using Raspberry Pi, a camera, motion sensors, and AWS Cloud. We'll also create a real-world project by building a Wi-Fi – controlled robot car with Raspberry Pi using a motor driver circuit, DC motor, and a web application. This book is a must-have as it provides a practical overview of IoT's existing architectures, communication protocols, and security threats at the software and hardware levels—security being the most important aspect of IoT. What you will learn Understand the concept of IoT and get familiar with the features of Raspberry Pi Learn to integrate sensors and actuators with the Raspberry Pi. Communicate with cloud and Raspberry using communication protocols such as HTTP and MQTT Build DIY projects using Raspberry Pi, JavaScript/node.js and cloud (AWS) Explore the best practices to ensure the security of your connected devices.

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IoT Inc: How Your Company Can Use the Internet of Things to Win in the Outcome Economy A guided tour through the Internet of Things, a networked world of connected devices and people that sense, communicate, and take action in a digital and often invisible way. When we step on the lights in our home, the thermostat turns itself on a day earlier to save money. Our refrigerator alerts us to buy milk on the way home. A package of cookies on the supermarket shelf suggests that we buy it, based on past purchases. The cookies themselves are on the shelf because of a “smart” supply chain. When we get home, the thermostat has already adjusted the temperature so that it’s toasty or brisk, whichever we prefer. This is the Internet of Things—a networked world of connected devices, objects, and people. In this book, Samuel Greengard offers a guided tour through this emerging world and how it will change the way we live and work. Greengard explains that the Internet of Things (IoT) is still in its early stages of development. As connected computing, RFID, sensor networks, and emerging standards and protocols are advancing toward a new generation of embedded and immersive technology, Greengard traces the origins of the IoT from the early days of personal computers and the Internet and examines how it creates the conceptual and practical framework for a connected world. He explores the Internet of Things and its promise to make the world a smarter, safer, and more secure place. IoT: The Things They Tell IoT: The Things They Tell is a book about the design and implementation of the Internet of Things (IoT). It presents a collection of cutting-edge research and development projects that are currently being implemented around the world. The book is intended for researchers, students, and professionals who are interested in the design and implementation of the Internet of Things (IoT).

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comprehensive look at the current technologies, procedures, and architectures.

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