

Microsoft Azure IoT Cloud Platform Services

Rapidly implement Internet of Things solutions Creating programs for the Internet of Things offers you an opportunity to build and program custom devices whose functionality is limited only by your imagination. This book teaches you to do exactly that, with solutions presented in a step-by-step format. When you read this book, you not only learn the fundamentals of device programming, you will also be ready to write code for revolutionizing devices and robots. You don't need to be an expert in low-level programming to benefit from this book. It explains basic concepts and programming techniques before diving into the more complicated topics. Each of the book's chapters and appendices contains a suitable level of detail to help you quickly master device programming. MCP Dawid Borycki shows you how to: Build Universal Windows Platform (UWP) applications that target interconnected embedded devices Design and implement background apps for seamless integration with hardware components Use intrinsic UWP functionality to detect and track human faces Build artificial auditory, visual, and learning systems Process audio signals to blink LEDs to the rhythm of music Use OpenCV to develop custom image-processing algorithms Communicate with external devices by using serial, USB, Wi-Fi, and AllJoyn connectivity Design and implement applications to control DC, stepper, and servo motors for robotics Use Microsoft Cognitive Services to detect human emotions Build predictive analysis and

preventive maintenance systems by using the Azure IoT Suite

The Internet of Things (IoT) has become a major influence on the development of new technologies and innovations. When utilized properly, these applications can enhance business functions and make them easier to perform. *Protocols and Applications for the Industrial Internet of Things* discusses and addresses the difficulties, challenges, and applications of IoT in industrial processes and production and work life. Featuring coverage on a broad range of topics such as industrial process control, machine learning, and data mining, this book is geared toward academicians, computer engineers, students, researchers, and professionals seeking current and relevant research on applications of the IoT.

Discover high-value Azure security insights, tips, and operational optimizations This book presents comprehensive Azure Security Center techniques for safeguarding cloud and hybrid environments. Leading Microsoft security and cloud experts Yuri Diogenes and Dr. Thomas Shinder show how to apply Azure Security Center's full spectrum of features and capabilities to address protection, detection, and response in key operational scenarios. You'll learn how to secure any Azure workload, and optimize virtually all facets of modern security, from policies and identity to incident response and risk management. Whatever your role in Azure security, you'll learn how to save hours, days, or even weeks by solving problems in most efficient, reliable ways possible. Two of Microsoft's leading cloud security experts show how to:

- Assess the

impact of cloud and hybrid environments on security, compliance, operations, data protection, and risk management • Master a new security paradigm for a world without traditional perimeters • Gain visibility and control to secure compute, network, storage, and application workloads • Incorporate Azure Security Center into your security operations center • Integrate Azure Security Center with Azure AD Identity Protection Center and third-party solutions • Adapt Azure Security Center's built-in policies and definitions for your organization • Perform security assessments and implement Azure Security Center recommendations • Use incident response features to detect, investigate, and address threats • Create high-fidelity fusion alerts to focus attention on your most urgent security issues • Implement application whitelisting and just-in-time VM access • Monitor user behavior and access, and investigate compromised or misused credentials • Customize and perform operating system security baseline assessments • Leverage integrated threat intelligence to identify known bad actors

This book is designed to be an ancillary to the classes, labs, and hands on practice that you have diligently worked on in preparing to obtain your AZ-220: Microsoft Azure IoT Developer certification. I won't bother talking about the benefits of certifications. This book tries to reinforce the knowledge that you have gained in your process of studying. It is meant as one of the end steps in your preparation for the AZ-220 exam. This book is short, but It will give you a good gauge of your readiness. Learning can be seen in 4 stages: 1. Unconscious Incompetence 2. Conscious Incompetence 3. Conscious

Competence 4. Unconscious Competence This book will assume the reader has already gone through the needed classes, labs, and practice. It is meant to take the reader from stage 2, Conscious Incompetence, to stage 3 Conscious Competence. At stage 3, you should be ready to take the exam. Only real-world scenarios and work experience will take you to stage 4, Unconscious Competence. I am not an author by trade. My goal is not to write the cleanest of a book. This book will get to the gist of things, no frills no thrills. The only purpose is to have the reader pass the AZ-220 exam. Before we get started, we all have doubts when preparing to take an exam. What is your reason and purpose for taking this exam? Remember your reason and purpose when you have some doubts. Obstacle is the way. Control your mind, attitude, and you can control the situation. Persistence leads to confidence. Confidence erases doubts. Leverage the power of Azure to get efficient data insights from your big data in real time

Key Features Explore the basics of cloud analytics using Azure Discover different ways to process and visualize your data easily Learn to use Azure Synapse Analytics (formerly known as Azure SQL Data Warehouse) to derive real-time customer insights

Book Description With data being generated at an exponential speed, organizations all over the world are migrating their infrastructure to the cloud. Application management becomes much easier when you use a cloud platform to build, manage, and deploy your services and applications. Cloud Analytics with Microsoft Azure covers all that you need to extract useful insights from your data. You'll explore the power of data with big

data analytics, the Internet of Things (IoT), machine learning, artificial intelligence, and DataOps. You'll also delve into data analytics by studying use cases that focus on creating actionable insights from near-real-time data. As you advance, you'll learn to build an end-to-end analytics pipeline on the cloud with machine learning and deep learning concepts. By the end of this book, you'll have developed a solid understanding of data analytics with Azure and its practical implementation. What you will learn

- Explore the concepts of modern data warehouses and data pipelines
- Discover different design considerations while applying a cloud analytics solution
- Design an end-to-end analytics pipeline on the cloud
- Differentiate between structured, semi-structured, and unstructured data
- Choose a cloud-based service for your data analytics solutions
- Use Azure services to ingest, store and analyze data of any scale

Who this book is for If you're planning to adopt the cloud analytics model for your business, this book will help you understand the design and business considerations that you must keep in mind. Though not necessary, a basic understanding of data analytics concepts such as data streaming, data types, the machine learning life cycle, and Docker containers will help you get the most out of the book.

This double volume set (LNAI 10863-10864) constitutes the refereed proceedings of the 25th International Workshop, EG-ICE 2018, held in Lausanne, Switzerland, in June 2018. The 58 papers presented in this volume were carefully reviewed and selected from 108 submissions. The papers are organized in topical sections on Advanced

Computing in Engineering, Computer Supported Construction Management, Life-Cycle Design Support, Monitoring and Control Algorithms in Engineering, and BIM and Engineering Ontologies.

How do you start? How should you build a plan for cloud migration for your entire portfolio? How will your organization be affected by these changes? This book, based on real-world cloud experiences by enterprise IT teams, seeks to provide the answers to these questions. Here, you'll see what makes the cloud so compelling to enterprises; with which applications you should start your cloud journey; how your organization will change, and how skill sets will evolve; how to measure progress; how to think about security, compliance, and business buy-in; and how to exploit the ever-growing feature set that the cloud offers to gain strategic and competitive advantage.

IoT Solutions in Microsoft's Azure IoT Suite
Data Acquisition and Analysis in the Real World
Apress

Microsoft Azure Essentials from Microsoft Press is a series of free ebooks designed to help you advance your technical skills with Microsoft Azure. The first ebook in the series, Microsoft Azure Essentials: Fundamentals of Azure, introduces developers and IT professionals to the wide range of capabilities in Azure. The authors - both Microsoft MVPs in Azure - present both conceptual and how-to content for key areas, including: Azure Websites and Azure Cloud Services Azure Virtual Machines Azure Storage Azure Virtual Networks Databases Azure Active Directory Management tools Business

scenarios Watch Microsoft Press's blog and Twitter (@MicrosoftPress) to learn about other free ebooks in the "Microsoft Azure Essentials" series.

Build a strong and efficient IoT solution at industrial and enterprise level by mastering industrial IoT using Microsoft Azure. This book focuses on the development of the industrial Internet of Things (IIoT) paradigm, discussing various architectures, as well as providing nine case studies employing IoT in common industrial domains including medical, supply chain, finance, and smart homes. The book starts by giving you an overview of the basic concepts of IoT, after which you will go through the various offerings of the Microsoft Azure IoT platform and its services. Next, you will get hands-on experience of IoT applications in various industries to give you a better picture of industrial solutions and how you should take your industry forward. As you progress through the chapters, you will learn real-time applications in IoT in agriculture, supply chain, financial services, retail, and transportation. Towards the end, you will gain knowledge to identify and analyze IoT security and privacy risks along with a detailed sample project. The book fills an important gap in the learning of IoT and its practical use case in your industry. Therefore, this is a practical guide that helps you discover the technologies and use cases for IIoT. By the end of this book, you will be able to build industrial IoT solution in Microsoft Azure with sensors, stream analytics, and serverless technologies. What You Will Learn Provision, configure, and connect devices with Microsoft Azure IoT hub Stream analytics using structural data and non-structural data such as images Use stream analytics, serverless technology, and IoT SaaS offerings Work with common sensors and IoT devices Who This Book Is For IoT architects, developers, and stakeholders working with the industrial Internet of Things.

Public health has become an essential area of focus in terms of the way it operates, the services offered, policies, and more. Maintaining an effective public health system and infrastructure, updated and useful policies, and health literacy are primary concerns. A critical analysis of public healthcare policy and services is critical to accommodate the changing health demands of the global population. Through a deeper understanding of the way public health services are offered, a look into policymaking and current policies in healthcare, and the way health literacy and health education are promoted, the current state and future of public health are acknowledged. The Research Anthology on Public Health Services, Policies, and Education presents a view of public health through an analysis of healthcare services and delivery; policies in terms of policymaking, ethics, and governance; as well as the way society is educated on public health affairs. The chapters will cover a wide range of issues such as healthcare policy, health literacy, healthcare reform, accessibility, public welfare, and more. This book is essential for public health officials, government officials, policymakers, teachers, medical professionals, health agencies and organizations, professionals, researchers, academics, practitioners, and students interested in the current state of public health and the improvement of public health services and policies for the future.

This exciting book explores the past, present and future of IoT, presenting the most prominent technologies that comprise IoT applications, including cloud computing, edge computing, embedded computing, Big Data, Artificial Intelligence (AI), blockchain and cybersecurity. A comprehensive description of the full range of the building blocks that comprise emerging IoT systems and applications is provided, while illustrating the evolution of IoT systems from the legacy small scale sensor systems and wireless sensor networks, to today's large scale IoT

deployments that comprise millions of connected devices in the cloud and smart objects with (semi)autonomous behavior. It also provides an outlook for the future evolution of IoT systems, based on their blending with AI and the use of emerging technologies like blockchain for massively decentralized applications. The full spectrum of technologies that are closely associated with the term IoT since its introduction are explored. The book also highlights the main challenges that are associated with the development and deployment of IoT applications at scale, including network connectivity, security, and interoperability challenges. First tech sensors, wireless sensor networks and radio-frequency identification (RFID) tags are covered. Machine learning, big data and security issues are also explored.

Cloud Analytics with Microsoft Azure enables you to understand the design and business considerations that you must keep in mind while planning to adopt the cloud analytics model for your business.

This volume constitutes the proceedings of the 11th International Conference on Cloud Computing, CLOUD 2018, held as part of the Services Conference Federation, SCF 2018, in Seattle, WA, USA, in June 2018. The 26 full papers presented together with 3 short papers were carefully reviewed and selected from 108 submissions. They are organized in topical sections such as cloud computing; client-server architectures; distributed systems organizing principles; storage virtualization; virtual machines; cloud based storage; distributed architectures; network services; and computing platforms.

Selecting the right architecture enables organizations to deliver a successful business solution that can boost customer engagement and growth. With this comprehensive guide, you'll learn architectural best practices and methodologies for implementing an enterprise-grade solution

tailored for your business needs using Microsoft Power Platform

Edge analytics brings intelligence to the sensory side of IoT applications. This is a comprehensive introduction for those who are new to edge analytics, that will have you up-to-speed in no time. You will learn to design modern edge analytics applications that take advantage of the processing power of single board computers and microcontrollers.

The increase in connected devices in the internet of things (IoT) is leading to an exponential increase in the data that an organization is required to manage. To successfully utilize IoT in businesses, big data analytics are necessary in order to efficiently sort through the increased data. The combination of big data and IoT can thus enable new monitoring services and powerful processing of sensory data streams. The Handbook of Research on Big Data and the IoT is a pivotal reference source that provides vital research on emerging trends and recent innovative applications of big data and IoT, challenges facing organizations and the implications of these technologies on society, and best practices for their implementation. While highlighting topics such as bootstrapping, data fusion, and graph mining, this publication is ideally designed for IT specialists, managers, policymakers, analysts, software engineers, academicians, and researchers.

Learn practical uses for some of the hottest tech applications trending among technology professionals We are living in an era of digital revolution. On the horizon, many emerging digital technologies are being developed at a breathtaking speed. Whether we like it or not, whether we are ready or not, digital technologies are going to penetrate more and more, deeper and deeper, into every aspect of our lives. This is going to fundamentally change how we live, how we work, and how we socialize. Java, as a modern high-level programming

language, is an excellent tool for helping us to learn these digital technologies, as well as to develop digital applications, such as IoT, AI, Cybersecurity, Blockchain and more. Practical Java Programming uses Java as a tool to help you learn these new digital technologies and to be better prepared for the future changes. Gives you a brief overview for getting started with Java Programming Dives into how you can apply your new knowledge to some of the biggest trending applications today Helps you understand how to program Java to interact with operating systems, networking, and mobile applications Shows you how Java can be used in trending tech applications such as IoT (Internet of Things), AI (Artificial Intelligence), Cybersecurity, and Blockchain Get ready to find out firsthand how Java can be used for connected home devices, healthcare, the cloud, and all the hottest tech applications. Collect and analyze sensor and usage data from Internet of Things applications with Microsoft Azure IoT Suite. Internet connectivity to everyday devices such as light bulbs, thermostats, and even voice-command devices such as Google Home and Amazon.com's Alexa is exploding. These connected devices and their respective applications generate large amounts of data that can be mined to enhance user-friendliness and make predictions about what a user might be likely to do next. Microsoft's Azure IoT Suite is a cloud-based platform that is ideal for collecting data from connected devices. You'll learn in this book about data acquisition and analysis, including real-time analysis. Real-world examples are provided to teach you to detect anomalous patterns in your data that might lead to business advantage. We live in a time when the amount of data being generated and stored is growing at an exponential

rate. Understanding and getting real-time insight into these data is critical to business. IoT Solutions in Microsoft's Azure IoT Suite walks you through a complete, end-to-end journey of how to collect and store data from Internet-connected devices. You'll learn to analyze the data and to apply your results to solving real-world problems. Your customers will benefit from the increasingly capable and reliable applications that you'll be able to deploy to them. You and your business will benefit from the gains in insight and knowledge that can be applied to delight your customers and increase the value from their business. What You'll Learn Go through data generation, collection, and storage from sensors and devices, both relational and non-relational Understand, from end to end, Microsoft's analytic services and where they fit into the analytical ecosystem Look at the Internet of your things and find ways to discover and draw on the insights your data can provide Understand Microsoft's IoT technologies and services, and stitch them together for business insight and advantage Who This Book Is For Developers and architects who plan on delivering IoT solutions, data scientists who want to understand how to get better insights into their data, and anyone needing or wanting to do real-time analysis of data from the Internet of Things Over 50 recipes to drive IoT innovation with Microsoft Azure About This Book Build secure and scalable IoT solutions with Azure IoT platform Learn techniques to build end to end IoT solutions leveraging the Azure IoT platform Filled with practical recipes to help you increase connectivity and automation across IoT devices Who This Book Is

For If you are an application developer and want to build robust and secure IoT solution for your organization using Azure IoT, then this book is for you. What You Will Learn Build IoT Solutions using Azure IoT & Services Learn device configuration and communication protocols Understand IoT Suite and Pre-configured solutions Manage Secure Device communications Understand Device management, alerts Introduction with IoT Analytics, reference IoT Architectures Reference Architectures from Industry Pre-Configured IoT Suite solutions In Detail Microsoft's end-to-end IoT platform is the most complete IoT offering, empowering enterprises to build and realize value from IoT solutions efficiently. It is important to develop robust and reliable solutions for your organization to leverage IoT services. This book focuses on how to start building custom solutions using the IoT hub or the preconfigured solution of Azure IoT suite. As a developer, you will be taught how to connect multiple devices to the Azure IoT hub, develop, manage the IoT hub service and integrate the hub with cloud. We will be covering REST APIs along with HTTP, MQTT and AMQP protocols. It also helps you learn Pre-Configured IoT Suite solution. Moving ahead we will be covering topics like:-Process device-to-cloud messages and cloud-to-device messages using .Net-Direct methods and device management-Query Language, Azure IoT SDK for .Net-Creating and managing, Securing IoT hub, IoT Suite and many more. We will be using windows 10 IoT core, Visual Studio, universal Windows platform. At the end, we will take you through IoT analytics and provide a demo of connecting real device with Azure

IoT. Style and approach A set of exciting recipes of using Microsoft Azure IoT more effectively.

It's time to get your head in the cloud! In today's business environment, more and more people are requesting cloud-based solutions to help solve their business challenges. So how can you not only anticipate your clients' needs but also keep ahead of the curve to ensure their goals stay on track? With the help of this accessible book, you'll get a clear sense of cloud computing and understand how to communicate the benefits, drawbacks, and options to your clients so they can make the best choices for their unique needs. Plus, case studies give you the opportunity to relate real-life examples of how the latest technologies are giving organizations worldwide the opportunity to thrive as supply chain solutions in the cloud. Demonstrates how improvements in forecasting, collaboration, and inventory optimization can lead to cost savings Explores why cloud computing is becoming increasingly important Takes a close look at the types of cloud computing Makes sense of demand-driven forecasting using Amazon's cloud Whether you work in management, business, or IT, this is the dog-eared reference you'll want to keep close by as you continue making sense of the cloud.

Blockchain, Internet of Things, and Artificial Intelligence provides an integrated overview and technical description of the fundamental concepts of blockchain, IoT, and AI technologies. State-of-the-art techniques are explored in depth to discuss the

challenges in each domain. The convergence of these revolutionized technologies has leveraged several areas that receive attention from academicians and industry professionals, which in turn promotes the book's accessibility more extensively. Discussions about an integrated perspective on the influence of blockchain, IoT, and AI for smart cities, healthcare, and other business sectors illuminate the benefits and opportunities in the ecosystems worldwide. The contributors have focused on real-world examples and applications and highlighted the significance of the strengths of blockchain to transform the readers' thinking toward finding potential solutions. The faster maturity and stability of blockchain is the key differentiator in artificial intelligence and the Internet of Things. This book discusses their potent combination in realizing intelligent systems, services, and environments. The contributors present their technical evaluations and comparisons with existing technologies. Theoretical explanations and experimental case studies related to real-time scenarios are also discussed.

FEATURES Discusses the potential of blockchain to significantly increase data while boosting accuracy and integrity in IoT-generated data and AI-processed information
Elucidates definitions, concepts, theories, and assumptions involved in smart contracts and distributed ledgers related to IoT systems and AI approaches
Offers real-world uses of blockchain technologies in different IoT systems and further studies its influence in supply chains and logistics, the automotive industry, smart homes, the pharmaceutical industry, agriculture, and other areas
Presents readers with ways of

employing blockchain in IoT and AI, helping them to understand what they can and cannot do with blockchain Provides readers with an awareness of how industry can avoid some of the pitfalls of traditional data-sharing strategies This book is suitable for graduates, academics, researchers, IT professionals, and industry experts.

Kubernetes radically changes the way applications are built and deployed in the cloud. Since its introduction in 2014, this container orchestrator has become one of the largest and most popular open source projects in the world. The updated edition of this practical book shows developers and ops personnel how Kubernetes and container technology can help you achieve new levels of velocity, agility, reliability, and efficiency. Kelsey Hightower, Brendan Burns, and Joe Beda—who've worked on Kubernetes at Google and beyond—explain how this system fits into the lifecycle of a distributed application. You'll learn how to use tools and APIs to automate scalable distributed systems, whether it's for online services, machine learning applications, or a cluster of Raspberry Pi computers. Create a simple cluster to learn how Kubernetes works Dive into the details of deploying an application using Kubernetes Learn specialized objects in Kubernetes, such as DaemonSets, jobs, ConfigMaps, and secrets Explore deployments that tie together the lifecycle of a complete application Get practical examples of how to develop and deploy real-world applications in Kubernetes AI, Edge, and IoT Smart Agriculture integrates applications of IoT, edge computing, and data analytics for sustainable agricultural development and introduces Edge of Thing-

based data analytics and IoT for predictability of crop, soil, and plant disease occurrence for improved sustainability and increased profitability. The book also addresses precision irrigation, precision horticulture, greenhouse IoT, livestock monitoring, IoT ecosystem for agriculture, mobile robot for precision agriculture, energy monitoring, storage management, and smart farming. The book provides an overarching focus on sustainable environment and sustainable economic development through smart and e-agriculture. Providing a medium for the exchange of expertise and inspiration, contributions from both smart agriculture and data mining researchers around the world provide foundational insights. The book provides practical application opportunities for the resolution of real-world problems, including contributions from the data mining, data analytics, Edge of Things, and cloud research communities working in the farming production sector. The book offers broad coverage of the concepts, themes, and instruments of this important and evolving area of IOT-based agriculture, Edge of Things and cloud-based farming, Greenhouse IOT, mobile agriculture, sustainable agriculture, and big data analytics in agriculture toward smart farming. Integrates sustainable agriculture, Greenhouse IOT, precision agriculture, crops monitoring, crops controlling to prediction, livestock monitoring, and farm management Presents data mining techniques for precision agriculture, including weather prediction, plant disease prediction, and decision support for crop and soil selection Promotes the importance and uses in managing the agro ecosystem for food security Emphasizes

low energy usage options for low cost and environmental sustainability

Discover how the Internet of Things will change the information and communication technology industry in the next decade The Intelligent Internet of Things explores a unique type of Internet of Things (IoT) architecture, for example, the Web of Things (WoT) with its open character that breaks the barriers among various IoT vertical applications. The authors—noted experts on the topic—examine and compare key technologies from physical to platform level, especially the Narrow Band Internet of Things (NB-IoT) technology. They discuss applications with different data transmission requirements that are typical to IoT. The text also describes the requirements of WoT applications on 5G and includes detailed information on WoT technologies. The Intelligent Internet of Things examines three typical WoT applications: the monitoring application of south-to-north water diversion projects; smart driving applications; and network optimization applications. In addition, the text explores testing and authentication of IoT key technologies, with the required equipment, platform, and outdoor environment development. This important book: Provides information on what IoT/WoT is, when to use it, how to provide IoT services with certain technologies, and more Discusses restful architecture, main protocols (ZigBee, 6lowpan, CoAP, HTML5) Explores key technologies on different layers (sensing, gathering, application) Examines how IoT will change the information and communication technology industry Written for professionals working in IoT development, management and big data

analytics, Intelligent Internet of Things offers an overview of IoT architecture, key technology, current applications and future development of the technology.

Use a step-by-step process to create and deploy your first Azure IoT Edge solution.

Modern day developers and architects in today's cloud-focused world must understand when it makes sense to leverage the cloud. Computing on the edge is a new paradigm for most people. The Azure IoT Edge platform uses many existing technologies that may be familiar to developers, but understanding how to leverage those technologies in an edge computing scenario can be challenging. Beginning Azure IoT Edge Computing demystifies computing on the edge and explains, through concrete examples and exercises, how and when to leverage the power of intelligent edge computing. It introduces the possibilities of intelligent edge computing using the Azure IoT Edge platform, and guides you through hands-on exercises to make edge computing approachable, understandable, and highly useful. Through user-friendly discussion you will not only understand how to build edge solutions, but also when to build them. By explaining some common solution patterns, the decision on when to use the cloud and when to avoid the cloud will become much clearer.

What You'll Learn

- Create and deploy Azure IoT Edge solutions
- Recognize when to leverage the intelligent edge pattern and when to avoid it
- Leverage the available developer tooling to develop and debug IoT Edge solutions
- Know which off-the-shelf edge computing modules are available
- Become familiar with some of the lesser-known device protocols used in

conjunction with edge computing Understand how to securely deploy and bootstrap an IoT Edge device Explore related topics such as containers and secure device provisioning Who This Book Is For Developers or architects who want to understand edge computing and when and where to use it. Readers should be familiar with C# or Python and have a high-level understanding of the Azure IoT platform.

The International Conference on Communications, Management, and Information Technology (ICCMIT'16) provides a discussion forum for scientists, engineers, educators and students about the latest discoveries and realizations in the foundations, theory, models and applications of systems inspired on nature, using computational intelligence methodologies, as well as in emerging areas related to the three tracks of the conference: Communication Engineering, Knowledge, and Information Technology. The best 25 papers to be included in the book will be carefully reviewed and selected from numerous submissions, then revised and expanded to provide deeper insight into trends shaping future ICT.

Manage and control Internet-connected devices from Windows and Raspberry Pi. Master the Windows IoT Core application programming interface and feature set to develop Internet of Things applications on the Raspberry Pi using your Windows and .NET programming skills. Windows 10 for the Internet of Things presents a set of example projects covering a wide range of techniques designed specifically to jump start your own Internet of Things creativity. You'll learn everything you need to know about Windows IoT Core in order to develop Windows and IoT applications that run on the Pi. Microsoft's release of Windows IoT Core is

groundbreaking in how it makes the Raspberry Pi and Internet of Things programming accessible to Windows developers. Now it's possible to develop for the Raspberry Pi using native Windows and all the related programming skills that Windows programmers have learned from developing desktop and mobile applications. Windows 10 becomes a gateway by which many can experience hardware and Internet of Things development who may never have had the opportunity otherwise. However, even savvy Windows programmers require help to get started with hardware development. This book, *Windows 10 for the Internet of Things*, provides just the help you need to get started in putting your Windows skills to use in a burgeoning new world of development for small devices that are ubiquitously connected to the Internet. What You Will Learn Learn Windows 10 on the Raspberry Pi Read sensor data and control actuators Connect to and transmit data into the cloud Remotely control your devices from any web browser Develop IOT applications under Windows using C# and Python Store your IOT data in a database for later analysis Who This Book Is For Developers and enthusiasts wanting to take their skills in Windows development and jump on board one of the largest and fastest growing trends to hit the technology world in years – that of connecting everyday devices to the Internet. This book shows how to develop for Microsoft's operating-system for devices, Windows 10 IoT Core. Readers learn to develop in C# and Python using Visual Studio, for deployment on devices such as the Raspberry Pi and the Arduino. Modern factories are experiencing rapid digital transformation supported by emerging technologies, such as the Industrial Internet of things (IIOT), industrial big data and cloud technologies, deep learning and deep analytics, AI, intelligent robotics, cyber-physical systems and digital twins, complemented by visual computing (including new forms of artificial vision

with machine learning, novel HMI, simulation, and visualization). This is evident in the global trend of Industry 4.0. The impact of these technologies is clear in the context of high-performance manufacturing. Important improvements can be achieved in productivity, systems reliability, quality verification, etc. Manufacturing processes, based on advanced mechanical principles, are enhanced by big data analytics on industrial sensor data. In current machine tools and systems, complex sensors gather useful data, which is captured, stored, and processed with edge, fog, or cloud computing. These processes improve with digital monitoring, visual data analytics, AI, and computer vision to achieve a more productive and reliable smart factory. New value chains are also emerging from these technological changes. This book addresses these topics, including contributions deployed in production, as well as general aspects of Industry 4.0.

Learn Azure in a Month of Lunches, Second Edition, is a tutorial on writing, deploying, and running applications in Azure. In it, you'll work through 21 short lessons that give you real-world experience. Each lesson includes a hands-on lab so you can try out and lock in your new skills. Summary You can be incredibly productive with Azure without mastering every feature, function, and service. Learn Azure in a Month of Lunches, Second Edition gets you up and running quickly, teaching you the most important concepts and tasks in 21 practical bite-sized lessons. As you explore the examples, exercises, and labs, you'll pick up valuable skills immediately and take your first steps to Azure mastery! This fully revised new edition covers core changes to the Azure UI, new Azure features, Azure containers, and the upgraded Azure Kubernetes Service. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the technology Microsoft Azure is vast and

powerful, offering virtual servers, application templates, and prebuilt services for everything from data storage to AI. To navigate it all, you need a trustworthy guide. In this book, Microsoft engineer and Azure trainer Iain Foulds focuses on core skills for creating cloud-based applications. About the book *Learn Azure in a Month of Lunches, Second Edition*, is a tutorial on writing, deploying, and running applications in Azure. In it, you'll work through 21 short lessons that give you real-world experience. Each lesson includes a hands-on lab so you can try out and lock in your new skills. What's inside

Understanding Azure beyond point-and-click
Securing applications and data
Automating your environment
Azure services for machine learning, containers, and more

About the reader
This book is for readers who can write and deploy simple web or client/server applications.

About the author
Iain Foulds is an engineer and senior content developer with Microsoft.

Table of Contents

PART 1 - AZURE CORE SERVICES

1 Before you begin
2 Creating a virtual machine
3 Azure Web Apps
4 Introduction to Azure Storage
5 Azure Networking basics

PART 2 - HIGH AVAILABILITY AND SCALE

6 Azure Resource Manager
7 High availability and redundancy
8 Load-balancing applications
9 Applications that scale
10 Global databases with Cosmos DB
11 Managing network traffic and routing
12 Monitoring and troubleshooting

PART 3 - SECURE BY DEFAULT

13 Backup, recovery, and replication
14 Data encryption
15 Securing information with Azure Key Vault
16 Azure Security Center and updates

PART 4 - THE COOL STUFF

17 Machine learning and artificial intelligence
18 Azure Automation
19 Azure containers
20 Azure and the Internet of Things
21 Serverless computing

This book provides practical guidance for adopting a high velocity, continuous delivery process to create reliable, scalable, Software-as-a-Service (SaaS) solutions that are designed and built

using a microservice architecture, deployed to the Azure cloud, and managed through automation. Microservices, IoT, and Azure offers software developers, architects, and operations engineers' step-by-step directions for building SaaS applications—applications that are available 24x7, work on any device, scale elastically, and are resilient to change-through code, script, exercises, and a working reference implementation. The book provides a working definition of microservices and contrasts this approach with traditional monolithic Layered Architecture. A fictitious, homebiomedical startup is used to demonstrate microservice architecture and automation capabilities for cross-cutting and business services as well as connected device scenarios for Internet of Things (IoT). Several Azure PaaS services are detailed including Storage, SQL Database, DocumentDb, Redis Cache, Cloud Services, Web API's, API Management, IoT Hub, IoT Suite, Event Hub, and Stream Analytics. Finally the book looks to the future and examines Service Fabric to see how microservices are becoming the de facto approach to building reliable software in the cloud. In this book, you'll learn: What microservices are and why are they're a compelling architecture pattern for SaaS applications How to design, develop, and deploy microservices using Visual Studio, PowerShell, and Azure Microservice patterns for cross-cutting concerns and business capabilities Microservice patterns for Internet of Things and big data analytics solutions using IoT Hub, Event Hub, and Stream Analytics Techniques for automating microservice provisioning, building, and deployment What Service Fabric is and how it's the future direction for microservices on Microsoft Azure

Develop and manage effective real-time streaming solutions by leveraging the power of Microsoft Azure About This Book Analyze your data from various sources using Microsoft

Azure Stream Analytics Develop, manage and automate your stream analytics solution with Microsoft Azure A practical guide to real-time event processing and performing analytics on the cloud Who This Book Is For If you are looking for a resource that teaches you how to process continuous streams of data in real-time, this book is what you need. A basic understanding of the concepts in analytics is all you need to get started with this book What You Will Learn Perform real-time event processing with Azure Stream Analysis Incorporate the features of Big Data Lambda architecture pattern in real-time data processing Design a streaming pipeline for storage and batch analysis Implement data transformation and computation activities over stream of events Automate your streaming pipeline using Powershell and the .NET SDK Integrate your streaming pipeline with popular Machine Learning and Predictive Analytics modelling algorithms Monitor and troubleshoot your Azure Streaming jobs effectively In Detail Microsoft Azure is a very popular cloud computing service used by many organizations around the world. Its latest analytics offering, Stream Analytics, allows you to process and get actionable insights from different kinds of data in real-time. This book is your guide to understanding the basics of how Azure Stream Analytics works, and building your own analytics solution using its capabilities. You will start with understanding what Stream Analytics is, and why it is a popular choice for getting real-time insights from data. Then, you will be introduced to Azure Stream Analytics, and see how you can use the tools and functions in Azure to develop your own Streaming Analytics. Over the course of the book, you will be given comparative analytic guidance on using Azure Streaming with other Microsoft Data Platform resources such as Big Data Lambda Architecture integration for real time data analysis and differences of scenarios for architecture designing with Azure HDInsight Hadoop clusters with

Storm or Stream Analytics. The book also shows you how you can manage, monitor, and scale your solution for optimal performance. By the end of this book, you will be well-versed in using Azure Stream Analytics to develop an efficient analytics solution that can work with any type of data. Style and approach A comprehensive guidance on developing real-time event processing with Azure Stream Analysis

This volume is a collation of articles on counter forensics practices and digital investigative methods from the perspective of crime science. The book also shares alternative dialogue on information security techniques used to protect data from unauthorised access and manipulation. Scandals such as those at OPCW and Gatwick Airport have reinforced the importance of crime science and the need to take proactive measures rather than a wait and see approach currently used by many organisations. This book proposes a new approach in dealing with cybercrime and unsociable behavior involving remote technologies using a combination of evidence-based disciplines in order to enhance cybersecurity and authorised controls. It starts by providing a rationale for combining selected disciplines to enhance cybersecurity by discussing relevant theories and highlighting the features that strengthen privacy when mixed. The essence of a holistic model is brought about by the challenge facing digital forensic professionals within environments where tested investigative practices are unable to provide satisfactory evidence and security. This book will be of interest to students, digital forensic and cyber security practitioners and policy makers. It marks a new route in the study of combined disciplines to tackle cybercrime using digital investigations and crime science.

This is the eBook of the printed book and may not include any media, website access codes,

or print supplements that may come packaged with the bound book. Implement maximum control, security, and compliance processes in Azure cloud environments In Microsoft Azure Security Infrastructure ,1/e three leading experts show how to plan, deploy, and operate Microsoft Azure with outstanding levels of control, security, and compliance. You'll learn how to prepare infrastructure with Microsoft's integrated tools, prebuilt templates, and managed services—and use these to help safely build and manage any enterprise, mobile, web, or Internet of Things (IoT) system. The authors guide you through enforcing, managing, and verifying robust security at physical, network, host, application, and data layers. You'll learn best practices for security-aware deployment, operational management, threat mitigation, and continuous improvement—so you can help protect all your data, make services resilient to attack, and stay in control no matter how your cloud systems evolve. Three Microsoft Azure experts show you how to:

- Understand cloud security boundaries and responsibilities
- Plan for compliance, risk management, identity/access management, operational security, and endpoint and data protection
- Explore Azure's defense-in-depth security architecture
- Use Azure network security patterns and best practices
- Help safeguard data via encryption, storage redundancy, rights management, database security, and storage security
- Help protect virtual machines with Microsoft Antimalware for Azure Cloud Services and Virtual Machines
- Use the Microsoft Azure Key Vault service to help secure cryptographic keys and other confidential information
- Monitor and help protect Azure and on-premises resources with Azure Security Center and Operations Management Suite
- Effectively model threats and plan protection for IoT systems
- Use Azure security tools for operations, incident response, and forensic investigation

In the race to compete in today's fast-moving markets, large enterprises are busy adopting new technologies for creating new products, processes, and business models. But one obstacle on the road to digital transformation is placing too much emphasis on technology, and not enough on the types of processes technology enables. What if different lines of business could build their own services and applications—and decision-making was distributed rather than centralized? This report explores the concept of a digital business platform as a way of empowering individual business sectors to act on data in real time. Much innovation in a digital enterprise will increasingly happen at the edge, whether it involves business users (from marketers to data scientists) or IoT devices. To facilitate the process, your core IT team can provide these sectors with the digital tools they need to innovate quickly. This report explores:

- Key cultural and organizational changes for developing business capabilities through cross-functional product teams
- A platform for integrating applications, data sources, business partners, clients, mobile apps, social networks, and IoT devices
- Creating internal API programs for building innovative edge services in low-code or no-code environments
- Tools including Integration Platform as a Service, Application Platform as a Service, and Integration Software as a Service
- The challenge of integrating microservices and serverless architectures
- Event-driven architectures for processing and reacting to events in real time

You'll also learn about a complete pervasive integration solution as a core component of a digital business platform to serve every audience in your organization.

This book relates research being implemented in three main research areas: secure connectivity and intelligent systems, real-time analytics and manufacturing knowledge and virtual manufacturing. Manufacturing SMEs and MNCs want to see how Industry 4.0 is

implemented. On the other hand, groundbreaking research on this topic is constantly growing. For the aforesaid reason, the Singapore Agency for Science, Technology and Research (A*STAR), has created the model factory initiative. In the model factory, manufacturers, technology providers and the broader industry can (i) learn how I4.0 technologies are implemented on real-world manufacturing use-cases, (ii) test process improvements enabled by such technologies at the model factory facility, without disrupting their own operations, (iii) co-develop technology solutions and (iv) support the adoption of solutions at their everyday industrial operation. The book constitutes a clear base ground not only for inspiration of researchers, but also for companies who will want to adopt smart manufacturing approaches coming from Industry 4.0 in their pathway to digitization.

Build cool Internet of Things (IoT) projects using Microsoft Azure cloud services About This Video Explore, Microsoft Azure IoT, one of the most popular cloud based IoT platforms Build projects in IoT using Microsoft Azure Cloud services Understand the security aspects of Microsoft Azure IoT In Detail If you are looking for that one course that will help you gain the confidence to learn Microsoft Azure IoT, you have come to the right place. With numerous custom-made illustrations and animations, we have set the standard in terms of production quality so that you can have a terrific learning experience. This course is meant for anyone who wants to build real-world IoT applications using Microsoft Azure Cloud services. If you are an engineer who wants to start working with one of the most popular cloud based IoT platforms or a hobbyist looking to enter the world of the Internet of Things, you will find this course very useful. This is because we have tailored this course by giving equal importance to both the projects as well as the concepts.

This book provides readers with a 360-degree perspective on the Internet of Things (IoT) design and M2M communication process. It is intended to be used as a design guide for the development of IoT solutions, covering architecture, design, and development methods. This book examines applications such as industry automation for Industry 4.0, Internet of Medical Things (IoMT), and Internet of Services (IoS) as it is unfolding. Discussions on engineering fundamentals are limited to what is required for the realization of IoT solutions. Internet of Things and M2M Communication Technologies: Architecture and Practical Design Approach to IoT in Industry 4.0 is written by an industry veteran with more than 30 years of hands-on experience. It is an invaluable guide for electrical, electronic, computer science, and information science engineers who aspire to be IoT designers and an authoritative reference for practicing designers working on IoT device development. Provides complete design approach to develop IoT solutions; Includes reference designs and guidance on relevant standards compliance; Addresses design for manufacturability and business models. This book provides a comprehensive guide to the design and prototyping of wearable technology and internet of things (IoT), in addition to their various components, applications, and practical considerations. The book also offers detailed design and prototyping of vital examples of these technologies covering all practical considerations. The authors begin with an introduction and brief history of wearable tech and IoT. They then move on to describe applications of the technology in the fields of biomedicine, civil defense, education, and more. This is followed by a review of electronic and digital circuits and other critical components. Later chapters discuss product development, security and privacy concerns, and software development.

This book presents the combined proceedings of the 8th International Conference on Computer Science and its Applications (CSA-16) and the 11st International Conference on Ubiquitous Information Technologies and Applications (CUTE 2016), both held in Bangkok, Thailand, December 19 - 21, 2016. The aim of these two meetings was to promote discussion and interaction among academics, researchers and professionals in the field of ubiquitous computing technologies. These proceedings reflect the state-of-the-art in the development of computational methods, involving theory, algorithm, numerical simulation, error and uncertainty analysis and novel application of new processing techniques in engineering, science, and other disciplines related to ubiquitous computing.

Security concerns around the rapid growth and variety of devices that are controlled and managed over the Internet is an immediate potential threat to all who own or use them. This book examines the issues surrounding these problems, vulnerabilities, what can be done to solve the problems, investigating the roots of the problems and how programming and attention to good security practice can combat the threats today that are a result of lax security processes on the Internet of Things, cloud computing and social media.

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