

## SignalR Realtime Application Cookbook

Create, train, and evaluate various machine learning models such as regression, classification, and clustering using ML.NET, Entity Framework, and ASP.NET Core Key Features Get well-versed with the ML.NET framework and its components and APIs using practical examples Learn how to build, train, and evaluate popular machine learning algorithms with ML.NET offerings Extend your existing machine learning models by integrating with TensorFlow and other libraries Book Description Machine learning (ML) is widely used in many industries such as science, healthcare, and research and its popularity is only growing. In March 2018, Microsoft introduced ML.NET to help .NET enthusiasts in working with ML. With this book, you'll explore how to build ML.NET applications with the various ML models available using C# code. The book starts by giving you an overview of ML and the types of ML algorithms used, along with covering what ML.NET is and why you need it to build ML apps. You'll then explore the ML.NET framework, its components, and APIs. The book will serve as a practical guide to helping you build smart apps using the ML.NET library. You'll gradually become well versed in how to implement ML algorithms such as regression, classification, and clustering with real-world examples and datasets. Each chapter will cover the practical implementation, showing you how to implement ML within .NET applications. You'll also learn to integrate TensorFlow in ML.NET applications. Later you'll discover how to store the regression model housing price prediction result to the database and display the real-time predicted results from the database on your web application using ASP.NET Core Blazor and SignalR. By the end of this book, you'll have learned how to confidently perform basic to advanced-level machine learning tasks in ML.NET. What you will learn Understand the framework, components, and APIs of ML.NET using C# Develop regression models using ML.NET for employee attrition and file classification Evaluate classification models for sentiment prediction of restaurant reviews Work with clustering models for file type classifications Use anomaly detection to find anomalies in both network traffic and login history Work with ASP.NET Core Blazor to create an ML.NET enabled web application Integrate pre-trained TensorFlow and ONNX models in a WPF ML.NET application for image classification and object detection Who this book is for If you are a .NET developer who wants to implement machine learning models using ML.NET, then this book is for you. This book will also be beneficial for data scientists and machine learning developers who are looking for effective tools to implement various machine learning algorithms. A basic understanding of C# or .NET is mandatory to grasp the concepts covered in this book effectively. Learn how web applications can be built efficiently using ASP.NET Core 2.0 and related frameworks About This Book Get to grips with the new features and APIs introduced in ASP.NET Core 2.0 Leverage the MVC framework and Entity Framework Core 2 to build efficient applications Learn to deploy your web

applications in new environments such as the cloud and Docker Who This Book Is For This book is for developers who would like to build modern web applications with ASP.NET Core 2.0. No prior knowledge of ASP.NET or .NET Core is required. However, basic programming knowledge is assumed. Additionally, previous Visual Studio experience will be helpful but is not required, since detailed instructions will guide through the samples of the book. This book can also help people, who work in infrastructure engineering and operations, to monitor and diagnose problems during the runtime of ASP.NET Core 2.0 web applications. What You Will Learn Set up your development environment using Visual Studio 2017 and Visual Studio Code Create a fully automated continuous delivery pipeline using Visual Studio Team Services Get to know the basic and advanced concepts of ASP.NET Core 2.0 with detailed examples Build an MVC web application and use Entity Framework Core 2 to access data Add Web APIs to your web applications using RPC, REST, and HATEOAS Authenticate and authorize users with built-in ASP.NET Core 2.0 features Use Azure, Amazon Web Services, and Docker to deploy and monitor your applications In Detail The ability to develop web applications that are highly efficient but also easy to maintain has become imperative to many businesses. ASP.NET Core 2.0 is an open source framework from Microsoft, which makes it easy to build cross-platform web applications that are modern and dynamic. This book will take you through all of the essential concepts in ASP.NET Core 2.0, so you can learn how to build powerful web applications. The book starts with a brief introduction to the ASP.NET Core framework and the improvements made in the latest release, ASP.NET Core 2.0. You will then build, test, and debug your first web application very quickly. Once you understand the basic structure of ASP.NET Core 2.0 web applications, you'll dive deeper into more complex concepts and scenarios. Moving on, we'll explain how to take advantage of widely used frameworks such as Model View Controller and Entity Framework Core 2 and you'll learn how to secure your applications. Finally, we'll show you how to deploy and monitor your applications using Azure, AWS, and Docker. After reading the book, you'll be able to develop efficient and robust web applications in ASP.NET Core 2.0 that have high levels of customer satisfaction and adoption. Style and approach Start an exciting journey to building high performance web applications using ASP.NET Core 2.0 and MVC Get definitive guidance on SignalR, a new library for ASP.NET developers that simplifies the process of adding real-time web functionality to your applications. Real-time web functionality enables server-side code to push content to connected clients instantly as it becomes available. With this book, Microsoft .NET developers familiar with HTML and JavaScript will gain the skills to add real-time and async communication features for web, desktop, and mobile phone applications. Topics include: Introduction to async development; HTTP and real-time communications; SignalR technology fundamentals; persistent connections and hubs; multiplatform real-time applications; advanced topics

Learn how SignalR uses Websockets when supported by the browser and the server and falls back to other techniques and technologies when it is not Use the simple ASP.NET API in SignalR for creating server-to-client remote procedure calls (RPC) that call JavaScript functions in client browsers from server-side .NET code. Exploit the API for connection management (e.g. connect and disconnect events), grouping connections, and authorization.

Get up to speed with using C# 8 and .NET Core 3.0 features to build real-world .NET Core applications Key Features Learn the core concepts of web applications, serverless computing, and microservices Create an ASP.NET Core MVC application using controllers, routing, middleware and authentication Build modern applications using cutting-edge services from Microsoft Azure Book Description .NET Core is a general-purpose, modular, cross-platform, and opensource implementation of .NET. The latest release of .NET Core 3 comes with improved performance and security features, along with support for desktop applications. .NET Core 3 is not only useful for new developers looking to start learning the framework, but also for legacy developers interested in migrating their apps. Updated with the latest features and enhancements, this updated second edition is a step-by-step, project-based guide. The book starts with a brief introduction to the key features of C# 8 and .NET Core 3. You'll learn to work with relational data using Entity Framework Core 3, before understanding how to use ASP.NET Core. As you progress, you'll discover how you can use .NET Core to create cross-platform applications. Later, the book will show you how to upgrade your old WinForms apps to .NET Core 3. The concluding chapters will then help you use SignalR effectively to add real-time functionality to your applications, before demonstrating how to implement MongoDB in your apps. Finally, you'll delve into serverless computing and how to build microservices using Docker and Kubernetes. By the end of this book, you'll be proficient in developing applications using .NET Core 3. What you will learn Understand how to incorporate the Entity Framework Core 3 to build ASP.NET Core MVC applications Create a real-time chat application using Azure's SignalR service Gain hands-on experience of working with Cosmos DB Develop an Azure Function and interface it with an Azure Logic App Explore user authentication with Identity Server and OAuth2 Understand how to use Azure Cognitive Services to add advanced functionalities with minimal code Get to grips with running a .NET Core application with Kubernetes Who this book is for This book is for developers and programmers of all levels who want to build real-world projects and explore the new features of .NET Core 3. Developers working on legacy desktop software who are looking to migrate to .NET Core 3 will also find this book useful. Basic knowledge of .NET Core and C# is assumed.

ASP .NET Core is a powerful framework to architect a powerful backend for scalable web applications. Combined with the solid front-end development capabilities of React, you will be reinforced to build a solid full-stack web. With this book, we will teach .NET developers how to harness the full potential of

React using ASP.NET Core as the backbone.

Microsoft's ASP.NET Core is a powerful web framework full of hidden features that this book will help you to understand. You'll get hands-on with customizing ASP.NET Core to suit your application development needs with the help of practical examples and best practices.

Real World Windows 8 Development is a developer's handbook - an essential guide to building complete, end-user ready Windows 8 applications on the XAML and C# programming stack from start to finish. Starting with Windows 8 basics and walking through practical aspects of building your Windows 8 application, you'll find step-by-step instructions and practical advice that will leave you with a modern, elegant app written to the highest of standards. Author Samidip Basu, an early adopter of Windows 8 app development techniques, breaks down the design, development, and polish of a real-world business application, adding handy tips and tricks around controls, user interface design, storage, navigation, contracts, and more. Give your Windows 8 application development efforts a kick-start with Real World Windows 8 Development. What you'll learn Discover the pertinent points of the technology stack in Windows 8 from a developer's perspective. Familiarize yourself with best practices around usage of controls, user experience paradigms, navigation, storage, service integration, contracts, and more. Incrementally make your Windows 8 application feature-rich and an integrated well-behaved citizen in the operating system. Learn from crisp, standalone discussion of topics in each chapter Who this book is for Real World Windows 8 Development is by a developer, for developers. The book is for .NET developers wanting to utilize their existing skills in XAML and C# towards building a Windows 8 application. On the fence about how your C# and .NET skills apply in the new WinRT world? Have a dream application idea that you slowly want to build up? This book is for you. Table of Contents Part I - Knowing the Ecosystem: Introduction to Windows 8 Part I - Knowing the Ecosystem: Modern UI Design Part II - Getting Started: The Platform & Developer Tools Part II - Getting Started: The Right Controls Part II - Getting Started: The Look & Feel Part II - Getting Started: Content Structuring & Navigation Part III - Into the Groove: Orientation & Visual States Part III - Into the Groove: Handling Data Part III - Into the Groove: Application Lifecycle Management Part III - Into the Groove: Contracts Part IV - The Bling: Media & Sensors Part IV - The Bling: Tiles, Badges, and Toasts Part V - Above & Beyond: Cloud Augmentation Part V - Above & Beyond: Live Service Integration Part V - Above & Beyond: Real-World Techniques Part V - Above & Beyond: Deployment

A step-by-step tutorial to get acquainted with the ASP.NET MVC4 Framework and its features in order to discover how to develop web applications using them. This book is targeted at people who are familiar with C# development on the .NET platform and are interested in web development with the ASP.NET development framework. No prior web or mobile development experience is required

Take Python beyond scripting to build robust, reusable, and efficient applications. About This Book Get to grips with Python techniques that address commonly encountered problems in general application development. Develop, package, and deploy efficient applications in a fun way. All-practical coverage of the major areas of application development, including best practices, exception handling, testing, refactoring, design patterns, performance, and GUI application development. Who This Book Is For Do you know the basics of Python and object oriented programming? Do you want to go an extra mile and learn techniques to make your Python application robust, extensible, and efficient? Then this book is for you. What You Will Learn Build a robust application by handling exceptions. Modularize, package, and release the source distribution. Document the code and implement coding standards. Create automated tests to catch bugs in the early development stage. Identify and re-factor badly written code to improve application life. Detect recurring problems in the code and apply design patterns. Improve code efficiency by identifying performance bottlenecks and fixing them. Develop simple GUI applications using Python. In Detail Python is one of the most widely used dynamic programming languages, supported by a rich set of libraries and frameworks that enable rapid development. But fast paced development often comes with its own baggage that could bring down the quality, performance, and extensibility of an application. This book will show you ways to handle such problems and write better Python applications. From the basics of simple command-line applications, develop your skills all the way to designing efficient and advanced Python apps. Guided by a light-hearted fantasy learning theme, overcome the real-world problems of complex Python development with practical solutions. Beginning with a focus on robustness, packaging, and releasing application code, you'll move on to focus on improving application lifetime by making code extensible, reusable, and readable. Get to grips with Python refactoring, design patterns and best practices. Techniques to identify the bottlenecks and improve performance are covered in a series of chapters devoted to performance, before closing with a look at developing Python GUIs. Style and approach The book uses a fantasy game theme as a medium to explain various topics. Specific aspects of application development are explained in different chapters. In each chapter the reader is presented with an interesting problem which is then tackled using hands-on examples with easy-to-follow instructions.

Explore the tools and techniques to build scalable and secured RESTful web services and web applications using C# 8 and ASP.NET Core 3.1 Key Features Delve into MVC patterns, configuration, routing, and deployment to build professional-grade applications Learn how to integrate ASP applications with the JavaScript frameworks React, Vue, and Angular Improve the performance of applications and the development team by implementing advanced ASP.NET Core concepts Book Description ASP.NET has been the preferred choice of web developers for a long time. With ASP.NET Core 3, Microsoft has made internal changes to the framework along with introducing new additions that will change the way you approach web development. This second edition has been thoroughly updated to help you make the most of

the latest features in the framework, right from gRPC and conventions to Blazor, which has a new chapter dedicated to it. You'll begin with an overview of the essential topics, exploring the Model-View-Controller (MVC) pattern, various platforms, dependencies, and frameworks. Next, you'll learn how to set up and configure the MVC environment, before delving into advanced routing options. As you advance, you'll get to grips with controllers and actions to process requests, and later understand how to create HTML inputs for models. Moving on, you'll discover the essential aspects of syntax and processes when working with Razor. You'll also get up to speed with client-side development and explore the testing, logging, scalability, and security aspects of ASP.NET Core. Finally, you'll learn how to deploy ASP.NET Core to several environments, such as Azure, Amazon Web Services (AWS), and Docker. By the end of the book, you'll be well versed in development in ASP.NET Core and will have a deep understanding of how to interact with the framework and work cross-platform. What you will learn

Understand the new capabilities of ASP.NET Core 3.1  
Become well versed in how to configure ASP.NET Core to use it to its full potential  
Create controllers and action methods, and understand how to maintain state  
Implement and validate forms and retrieve information from them  
Improve productivity by enforcing reuse, process forms, and effective security measures  
Delve into the new Blazor development model  
Deploy ASP.NET Core applications to new environments, such as Microsoft Azure, AWS, and Docker

Who this book is for  
If you are a developer with basic knowledge of ASP.NET MVC and want to build powerful applications, then this book is for you. Developers who want to explore the latest changes in ASP.NET Core 3.1 to build professional-level applications will also find this book useful. Familiarity with C#, ASP.NET Core, HTML, and CSS is expected to get the most out of this book.

ASP.NET Core 5 for Beginners is a practical guide for developers for building dynamic and powerful web applications with the ASP.NET Core framework and C#. From basic ASP terminologies to creating a single-page application, and from testing and maintaining the app to deploying it on the cloud, this book covers everything you need to get started.

WinUI is the future of Windows application development. It is the first step in Microsoft's Project Reunion, an open source effort to unify Windows development on an SPA. This book will help developers get up to speed with WinUI quickly to build new Windows applications or modernize existing desktop applications with the power of XAML Islands.

Microsoft ASP.NET SignalR adds real-time web functionality to your applications. This book helps you how to build SignalR application with several scenarios and code illustration. The following is a list of highlight topics in this book:

- \* Preparing Development Environment
- \* Persistent Connections
- \* ASP.NET SignalR Hubs
- \* ASP.NET SignalR Groups
- \* SignalR and ASP.NET MVC 5
- \* SignalR and .NET Client
- \* SignalR and Windows Store
- \* Publishing SignalR on Microsoft Azure
- \* SignalR and Windows Phone 8.1
- \* SignalR and Java

Blazor is the new way to build interactive web apps using C# and .NET. This Blazor C# book starts by helping you discover Blazor and its features for building your first application, which will show you how Blazor can be used on both the client-side and server-side.

ASP.NET SignalR is the new solution to real-time communication between servers and clients in .NET. Use it to push new data to a web page or mobile device as soon as it becomes available, whether it's a notification, live chat, up-to-the-minute financial data, or a range of other exciting applications. Innovations like Google live search and live Facebook and Twitter updates are pushing users' expectations of the real-time web. With Pro ASP.NET SignalR, you can join this revolution and learn skills that will be valuable for years to come. Pro ASP.NET SignalR starts with an introduction to the real-time web. Learn about the technologies underlying the SignalR library, such as WebSockets and long-polling, and how SignalR elegantly flips between them depending on the capabilities of the client. Next, meet the concepts of hubs and persistent connections and how to use them to build the components

of an ASP.NET SignalR application. Find out how to extend, test, debug, configure, scale, and host your applications, and how to target a range of clients, including Windows and iOS. The book rounds off with two case studies—a stock market price updater, and a collaborative drawing application—so you can get to grips with SignalR in a realistic scenario, using a broad range of the concepts covered in earlier chapters. As real-time updates to web and mobile apps become the norm, Pro ASP.NET SignalR will be your in-depth, one-stop companion to this new and exciting technology. What you'll learn

- The concept of hubs and hub proxies, and how to use them to build SignalR applications quickly and easily
- The concept of persistent connections and how to use them to build more advanced SignalR applications
- Debugging SignalR applications
- Configuring and scaling SignalR applications
- Hosting SignalR applications on Windows Azure
- How to apply all these concepts to a real ASP.NET or Windows Store app

Who this book is for This book will suit professional ASP.NET developers familiar with C#, IIS and JavaScript.

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- Chapter 3: Developing SignalR Applications using Hubs
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- Chapter 10: Building a Collaborative Drawing Application

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.

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Deliver rich audio and video real-time communication and peer-to-peer data exchange right in

the browser, without the need for proprietary plug-ins. This concise hands-on guide shows you how to use the emerging Web Real-Time Communication (WebRTC) technology to build a browser-to-browser application, piece by piece. The authors' learn-by-example approach is perfect for web programmers looking to understand real-time communication, and telecommunications architects unfamiliar with HTML5 and JavaScript-based client-server web programming. You'll use a ten-step recipe to create a complete WebRTC system, with exercises that you can apply to your own projects. Tour the WebRTC development cycle and trapezoid architectural model Understand how and why VoIP is shifting from standalone functionality to a browser component Use mechanisms that let client-side web apps interact with browsers through the WebRTC API Transfer streaming data between browser peers with the RTCPeerConnection API Create a signaling channel between peers for setting up a WebRTC session Put everything together to create a basic WebRTC system from scratch Learn about conferencing, authorization, and other advanced WebRTC features

If you are a CakePHP developer looking to ease the burden of development, then this book is for you. As a headfirst dive into the framework, this collection of recipes will help you get the most out of CakePHP, and get your applications baked in no time. Even if you're not familiar with the framework, we'll take you from basic CRUD building to useful solutions that will aid in getting the job done quickly and efficiently.

A fast-paced guide to develop, test, and deliver real-time communication in your .Net applications using SignalR About This Book- Build and test real-time apps in .Net using the new features of SignalR- Explore the fundamentals and the new methods and functions in the latest version of SignalR along with developing a complete application from scratch- A progressive, hands-on guide to gain an understanding of the SignalR framework Who This Book Is For If you are a .Net developer with good understanding of the .Net platform then this is an ideal book for you to learn how to build real-time apps using the SignalR framework. What You Will Learn- Explore the basic knowledge and understanding of SignalR- Get to know how to connect client to the server- Connecting a client with a server and setting a hub- Creating group connections together- Understand how to have state in the client to have specific operations- Securing SignalR connections- How to scale SignalR across multiple servers- Building a client for WPF- Building a client using Xamarin targeting Windows, iPhone and Android- Get to grips with monitoring the traffic in SignalR using Fiddler for Windows and Charles for OSX- Setting up code to host SignalR using OWIN In Detail With technology trends, demands on software have changed with more and more skilled users. Over the past few years, with services such as Facebook, Twitter and push notifications on smartphones, users are now getting used to being up to date with everything that happens all the time. With SignalR, the applications stay connected and will generate notifications when something happens either from the system or by other users thus giving new opportunities to enter into this new, exciting world of real-time application development. This is a step-by-step guide that follows a practical approach helping you as a developer getting to get started with SignalR by learning its fundamentals. It will help you through building real-time applications using the new methods and functions in the SignalR framework. Starting from getting persistent connections with the server, you will learn the

basics of connecting a client to the server and how the messaging works. This will be followed by setting up a hub on the server and consuming it from a JavaScript client. Next you will be taught how you can group connections together to send messages. We will then go on to know how you can have state in the client to handle specific operations like connecting or disconnecting. Then, moving on you will learn how to secure your SignalR connections using OWIN and scaling SignalR across multiple servers. Next you will learn building a client for WPF and building a client using Xamarin that targets Windows Phone, iPhone and Android. Lastly, you will learn how to monitor the traffic in SignalR using Fiddler, Charles and hosting SignalR using OWIN.

This is an example-oriented and comprehensive guide to learning the fundamentals of SignalR to build real-time applications. It will help you build real-time applications on the .Net platform in a step-by-step manner along with giving teaching techniques to deal with possible performance bottlenecks and other key topics.

Summary

Concurrency in .NET teaches you how to build concurrent and scalable programs in .NET using the functional paradigm. This intermediate-level guide is aimed at developers, architects, and passionate computer programmers who are interested in writing code with improved speed and effectiveness by adopting a declarative and pain-free programming style. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications.

About the Technology

Unlock the incredible performance built into your multi-processor machines. Concurrent applications run faster because they spread work across processor cores, performing several tasks at the same time. Modern tools and techniques on the .NET platform, including parallel LINQ, functional programming, asynchronous programming, and the Task Parallel Library, offer powerful alternatives to traditional thread-based concurrency.

About the Book

Concurrency in .NET teaches you to write code that delivers the speed you need for performance-sensitive applications. Featuring examples in both C# and F#, this book guides you through concurrent and parallel designs that emphasize functional programming in theory and practice. You'll start with the foundations of concurrency and master essential techniques and design practices to optimize code running on modern multiprocessor systems.

What's Inside

- The most important concurrency abstractions
- Employing the agent programming model
- Implementing real-time event-stream processing
- Executing unbounded asynchronous operations
- Best concurrent practices and patterns that apply to all platforms

About the Reader

For readers skilled with C# or F#. About the Book

Riccardo Terrell is a seasoned software engineer and Microsoft MVP who is passionate about functional programming. He has over 20 years' experience delivering cost-effective technology solutions in a competitive business environment.

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ASP.NET SignalR is the new solution to real-time communication between servers and clients in .NET. Use it to push new data to a web page or mobile device as soon as it becomes available, whether it's a notification, live chat, up-to-the-minute financial data, or a range of other exciting applications. Innovations like Google live search and live Facebook and Twitter updates are pushing users' expectations of the real-time web. With Pro ASP.NET SignalR, you can join this revolution and learn skills that will be valuable for years to come. Pro ASP.NET SignalR starts with an introduction to the real-time web. Learn about the technologies underlying the SignalR library, such as WebSockets and long-polling, and how SignalR elegantly flips between them depending on the capabilities of the client. Next, meet the concepts of hubs and persistent connections and how to use them to build the components of an ASP.NET SignalR application. Find out how to extend, test, debug, configure, scale, and host your applications, and how to target a range of clients, including Windows and iOS. The book rounds off with two case studies—a stock market price updater, and a collaborative drawing application—so you can get to grips with SignalR in a realistic scenario, using a broad range of the concepts covered in earlier chapters. As real-time updates to web and mobile apps become the norm, Pro ASP.NET SignalR will be your in-depth, one-stop companion to this new and exciting technology.

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.

New edition of the bestselling guide to building an effective mobile app architecture with Xamarin.Forms 4 that maximizes the overall quality of apps.  
Key Features Updated for Xamarin.Forms 4 Packed with real-world scenarios and solutions to help you build professional grade mobile apps with Xamarin.Forms Includes design patterns and best practice techniques that every mobile developer should know  
Book Description Discover how to extend and build upon the components of the most recent version of Xamarin.Forms to develop an effective, robust mobile app architecture. This new edition features Xamarin.Forms 4 updates, including CollectionView and RefreshView, new coverage of client-side validation, and updates on how to implement user authentication. Mastering Xamarin.Forms, Third Edition is one of the few Xamarin books structured around the development of a simple app from start to finish, beginning with a basic Xamarin.Forms app and going step by step through several advanced topics to create a solution architecture rich with the benefits of good design patterns and best practices. This book introduces a core separation between the app's user interface and the app's business logic by applying the MVVM pattern and data binding, and then focuses on building a layer of plugin-like services that handle platform-specific utilities such as navigation and geo-location, as well as how to loosely use these services in the app with inversion of control and dependency injection. You'll connect the app to a live web-based API and set up offline synchronization before testing the app logic through unit testing. Finally, you will learn how to add monitoring to your Xamarin.Forms projects to track crashes and analytics and gain a proactive edge on quality. What you will learn Find out how, when, and why to use architecture patterns and best practices with Xamarin.Forms Implement the Model-View-ViewModel (MVVM) pattern and data binding in Xamarin.Forms mobile apps Incorporate client-side validation in Xamarin.Forms mobile apps Extend the Xamarin.Forms navigation API with a custom ViewModel-centric navigation service Leverage the inversion of control and dependency injection patterns in Xamarin.Forms mobile apps Work with online and offline data in Xamarin.Forms mobile apps Use platform-specific APIs to build rich custom user interfaces in Xamarin.Forms mobile apps Explore how to monitor mobile app quality using Visual Studio App Center Who this book is for This book is intended for .NET developers who are familiar with Xamarin mobile application development and the open source Xamarin.Forms toolkit. If you have already started working with Xamarin.Forms

and want to take your app to the next level, making it more maintainable, testable and flexible, then this book is for you.

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 Microservices in .NET, Second Edition teaches you to build and deploy microservices using ASP.NET and Azure services. Summary In Microservices in .NET, Second Edition you will learn how to: Build scalable microservices that are reliable in production Optimize microservices for continuous delivery Design event-based collaboration between microservices Deploy microservices to Kubernetes Set up Kubernetes in Azure Microservices in .NET, Second Edition is a comprehensive guide to building microservice applications using the .NET stack. After a crystal-clear introduction to the microservices architectural style, it teaches you practical microservices development skills using ASP.NET. This second edition of the bestselling original has been revised with up-to-date tools for the .NET ecosystem, and more new coverage of scoping microservices and deploying to Kubernetes. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the technology Microservice architectures connect independent components that must work together as a system. Integrating new technologies like Docker and Kubernetes with Microsoft's familiar ASP.NET framework and Azure cloud platform enables .NET developers to create and manage microservices efficiently. About the book Microservices in .NET, Second Edition teaches you to build and deploy microservices using ASP.NET and Azure services. It lays out microservice architecture simply, and then guides you through several real-world projects, such as building an ecommerce shopping cart. In this fully revised edition, you'll learn about scoping microservices, deploying to Kubernetes, and operations concerns like monitoring, logging, and security. What's inside Optimize microservices for continuous delivery Design event-based collaboration between microservices Deploy microservices to Kubernetes Set up Kubernetes in Azure About the reader For C# developers. No experience with microservices required.

About the author Christian Horsdal is an independent consultant with more than 20 years of experience building projects from large-scale microservice systems to tiny embedded systems. Table of Contents PART 1 GETTING STARTED WITH MICROSERVICES 1 Microservices at a glance 2 A basic shopping cart microservice 3 Deploying a microservice to Kubernetes PART 2 BUILDING MICROSERVICES 4 Identifying and scoping microservices 5 Microservice collaboration 6 Data ownership and data storage 7 Designing for robustness 8 Writing tests for microservices PART 3 HANDLING CROSS-CUTTING CONCERNS: BUILDING A REUSABLE MICROSERVICE PLATFORM 9 Cross-cutting concerns: Monitoring and logging 10 Securing microservice-to-microservice communication 11 Building a reusable microservice platform PART 4 BUILDING APPLICATIONS 12 Creating applications over microservices

If you are a .NET developer who is looking for a simpler way to build services, this is the book for you. It will show you how to write fast, maintainable APIs that are a pleasure to use and maintain starting from the database to the client and everything in-between.

This book is designed for software developers, primarily those with knowledge of C#, .NET, and JavaScript. Good knowledge and understanding of SignalR is assumed to allow efficient programming of core elements and applications in SignalR.

Master efficient parallel programming to build powerful applications using Python About This Book Design and implement efficient parallel software Master new programming techniques to address and solve complex programming problems Explore the world of parallel programming with this book, which is a go-to resource for different kinds of parallel computing tasks in Python, using examples and topics covered in great depth Who This Book Is For Python Parallel Programming Cookbook is intended for software developers who are well versed with Python and want to use parallel programming techniques to write powerful and efficient code. This book will help you master the basics and the advanced of parallel computing. What You Will Learn Synchronize multiple threads and processes to manage parallel tasks Implement message passing communication between processes to build parallel applications Program your own GPU cards to address complex problems Manage computing entities to execute distributed computational tasks Write efficient programs by adopting the event-driven programming model Explore the cloud technology with Django and Google App Engine Apply parallel programming techniques that can lead to performance improvements In Detail Parallel programming techniques are required for a developer to get the best use of all the computational resources available today and to build efficient software systems. From multi-core to GPU systems up to the distributed architectures, the high computation of programs throughout requires the use of programming tools and software libraries. Because of this, it is becoming increasingly important to know what the parallel programming techniques are. Python is commonly used as even non-experts can easily deal with its concepts. This book will teach you parallel programming techniques using examples in Python and will help you explore the many ways in which you can write code that allows more than one process to happen at once. Starting with introducing you to the world of parallel computing, it moves on to cover the

fundamentals in Python. This is followed by exploring the thread-based parallelism model using the Python threading module by synchronizing threads and using locks, mutex, semaphores queues, GIL, and the thread pool. Next you will be taught about process-based parallelism where you will synchronize processes using message passing along with learning about the performance of MPI Python Modules. You will then go on to learn the asynchronous parallel programming model using the Python asyncio module along with handling exceptions. Moving on, you will discover distributed computing with Python, and learn how to install a broker, use Celery Python Module, and create a worker. You will also understand the StarCluster framework, Pycsp, Scoop, and Disco modules in Python. Further on, you will learn GPU programming with Python using the PyCUDA module along with evaluating performance limitations. Next you will get acquainted with the cloud computing concepts in Python, using Google App Engine (GAE), and building your first application with GAE. Lastly, you will learn about grid computing concepts in Python and using PyGlobus toolkit, GFTP and GASS COPY to transfer files, and service monitoring in PyGlobus. Style and approach A step-by-step guide to parallel programming using Python, with recipes accompanied by one or more programming examples. It is a practically oriented book and has all the necessary underlying parallel computing concepts.

A fast-paced guide to develop, test, and deliver real-time communication in your .Net applications using SignalR About This Book Build and test real-time apps in .Net using the new features of SignalR Explore the fundamentals and the new methods and functions in the latest version of SignalR along with developing a complete application from scratch A progressive, hands-on guide to gain an understanding of the SignalR framework Who This Book Is For If you are a .Net developer with good understanding of the .Net platform then this is an ideal book for you to learn how to build real-time apps using the SignalR framework. What You Will Learn Explore the basic knowledge and understanding of SignalR Get to know how to connect client to the server Connecting a client with a server and setting a hub Creating group connections together Understand how to have state in the client to have specific operations Securing SignalR connections How to scale SignalR across multiple servers Building a client for WPF Building a client using Xamarin targeting Windows, iPhone and Android Get to grips with monitoring the traffic in SignalR using Fiddler for Windows and Charles for OSX Setting up code to host SignalR using OWIN In Detail With technology trends, demands on software have changed with more and more skilled users. Over the past few years, with services such as Facebook, Twitter and push notifications on smartphones, users are now getting used to being up to date with everything that happens all the time. With SignalR, the applications stay connected and will generate notifications when something happens either from the system or by other users thus giving new opportunities to enter into this new, exciting world of real-time application development. This is a step-by-step guide that follows a practical approach helping you as a developer getting to get started with SignalR by learning its fundamentals. It will help you through building real-time applications using the new methods and functions in the SignalR framework. Starting from getting persistent connections with the server, you will learn the basics of connecting a client to the server and how the messaging works. This will be followed by setting up a hub on the server and consuming it from a JavaScript client. Next you will be taught how you can group connections together to

send messages. We will then go on to know how you can have state in the client to handle specific operations like connecting or disconnecting. Then, moving on you will learn how to secure your SignalR connections using OWIN and scaling SignalR across multiple servers. Next you will learn building a client for WPF and building a client using Xamarin that targets Windows Phone, iPhone and Android. Lastly, you will learn how to monitor the traffic in SignalR using Fiddler, Charles and hosting SignalR using OWIN. Style and approach This is an example- oriented and comprehensive guide to learning the fundamentals of SignalR to build real-time applications. It will help you build real-time applications on the .Net platform in a step-by-step manner along with giving teaching techniques to deal with possible performance bottlenecks and other key topics.

This book contains illustrated code examples to help you create real-time, asynchronous, and bi-directional client-server applications. Each recipe will concentrate on one specific aspect of application development with SignalR showing you how that aspect can be used proficiently. Different levels of developers will find this book useful. Beginners will be able to learn all the fundamental concepts of SignalR, quickly becoming productive in a difficult arena. Experienced programmers will find in this book a handy and useful collection of ready-made solutions to common use cases, which they will be able to enhance as needed. Developers can also use the book as a quick reference to the most important SignalR features. No previous practical experience either with SignalR or with real-time communication in general is required.

Build cross-platform solutions with .NET Core 2.0 through real-life scenarios Key Features Bridges the gap between learning and doing and improves your software development skills Covers the best practices of .NET development to improve your productivity Example-based approach to get you started quickly with software programming Book Description With the rise in the number of tools and technologies available today, developers and architects are always exploring ways to create better and smarter solutions. Before, the differences between target platforms was a major roadblock, but that's not the case now. .NET Core 2.0 By Example will take you on an exciting journey to building better software. This book provides fresh and relevant content to .NET Core 2.0 in a succinct format that's enjoyable to read. It also delivers concepts, along with the implications, design decisions, and potential pitfalls you might face when targeting Linux and Windows systems, in a logical and simple way. With the .NET framework at its center, the book comprises of five varied projects: a multiplayer Tic-tac-toe game; a real-time chat application, Let'sChat; a chatbot; a microservice-based buying-selling application; and a movie booking application. You will start each chapter with a high-level overview of the content, followed by the above example applications described in detail. By the end of each chapter, you will not only be proficient with the concepts, but you'll also have created a tangible component in the application. By the end of the book, you will have built five solid projects using all the tools and support provided by the .NET Core 2.0 framework. What you will learn Build cross-platform applications with ASP.NET Core 2.0 and its tools Integrate, host, and deploy web apps with the cloud (Microsoft Azure) Leverage the ncurses native library to extend console capabilities in .NET Core on Linux and interop with native coden .NET Core on Linux and learn how to interop with existing native code Reuse existing .NET Framework and Mono assemblies from .NET Core 2.0 applications Develop real-time

web applications using ASP.NET Core Learn the differences between SOA and microservices and get started with microservice development using ASP.NET Core 2.0 Walk through functional programming with F# and .NET Core from scratch Who this book is for If you are a developer or architect and want to learn how to build cross-platform solutions using Microsoft .NET Core, this book is for you. It is assumed that you have some knowledge of the .NET Framework, OOP, and C# (or a similar programming language).

Step by Step guide filled with real world practical examples. About This Book Get your first experience with data analysis with one of the most powerful types of analysis—time-series. Find patterns in your data and predict the future pattern based on historical data. Learn the statistics, theory, and implementation of Time-series methods using this example-rich guide Who This Book Is For This book is for anyone who wants to analyze data over time and/or frequency. A statistical background is necessary to quickly learn the analysis methods. What You Will Learn Understand the basic concepts of Time Series Analysis and appreciate its importance for the success of a data science project Develop an understanding of loading, exploring, and visualizing time-series data Explore auto-correlation and gain knowledge of statistical techniques to deal with non-stationarity time series Take advantage of exponential smoothing to tackle noise in time series data Learn how to use auto-regressive models to make predictions using time-series data Build predictive models on time series using techniques based on auto-regressive moving averages Discover recent advancements in deep learning to build accurate forecasting models for time series Gain familiarity with the basics of Python as a powerful yet simple to write programming language In Detail Time Series Analysis allows us to analyze data which is generated over a period of time and has sequential interdependencies between the observations. This book describes special mathematical tricks and techniques which are geared towards exploring the internal structures of time series data and generating powerful descriptive and predictive insights. Also, the book is full of real-life examples of time series and their analyses using cutting-edge solutions developed in Python. The book starts with descriptive analysis to create insightful visualizations of internal structures such as trend, seasonality and autocorrelation. Next, the statistical methods of dealing with autocorrelation and non-stationary time series are described. This is followed by exponential smoothing to produce meaningful insights from noisy time series data. At this point, we shift focus towards predictive analysis and introduce autoregressive models such as ARMA and ARIMA for time series forecasting. Later, powerful deep learning methods are presented, to develop accurate forecasting models for complex time series, and under the availability of little domain knowledge. All the topics are illustrated with real-life problem scenarios and their solutions by best-practice implementations in Python. The book concludes with the Appendix, with a brief discussion of programming and solving data science problems using Python. Style and approach This book takes the readers from the basic to advance level of Time series analysis in a very practical and real world use cases.

A beginner's guide to building fully functioning web applications from scratch using the latest features of ASP.NET Core 3 and C# 8 Key Features Get to grips with the new features and APIs in ASP.NET Core 3, EF Core 3, and Blazor Create web APIs that integrate your applications with other systems and services Learn to deploy your web

applications in new environments such as the cloud and Docker containers

**Book Description** ASP.NET Core is an open source framework from Microsoft that makes it easy to build highly efficient and dynamic cross-platform web applications. Updated for the latest features of ASP.NET Core 3, this second edition will equip you with the skills you need to build powerful web applications. The book starts with an introduction to ASP.NET Core and its features, giving you a complete understanding of the framework. You will also learn how to set up your development environment with Visual Studio 2019 and build a fully functioning application from scratch. You'll then understand core concepts for building web applications such as Model View Controller (MVC), dependency injection, and WebSockets. As you advance, you'll discover how to use Entity Framework Core 3 to automate all database-related activities for your application. You will then build and document secure web APIs using security best practices to protect your web applications from threats and vulnerabilities. Finally, you will learn how to use Azure DevOps as a CI/CD tool to deploy and monitor your applications using Microsoft Azure, Amazon Web Services (AWS), and Docker. By the end of this book, you'll have the skills you need to develop efficient and robust web applications in ASP.NET Core 3.

**What you will learn**

- Delve into basic and advanced ASP.NET Core 3 concepts with the help of examples
- Build an MVC web application and use Entity Framework Core 3 to access data
- Add web APIs to your web applications using RPC, REST, and HATEOAS
- Create a fully automated continuous integration and continuous delivery (CI/CD) pipeline using Azure DevOps
- Use Azure, Amazon Web Services, and Docker to deploy and monitor your applications
- Secure your web application from common attacks such as Cross-Site Scripting and SQL injection
- Explore client-side development using C# Razor components

**Who this book is for** This book is for developers who want to build modern web applications with ASP.NET Core. The book will also be helpful for anyone working in infrastructure engineering and operations to monitor and diagnose problems during the runtime of ASP.NET Core 3.0 web applications. Although no prior understanding of ASP.NET or .NET Core is required, basic C# programming knowledge is assumed.

ASP.NET Core and Vue.js is a practical web application development book that will help you develop modern full-stack web apps, which can withstand scale and performance challenges. You'll learn all the core aspects and effectively implement them using best practices in coding and project structuring.

Learn to build a simple data-driven mobile game application using the power of Xamarin.Forms, ASP.NET, the Web API, and SignalR with this short book. In it you will build a cross-platform mobile application that targets both iOS and Android, connect your app with your database using Entity Framework, and implement real-time syncing functionality using SignalR.

**Understanding Game Application Development** starts by giving you an overview of the development tools, an installation guide, and a list of prerequisites. You will learn how to manage application flow, create your workspace, and set up your database. Next, you will see how to access data for handling CRUD operations and define the necessary API endpoints. Further, you will build a mobile application with Xamarin.Forms, both in iOS and in Android. You will also understand the deployment and testing process as well as how to build a real-time leader board using ASP.NET MVC and SignalR. Finally, you will understand how to publish your source code on GitHub from Visual Studio 2017.

**What You Will Learn**

- Understand the

basic concept and fundamentals of the technologies used for building the applications  
Set up your development environment  
Create a SQL database from scratch  
Implement a data access layer  
Define REST service endpoints using the Web API  
Deploy, test, and debug iOS and Android applications  
Push your source code to GitHub  
Who This Book Is For .NET developers who want to jump on mobile application development with Xamarin and learn with practical examples.

Design, develop, and deploy a real-world web application by leveraging modern open source technologies. This book shows you how to use ASP.NET Core to build cross-platform web applications along with SignalR to enrich the application by enabling real-time communication between server and clients. You will use Docker to containerize your application, integrate with GitHub to package the application, and provide continuous deployment to Azure's IaaS platform. Along the way, Real-Time Web Application Development covers topics including designing a Materialize CSS theme, using a test-driven development approach with xUnit.net, and securing your application with the OAuth 2.0 protocol. To further your understanding of the technology, you will learn logging and exception handling; navigation using view components; and how to work with forms and validations. The rich code samples from this book can be used to retrofit or upgrade existing ASP.NET Core applications. What You Will Learn  
Design and develop a real-world web application  
Implement security and data storage with OAuth2 and Azure Table Storage  
Orchestrate real-time notifications through SignalR  
Use GitHub and Travis CI for continuous integration of code  
Master Docker containerization and continuous deployment with Docker Cloud to Azure Linux virtual machines  
Who This Book Is For Developers and software engineers interested in learning an end-to-end approach to application development using Microsoft technologies.

SignalR Real-time Application CookbookPackt Publishing Ltd

Provides information on using ASP.NET MVC 4 to build server-side Web applications.

Design, develop, build, and deliver an end-to-end serverless architecture by leveraging Azure services, frameworks, and tools. This book offers a holistic approach, guiding you through the design and development of a Twitter Bot application, while leveraging Azure Functions. Integrating Serverless Architecture begins with an overview of serverless computing and getting started with Azure Functions. Here, you will create a Twitter bot function which scans Twitter for the latest tweets and makes use of dependency injection. Further, you will learn about Azure Cosmos DB where you will cover its change feed mechanism and the repository pattern. You will create a Cosmos DB trigger-based tweet notifier function, which will broadcast the latest tweets to connected clients. You will explore the basics of Azure Service Bus and create a tweet scheduler function, which will prioritize different keywords for the Twitter bot function. Along the way, you will debug, deliver, and test the functions in the Azure environment. This book shows you how to secure your Azure Function secrets with the help of Azure Key Vault. To further your understanding of the technology, you will learn logging and exception handling in Azure Functions. Later in the book, you will build a Twitter bot web application by using ASP.NET Core and Materialize CSS,

which will interact with several HTTP-based Azure Functions. The Twitter bot web application allows users to log in through the Twitter Identity Provider, subscribe to different keywords/hashtags, and browse the latest tweets based on subscriptions. You will get started with SignalR Service and integrate it with Azure Functions and web applications. Towards the end you will go through app service authentication on Azure Functions and discover how to configure continuous integration and delivery to Azure Functions. After reading this book, you will be able to understand the steps involved in design, development, and delivery of a workflow using Azure Functions. What You Will Learn Design and develop a Twitter bot application using Azure Functions with Azure Web App Service as the front end Leverage Azure Cosmos DB as data storage and trigger notifications using its change feed mechanism Store and retrieve secrets from Azure Key Vault Integrate Azure Functions with Azure SignalR Service to broadcast real-time messages Secure Azure Functions by enabling Twitter identity authentication using built-in App Service authentication Build a continuous integration and continuous delivery pipeline for Azure Functions using Visual Studio Team Services (VSTS) Who This Book Is For Developers, software engineers, and architects who design and manage infrastructures and build applications by leveraging Microsoft cloud services.

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. Through four complete sprints, this book takes you through every step needed to build brand new cross-platform web apps with ASP.NET Core, and make them available on the Internet. You won't just master Microsoft's revolutionary open source ASP.NET Core technology: you'll learn how to integrate the immense power of MVC, Docker, Azure Web Apps, Visual Studio and Visual Studio Code, C#, JavaScript, TypeScript, and Entity Framework. Working through the authors' carefully designed sprints, you'll start with a blank canvas, move through software architecture and design, adjusting to user feedback, recovering from mistakes, builds, testing, deployment, maintenance, refactoring, and more. Along the way, you'll learn techniques for delivering state-of-the-art software to users more rapidly and repeatably than ever before. In this book, you'll be introduced to the features and capabilities of ASP.NET 3.5, as well as the foundation that ASP.NET provides. Updated for the latest release of Visual Studio, this new edition adds five hundred pages of great new content compared to the original 2.0 version of the book. Including both printed and downloadable VB and C# code examples, this edition focuses even more on experienced programmers and advanced web development. New coverage includes new chapters on IIS 7 development, LINQ, ASP.NET, Silverlight, and many others.

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