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API development is becoming increasingly common for server-side developers thanks to the rise of front-end JavaScript frameworks, iPhone applications, and API-centric architectures. It might seem like grabbing stuff from a data source and shoving it out as JSON would be easy, but surviving changes in business logic, database schema updates, new features, or deprecated endpoints can be a nightmare. After finding many of the existing resources for API development to be lacking, Phil learned a lot of things the hard way through years of trial and error. This book aims to condense that experience, taking examples and explanations further than the trivial apples and pears nonsense tutorials often provide. By passing on some best practices and general good advice you can hit the ground running with API development, combined with some horror stories and how they were overcome/avoided/averted. This book will discuss the theory of designing and building APIs in any language or framework, with this theory applied in PHP-based examples.

Explore the concepts and tools you need to discover the world of microservices with various design patterns Key Features Get to grips with the microservice architecture and build enterprise-ready microservice applications Learn design patterns and the best practices while building a microservice application Obtain hands-on techniques and tools to create high-performing microservices resilient to possible fails Book Description Microservices are a hot trend in the development world right now. Many enterprises have adopted this approach to achieve agility and the continuous delivery of applications to gain a competitive advantage. This book will take you through different design patterns at different stages of the microservice application development along with their best practices. Mi-

croservice Patterns and Best Practices starts with the learning of microservices key concepts and showing how to make the right choices while designing microservices. You will then move onto internal microservices application patterns, such as caching strategy, asynchronism, CQRS and event sourcing, circuit breaker, and bulkheads. As you progress, you'll learn the design patterns of microservices. The book will guide you on where to use the perfect design pattern at the application development stage and how to break monolithic application into microservices. You will also be taken through the best practices and patterns involved while testing, securing, and deploying your microservice application. At the end of the book, you will easily be able to create interoperable microservices, which are testable and prepared for optimum performance. What you will learn How to break monolithic application into microservices Implement caching strategies, CQRS and event sourcing, and circuit breaker patterns Incorporate different microservice design patterns, such as shared data, aggregator, proxy, and chained Utilize consolidate testing patterns such as integration, signature, and monkey tests Secure microservices with JWT, API gateway, and single sign on Deploy microservices with continuous integration or delivery, Blue--Green deployment Who this book is for This book is for architects and senior developers who would like implement microservice design patterns in their enterprise application development. The book assumes some prior programming knowledge.

How do today’s most successful tech companies—Amazon, Google, Facebook, Netflix, Tesla—design, develop, and deploy the products that have earned the love of literally billions of people around the world? Perhaps surprisingly, they do it very differently than the vast majority of tech companies. In INSPIRED, technology product management thought leader Marty Cagan provides readers with a master class in how to structure and staff a vibrant and successful product organization, and how to discover and deliver technology products that your customers will love—and that will work for your business. With sections on assembling the right people and skillsets, discovering the right product, embracing an effective yet lightweight process, and creating a strong product culture, readers can take the information they learn and immediately leverage it within their own organizations—dramatically improving their own product efforts. Whether you’re an early stage startup working to get to product/market fit, or a growth-stage company working to scale your product organization, or a large, long-established company trying to regain your ability to consistently deliver new value for your customers, INSPIRED will take you and your product organization to a new level of customer engagement, consistent innovation, and business success. Filled with the author’s own personal stories—and profiles of some of today’s most-successful product managers and technology-powered product companies, including Adobe, Apple, BBC, Google, Microsoft, and Netflix—INSPIRED will show you how to turn up the dial of your own product efforts, creating technology products your customers love. The first edition of INSPIRED, published ten years ago, established itself as the primary reference for technology product managers,

and can be found on the shelves of nearly every successful technology product company worldwide. This thoroughly updated second edition shares the same objective of being the most valuable resource for technology product managers, yet it is completely new—sharing the latest practices and techniques of today's most-successful tech product companies, and the men and women behind every great product.
The infrastructure-as-code revolution in IT is also affecting database administration. With this practical book, developers, system administrators, and junior to mid-level DBAs will learn how the modern practice of site reliability engineering applies to the craft of database architecture and operations. Authors Laine Campbell and Charity Majors provide a framework for professionals looking to join the ranks of today's database reliability engineers (DBRE). You'll begin by exploring core operational concepts that DBREs need to master. Then you'll examine a wide range of database persistence options, including how to implement key technologies to provide resilient, scalable, and performant data storage and retrieval. With a firm foundation in database reliability engineering, you'll be ready to dive into the architecture and operations of any modern database. This book covers: Service-level requirements and risk management Building and evolving an architecture for operational visibility Infrastructure engineering and infrastructure management How to facilitate the release management process Data storage, indexing, and replication Identifying datastore characteristics and best use cases Datastore architectural components and data-driven architectures

Publisher's Note: Products purchased from Third Party sellers are not guaranteed by the publisher for quality, authenticity, or access to any online entitlements included with the product. Design and build scalable web applications quickly This is an invaluable roadmap for meeting the rapid demand to deliver scalable applications in a startup environment. With a focus on core concepts and best practices rather than on individual languages, platforms, or technologies, Web Scalability for Startup Engineers describes how infrastructure and software architecture work together to support a scalable environment. You'll learn, step by step, how scalable systems work and how to solve common challenges. Helpful diagrams are included throughout, and real--world examples illustrate the concepts presented. Even if you have limited time and resources, you can successfully develop and deliver robust, scalable web applications with help from this practical guide. Learn the key principles of good software design required for scalable systems Build the front-end layer to sustain the highest levels of concurrency and request rates Design and develop web services, including REST--ful APIs Enable a horizontally scalable data layer Implement caching best practices Leverage asynchronous processing, messaging, and event--driven architecture Structure, index, and store data for optimized search Explore other aspects of scalability, such as automation, project management, and agile teams
This invaluable roadmap for startup engineers reveals how to successfully handle web application scalability challenges to meet increasing product and traffic demands. Web Scalability for Startup Engi-

neers shows engineers working at startups and small companies how to plan and implement a comprehensive scalability strategy. It presents broad and holistic view of infrastructure and architecture of a scalable web application. Successful startups often face the challenge of scalability, and the core concepts driving a scalable architecture are language and platform agnostic. The book covers scalability of HTTP-based systems (websites, REST APIs, SaaS, and mobile application backends), starting with a high-level perspective before taking a deep dive into common challenges and issues. This approach builds a holistic view of the problem, helping you see the big picture, and then introduces different technologies and best practices for solving the problem at hand. The book is enriched with the author's real-world experience and expert advice, saving you precious time and effort by learning from others' mistakes and successes. Language-agnostic approach addresses universally challenging concepts in Web development/scalability—does not require knowledge of a particular language Fills the gap for engineers in startups and smaller companies who have limited means for getting to the next level in terms of accomplishing scalability Strategies presented help to decrease time to market and increase the efficiency of web applications 50 Powerful, Easy-to-Use Rules for Supporting Hypergrowth in Any Environment Scalability Rules is the easy-to-use scalability primer and reference for every architect, developer, web professional, and manager. Authors Martin L. Abbott and Michael T. Fisher have helped scale more than 200 hypergrowth Internet sites through their consulting practice. Now, drawing on their unsurpassed experience, they present 50 clear, proven scalability rules—and practical guidance for applying them. Abbott and Fisher transform scalability from a "black art" to a set of realistic, technology-agnostic best practices for supporting hypergrowth in nearly any environment, including both frontend and backend systems. For architects, they offer powerful new insights for creating and evaluating designs. For developers, they share specific techniques for handling everything from databases to state. For managers, they provide invaluable help in goal-setting, decision-making, and interacting with technical teams. Whatever your role, you'll find practical risk/benefit guidance for setting priorities—and getting maximum "bang for the buck." • Simplifying architectures and avoiding "over-engineering" • Scaling via cloning, replication, separating functionality, and splitting data sets • Scaling out, not up • Getting more out of databases without compromising scalability • Avoiding unnecessary redirects and redundant double-checking • Using caches and content delivery networks more aggressively, without introducing unacceptable complexity • Designing for fault tolerance, graceful failure, and easy rollback • Striving for statelessness when you can; efficiently handling state when you must • Effectively utilizing asynchronous communication • Learning quickly from mistakes, and much more

Describing how infrastructure and software architecture work together to support a scalable environment; this book focuses on core concepts and best practices; rather than on individual languages; platforms; or technologies;

and explains step by step how scalable systems work and how to solve common challenges. --

Get a head start with eXist, the open source NoSQL database and application development platform built entirely around XML technologies. With this hands-on guide, you'll learn eXist from the ground up, from using this feature-rich database to work with millions of documents to building complex web applications that take advantage of eXist's many extensions. If you're familiar with XML—as a student, professor, publisher, or developer—you'll find that eXist is ideal for all kinds of documents. This book shows you how to store, query, and search documents with XQuery and other XML technologies, and how to construct applications on top of the database with tools such as eXide and eXist's built-in development environment. Manage both data-oriented and text-oriented markup documents securely Build a sample application that analyzes and searches Shakespeare's plays Go inside the architecture and learn how eXist processes documents Learn how to work with eXist's internal development environment Choose among various indexes, including a full-text index based on Apache Lucene Dive into eXist's APIs for integrating or interacting with the database Extend eXist by building your own Triggers, Scheduled Tasks, and XQuery extension modules

With the immense cost savings and scalability the cloud provides, the rationale for building cloud native applications is no longer in question. The real issue is how. With this practical guide, developers will learn about the most commonly used design patterns for building cloud native applications using APIs, data, events, and streams in both greenfield and brownfield development. You'll learn how to incrementally design, develop, and deploy large and effective cloud native applications that you can manage and maintain at scale with minimal cost, time, and effort. Authors Kasun Indrasiri and Sriskandarajah Suhothayan highlight use cases that effectively demonstrate the challenges you might encounter at each step. Learn the fundamentals of cloud native applications Explore key cloud native communication, connectivity, and composition patterns Learn decentralized data management techniques Use event-driven architecture to build distributed and scalable cloud native applications Explore the most commonly used patterns for API management and consumption Examine some of the tools and technologies you'll need for building cloud native systems

Most startups fail. But many of those failures are preventable. The Lean Startup is a new approach being adopted across the globe, changing the way companies are built and new products are launched. Eric Ries defines a startup as an organization dedicated to creating something new under conditions of extreme uncertainty. This is just as true for one person in a garage or a group of seasoned professionals in a Fortune 500 boardroom. What they have in common is a mission to penetrate that fog of uncertainty to discover a successful path to a sustainable business. The Lean Startup approach fosters companies that are both more capital efficient and that leverage human creativity more effectively. Inspired by lessons from lean manufacturing, it relies on "validated learning," rapid scientific experimentation, as

well as a number of counter-intuitive practices that shorten product development cycles, measure actual progress without resorting to vanity metrics, and learn what customers really want. It enables a company to shift directions with agility, altering plans inch by inch, minute by minute. Rather than wasting time creating elaborate business plans, The Lean Startup offers entrepreneurs—in companies of all sizes—a way to test their vision continuously, to adapt and adjust before it's too late. Ries provides a scientific approach to creating and managing successful startups in a age when companies need to innovate more than ever.

Do you need to learn about cloud computing architecture with Microsoft's Azure quickly? Read this book! It gives you just enough info on the big picture and is filled with key terminology so that you can join the discussion on cloud architecture.

This book is the "Hello, World" tutorial for building products, technologies, and teams in a startup environment. It's based on the experiences of the author, Yevgeniy (Jim) Brikman, as well as interviews with programmers from some of the most successful startups of the last decade, including Google, Facebook, LinkedIn, Twitter, GitHub, Stripe, Instagram, AdMob, Pinterest, and many others. Hello, Startup is a practical, how-to guide that consists of three parts: Products, Technologies, and Teams. Although at its core, this is a book for programmers, by programmers, only Part II (Technologies) is significantly technical, while the rest should be accessible to technical and non-technical audiences alike. If you're at all interested in startups—whether you're a programmer at the beginning of your career, a seasoned developer bored with large company politics, or a manager looking to motivate your engineers—this book is for you.

Today, software engineers need to know not only how to program effectively but also how to develop proper engineering practices to make their codebase sustainable and healthy. This book emphasizes this difference between programming and software engineering. How can software engineers manage a living codebase that evolves and responds to changing requirements and demands over the length of its life? Based on their experience at Google, software engineers Titus Winters and Hyrum Wright, along with technical writer Tom Manshreck, present a candid and insightful look at how some of the world's leading practitioners construct and maintain software. This book covers Google's unique engineering culture, processes, and tools and how these aspects contribute to the effectiveness of an engineering organization. You'll explore three fundamental principles that software organizations should keep in mind when designing, architecting, writing, and maintaining code: How time affects the sustainability of software and how to make your code resilient over time How scale affects the viability of software practices within an engineering organization What trade-offs a typical engineer needs to make when evaluating design and development decisions

More than 100,000 entrepreneurs rely on this book for detailed, step-by-step instructions on building successful, scalable, profitable startups. The National Science Foundation pays hundreds of startup teams each year to follow the process out-

lined in the book, and it's taught at Stanford, Berkeley, Columbia and more than 100 other leading universities worldwide. Why? The Startup Owner's Manual guides you, step-by-step, as you put the Customer Development process to work. This method was created by renowned Silicon Valley startup expert Steve Blank, co-creator with Eric Ries of the "Lean Startup" movement and tested and refined by him for more than a decade. This 608-page how--to guide includes over 100 charts, graphs, and diagrams, plus 77 valuable checklists that guide you as you drive your company toward profitability. It will help you: • Avoid the 9 deadly sins that destroy startups' chances for success • Use the Customer Development method to bring your business idea to life • Incorporate the Business Model Canvas as the organizing principle for startup hypotheses • Identify your customers and determine how to "get, keep and grow" customers profitably • Compute how you'll drive your startup to repeatable, scalable profits. The Startup Owner's Manual was originally published by K&S Ranch Publishing Inc. and is now available from Wiley. The cover, design, and content are the same as the prior release and should not be considered a new or updated product.

Wall Street Journal Bestseller "The pick of 2014's management books." –Andrew Hill, Financial Times "One of the top business books of the year." –Harvey Schacter, The Globe and Mail Bestselling author, Robert Sutton and Stanford colleague, Huggy Rao tackle a challenge that determines every organization's success: how to scale up farther, faster, and more effectively as an organization grows. Sutton and Rao have devoted much of the last decade to uncovering what it takes to build and uncover pockets of exemplary performance, to help spread them, and to keep recharging organizations with ever better work practices. Drawing on inside accounts and case studies and academic research from a wealth of industries-- including start-ups, pharmaceuticals, airlines, retail, financial services, high-tech, education, nonprofits, government, and healthcare-- Sutton and Rao identify the key scaling challenges that confront every organization. They tackle the difficult trade-offs that organizations must make between whether to encourage individualized approaches tailored to local needs or to replicate the same practices and customs as an organization or program expands. They reveal how the best leaders and teams develop, spread, and instill the right mindsets in their people--rather than ruining or watering down the very things that have fueled successful growth in the past. They unpack the principles that help to cascade excellence throughout an organization, as well as show how to eliminate destructive beliefs and behaviors that will hold them back. Scaling Up Excellence is the first major business book devoted to this universal and vexing challenge and it is destined to become the standard bearer in the field.

Discover BIM: A better way to build better buildings Building Information Modeling (BIM) offers a novel approach to design, construction, and facility management in which a digital representation of the building product and process is used to facilitate the exchange and interoperability of information in digital format. BIM is beginning to change the way buildings look,

the way they function, and the ways in which they are designed and built. The BIM Handbook, Third Edition provides an in-depth understanding of BIM technologies, the business and organizational issues associated with its implementation, and the profound advantages that effective use of BIM can provide to all members of a project team. Updates to this edition include: Information on the ways in which professionals should use BIM to gain maximum value New topics such as collaborative working, national and major construction clients, BIM standards and guides A discussion on how various professional roles have expanded through the widespread use and the new avenues of BIM practices and services A wealth of new case studies that clearly illustrate exactly how BIM is applied in a wide variety of conditions Painting a colorful and thorough picture of the state of the art in building information modeling, the BIM Handbook, Third Edition guides readers to successful implementations, helping them to avoid needless frustration and costs and take full advantage of this paradigm-shifting approach to construct better buildings that consume fewer materials and require less time, labor, and capital resources.

Data is at the center of many challenges in system design today. Difficult issues need to be figured out, such as scalability, consistency, reliability, efficiency, and maintainability. In addition, we have an overwhelming variety of tools, including relational databases, NoSQL datastores, stream or batch processors, and message brokers. What are the right choices for your application? How do you make sense of all these buzzwords? In this practical and comprehensive guide, author Martin Kleppmann helps you navigate this diverse landscape by examining the pros and cons of various technologies for processing and storing data. Software keeps changing, but the fundamental principles remain the same. With this book, software engineers and architects will learn how to apply those ideas in practice, and how to make full use of data in modern applications. Peer under the hood of the systems you already use, and learn how to use and operate them more effectively Make informed decisions by identifying the strengths and weaknesses of different tools Navigate the trade-offs around consistency, scalability, fault tolerance, and complexity Understand the distributed systems research upon which modern databases are built Peek behind the scenes of major online services, and learn from their architectures

Master powerful new approaches to web architecture, design, and user experience This book presents a pragmatic, problem-driven, user-focused approach to planning, designing, and building dynamic web solutions. You'll learn how to gain maximum value from Domain-Driven Design (DDD), define optimal supporting architecture, and succeed with modern UX-first design approaches. The author guides you through choosing and implementing specific technologies and addresses key user-experience topics, including mobile-friendly and responsive design. You'll learn how to gain more value from existing Microsoft technologies such as ASP.NET MVC and SignalR by using them alongside other technologies such as Bootstrap, AJAX, JSON, and JQuery. By using these techniques and understanding the new ASP.NET

Core 1.0, you can quickly build advanced web solutions that solve today's problems and deliver an outstanding user experience. Microsoft MVP Dino Esposito shows you how to: Plan websites and web apps to mirror real-world social and business processes Use DDD to dissect and master the complexity of business domains Use UX-Driven Design to reduce costs and give customers what they want Realistically compare server--side and client-side web paradigms Get started with the new ASP.NET Core 1.0 Simplify modern visual webpage construction with Bootstrap Master practical, efficient techniques for running ASP.NET MVC projects Consider new options for implementing persistence and working with data models Understand Responsive Web Design's pros, cons, and tradeoffs Build truly mobile-friendly, mobile-optimized websites About This Book For experienced developers and solution architects who want to plan and develop web solutions more effectively Assumes basic familiarity with the Microsoft web development stack

Every day, companies struggle to scale critical applications. As traffic volume and data demands increase, these applications become more complicated and brittle, exposing risks and compromising availability. With the popularity of software as a service, scaling has never been more important. Updated with an expanded focus on modern architecture paradigms such as microservices and cloud computing, this practical guide provides techniques for building systems that can handle huge quantities of traffic, data, and demand—without affecting the quality your customers expect. Architects, managers, and directors in engineering and operations organizations will learn how to build applications at scale that run more smoothly and reliably to meet the needs of customers. Learn how scaling affects the availability of your services, why that matters, and how to improve it Dive into a modern service-based application architecture that ensures high availability and reduces the effects of service failures Explore the Single Team Owned Service Architecture paradigm (STOSA)—a model for scaling your development organization in tandem with your application Understand, measure, and mitigate risk in your systems Use the cloud to build highly scalable applications

Learning to build distributed systems is hard, especially if they are large scale. It's not that there is a lack of information out there. You can find academic papers, engineering blogs, and even books on the subject. The problem is that the available information is spread out all over the place, and if you were to put it on a spectrum from theory to practice, you would find a lot of material at the two ends, but not much in the middle. That is why I decided to write a book to teach the fundamentals of distributed systems so that you don't have to spend countless hours scratching your head to understand how everything fits together. This is the guide I wished existed when I first started out, and it's based on my experience building large distributed systems that scale to millions of requests per second and billions of devices. If you develop the back-end of web or mobile applications (or would like to!), this book is for you. When building distributed systems, you need to be familiar with the network stack, data consistency models, scala-

bility and reliability patterns, and much more. Although you can build applications without knowing any of that, you will end up spending hours debugging and re-designing their architecture, learning lessons that you could have acquired in a much faster and less painful way.
Cloud native infrastructure is more than servers, network, and storage in the cloud—it is as much about operational hygiene as it is about elasticity and scalability. In this book, you'll learn practices, patterns, and requirements for creating infrastructure that meets your needs, capable of managing the full life cycle of cloud native applications. Justin Garrison and Kris Nova reveal hard-earned lessons on architecting infrastructure from companies such as Google, Amazon, and Netflix. They draw inspiration from projects adopted by the Cloud Native Computing Foundation (CNCF), and provide examples of patterns seen in existing tools such as Kubernetes. With this book, you will: Understand why cloud native infrastructure is necessary to effectively run cloud native applications Use guidelines to decide when—and if—your business should adopt cloud native practices Learn patterns for deploying and managing infrastructure and applications Design tests to prove that your infrastructure works as intended, even in a variety of edge cases Learn how to secure infrastructure with policy as code
Gain all of the techniques, teachings, tools, and methodologies required to be an effective first-time product manager. The overarching goal of this book is to help you understand the product manager role, give you concrete examples of what a product manager does, and build the foundational skill-set that will gear you towards a career in product management. To be an effective PM in the tech industry, you need to have a basic understanding of technology. In this book you'll get your feet wet by exploring the skills a PM needs in their toolset and cover enough ground to make you feel comfortable in a technical discussion. A PM is not expected to have the same level of depth or knowledge as a software engineer, but knowing enough to continue the conversation can be a benefit in your career in product management. A complete product manager will have a 360-degree understanding of user experience and how to craft beautiful products that are easy-to-use, with the end user in mind. You'll continue your journey with a walk through basic UX principles and even go through the process of building a simple set of UI frames for a mock app. Aside from the technical and design expertise, a PM needs to master the social aspects of the role. Acting as a bridge between engineering, marketing, and other teams can be difficult, and this book will dive into the business and soft skills of product management. After reading Product Management Essentials you will be one of a select few technically-capable PMs who can interface with management, stakeholders, customers, and the engineering team. What You Will Learn Gain the traits of a successful PM from industry PMs, VCs, and other professionals See the day-to-day responsibilities of a PM and how the role differs across tech companies Absorb the technical knowledge necessary to interface with engineers and estimate timelines Design basic mocks, high-fidelity wireframes, and fully polished user interfaces Create core documents and han-

dle business interactions Who This Book Is For Individuals who are eyeing a transition into a PM role or have just entered a PM role at a new organization for the first time. They currently hold positions as a software engineer, marketing manager, UX designer, or data analyst and want to move away from a feature-focused view to a high-level strategic view of the product vision.

While there is a lot of appreciation for backend and distributed systems challenges, there tends to be less empathy for why mobile development is hard when done at scale. This book collects challenges engineers face when building iOS and Android apps at scale, and common ways to tackle these. By scale, we mean having numbers of users in the millions and being built by large engineering teams. For mobile engineers, this book is a blueprint for modern app engineering approaches. For non-mobile engineers and managers, it is a resource with which to build empathy and appreciation for the complexity of world-class mobile engineering. The book covers iOS and Android mobile app challenges on these dimensions: Challenges due to the unique nature of mobile applications compared to the web, and to the backend. App complexity challenges. How do you deal with increasingly complicated navigation patterns? What about non-deterministic event combinations? How do you localize across several languages, and how do you scale your automated and manual tests? Challenges due to large engineering teams. The larger the mobile team, the more challenging it becomes to ensure a consistent architecture. If your company builds multiple apps, how do you balance not rewriting everything from scratch while moving at a fast pace, over waiting on "centralized" teams? Cross-platform approaches. The tooling to build mobile apps keeps changing. New languages, frameworks, and approaches that all promise to address the pain points of mobile engineering keep appearing. But which approach should you choose? Flutter, React Native, Cordova? Native apps? Reuse business logic written in Kotlin, C#, C++ or other languages? What engineering approaches do "world-class" mobile engineering teams choose in non-functional aspects like code quality, compliance, privacy, compliance, or with experimentation, performance, or app size?

One of the biggest challenges for organizations that have adopted microservice architecture is the lack of architectural, operational, and organizational standardization. After splitting a monolithic application or building a microservice ecosystem from scratch, many engineers are left wondering what’s next. In this practical book, author Susan Fowler presents a set of microservice standards in depth, drawing from her experience standardizing over a thousand microservices at Uber. You’ll learn how to design microservices that are stable, reliable, scalable, fault tolerant, performant, monitored, documented, and prepared for any catastrophe. Explore production-readiness standards, including: Stability and Reliability: develop, deploy, introduce, and deprecate microservices; protect against dependency failures Scalability and Performance: learn essential components for achieving greater microservice efficiency Fault Tolerance and Catastrophe Preparedness: ensure availability by actively pushing microservices to fail in real

time Monitoring: learn how to monitor, log, and display key metrics; establish alerting and on-call procedures Documentation and Understanding: mitigate tradeoffs that come with microservice adoption, including organizational sprawl and technical debt
Praise for the first edition: “This excellent text will be useful to everysystem engineer (SE) regardless of the domain. It covers ALL-relevant SE material and does so in a very clear, methodicalfashion. The breadth and depth of the author's presentation ofSE principles and practices is outstanding.” –Philip Allen This textbook presents a comprehensive, step-by-step guide toSystem Engineering analysis, design, and development via anintegrated set of concepts, principles, practices, andmethodologies. The methods presented in this text apply to any typeof human system -- small, medium, and large organizational systemsand system development projects delivering engineered systems orservices across multiple business sectors such as medical,transportation, financial, educational, governmental, aerospace anddefense, utilities, political, and charity, among others. Provides a common focal point for “bridgingthe gap” between and unifying System Users, System Acquirers,multi--discipline System Engineering, and Project, Functional, andExecutive Management education, knowledge, and decision-making fordeveloping systems, products, or services Each chapter provides definitions of key terms,guiding principles, examples, author’s notes, real-worldexamples, and exercises, which highlight and reinforce key SE&D-concepts and practices Addresses concepts employed in Model-BasedSystems Engineering (MBSE), Model-Driven Design (MDD), UnifiedModeling Language (UMLTM) / Systems Modeling Language(SysMLTM), and Agile/Spiral/V-Model Development such asuser needs, stories, and use cases analysis; specificationdevelopment; system architecture development; User-Centric SystemDesign (UCSD); interface definition & control; systemintegration & test; and Verification & Validation(V&V) Highlights/introduces a new 21st Century SystemsEngineering & Development (SE&D) paradigm that is easy tounderstand and implement. Provides practices that are critical stagingpoints for technical decision making such as Technical StrategyDevelopment; Life Cycle requirements; Phases, Modes, & States;SE Process; Requirements Derivation; System ArchitectureDevelopment, User-Centric System Design (UCSD); EngineeringStandards, Coordinate Systems, and Conventions; et al. Thoroughly illustrated, with end-of-chapter exercises andnumerous case studies and examples, Systems EngineeringAnalysis, Design, and Development, Second Edition is a primarytextbook for multi-discipline, engineering, system analysis, andproject management undergraduate/graduate level students and avaluable reference for professionals.
The system design interview is considered to be the most complex and most difficult technical job interview by many. Those questions are intimidating, but don't worry. It's just that nobody has taken the time to prepare you systematically. We take the time. We go slow. We draw lots of diagrams and use lots of examples. You'll learn step-by-step, one question at a time.Don't miss out-.What's inside?- An insider's take on what interviewers really look for and why.- A 4-step framework

for solving any system design interview question.- 16 real system design interview questions with detailed solutions.- 188 diagrams to visually explain how different systems work.

Discover the foundations of software engineering with this easy and intuitive guide In the newly updated second edition of Beginning Software Engineering, expert programmer and tech educator Rod Stephens delivers an instructive and intuitive introduction to the fundamentals of software engineering. In the book, you'll learn to create well--constructed software applications that meet the needs of users while developing the practical, hands-on skills needed to build robust, efficient, and reliable software. The author skips the unnecessary jargon and sticks to simple and straightforward English to help you understand the concepts and ideas discussed within. He also offers you real-world tested methods you can apply to any programming language. You'll also get: Practical tips for preparing for programming job interviews, which often include questions about software engineering practices A no-nonsense guide to requirements gathering, system modeling, design, implementation, testing, and debugging Brand-new coverage of user interface design, algorithms, and programming language choices Beginning Software Engineering doesn't assume any experience with programming, development, or management. It's plentiful figures and graphics help to explain the foundational concepts and every chapter offers several case examples, Try It Out, and How It Works explanatory sections. For anyone interested in a new career in software development, or simply curious about the software engineering process, Beginning Software Engineering, Second Edition is the handbook you've been waiting for.

Are you a customer success or support executive curious about adapting industry best practices to your organization? Are you a newly-promoted customer success or support manager with plenty of ideas, but not much management experience? Or are you an executive with no hands-on experience with customer success, but wanting to learn more about how to decrease churn and improve revenue expansion from existing customers? The Art of Support is a practical guide for managers and executives that answers your questions. In it, you will find: - Best practices for customer success and support, from designing customer lifecycle journeys, to managing day-to--day activities, to measuring results. - Nuanced recommendations to build or improve your organization. - Dozens of practical tools you can use right away such as customer scorecards, sample support portfolios, hiring checklists, decision trees for selecting support models, job ladders, and budget templates.

Problem-Solving in High Performance Computing: A Situational Awareness Approach with Linux focuses on understanding giant computing grids as cohesive systems. Unlike other titles on general problem--solving or system administration, this book offers a cohesive approach to complex, layered environments, highlighting the difference between standalone system troubleshooting and complex problem-solving in large, mission critical environments, and addressing the pitfalls of information overload, micro, and macro symptoms, also including methods for managing problems in large computing ecosystems.

The authors offer perspective gained from years of developing Intel-based systems that lead the industry in the number of hosts, software tools, and licenses used in chip design. The book offers unique, real-life examples that emphasize the magnitude and operational complexity of high performance computer systems. Provides insider perspectives on challenges in high performance environments with thousands of servers, millions of cores, distributed data centers, and petabytes of shared data Covers analysis, troubleshooting, and system optimization, from initial diagnostics to deep dives into kernel crash dumps Presents macro principles that appeal to a wide range of users and various real-life, complex problems Includes examples from 24/7 mission--critical environments with specific HPC operational constraints

Microservices architectures offer faster change speeds, better scalability, and cleaner, evolvable system designs. But implementing your first microservices architecture is difficult. How do you make myriad choices, educate your team on all the technical details, and navigate the organization to a successful execution to maximize your chance of success? With this book, authors Ronnie Mitra and Irakli Nadareishvili provide step-by-step guidance for building an effective microservices architecture. Architects and engineers will follow an implementation journey based on techniques and architectures that have proven to work for microservices systems. You'll build an operating model, a microservices design, an infrastructure foundation, and two working microservices, then put those pieces together as a single implementation. For anyone tasked with building microservices or a microservices architecture, this guide is invaluable. Learn an effective and explicit end-to-end microservices system design Define teams, their responsibilities, and guidelines for working together Understand how to slice a big application into a collection of microservices Examine how to isolate and embed data into corresponding microservices Build a simple yet powerful CI/CD pipeline for infrastructure changes Write code for sample microservices Deploy a working microservices application on Amazon Web Services

Imagine what you could do if scalability wasn't a problem. With this hands-on guide, you'll learn how the Cassandra database management system handles hundreds of terabytes of data while remaining highly available across multiple data centers. This expanded second edition—updated for Cassandra 3.0—provides the technical details and practical examples you need to put this database to work in a production environment. Authors Jeff Carpenter and Eben Hewitt demonstrate the advantages of Cassandra's non-relational design, with special attention to data modeling. If you're a developer, DBA, or application architect looking to solve a database scaling issue or future-proof your application, this guide helps you harness Cassandra's speed and flexibility. Understand Cassandra's distributed and decentralized structure Use the Cassandra Query Language (CQL) and cqlsh—the CQL shell Create a working data model and compare it with an equivalent relational model Develop sample applications using client drivers for languages including Java, Python, and Node.js Explore cluster topology and learn how nodes exchange data Maintain a high level of

performance in your cluster Deploy Cassandra on site, in the Cloud, or with Docker Integrate Cassandra with Spark, Hadoop, Elasticsearch, Solr, and Lucene

Annotation Over the past 10 years, distributed systems have become more fine-grained. From the large multi-million line long monolithic applications, we are now seeing the benefits of smaller self-contained services. Rather than heavy-weight, hard to change Service Oriented Architectures, we are now seeing systems consisting of collaborating microservices. Easier to change, deploy, and if required retire, organizations which are in the right position to take advantage of them are yielding significant benefits. This book takes an holistic view of the things you need to be cognizant of in order to pull this off. It covers just enough understanding of technology, architecture, operations and organization to show you how to move towards finer-grained systems.

A guide to developing Web sites using scalable applications.

The Comprehensive, Proven Approach to IT Scalability–Updated with New Strategies, Technologies, and Case Studies In The Art of Scalability, Second Edition, leading scalability consultants Martin L. Abbott and Michael T. Fisher cover everything you need to know to smoothly scale products and services for any requirement. This extensively revised edition reflects new technologies, strategies, and lessons, as well as new case studies from the authors' pioneering consulting practice, AKF Partners. Writing for technical and nontechnical decision-makers, Abbott and Fisher cover everything that impacts scalability, including architecture, process, people, organization, and technology. Their insights and recommendations reflect more than thirty years of experience at companies ranging from eBay to Visa, and Salesforce.com to Apple. You'll find updated strategies for structuring organizations to maximize agility and scalability, as well as new insights into the cloud (IaaS/PaaS) transition, NoSQL, DevOps, business metrics, and more. Using this guide's tools and advice, you can systematically clear away obstacles to scalability–and achieve unprecedented IT and business performance. Coverage includes • Why scalability problems start with organizations and people, not technology, and what to do about it • Actionable lessons from real successes and failures • Staffing, structuring, and leading the agile, scalable organization • Scaling processes for hyper-growth environments • Architecting scalability: proprietary models for clarifying needs and making choices–including 15 key success principles • Emerging technologies and challenges: data cost, datacenter planning, cloud evolution, and customer-aligned monitoring • Measuring availability, capacity, load, and performance

If you create, manage, operate, or configure systems running in the cloud, you're a cloud engineer--even if you work as a system administrator, software developer, data scientist, or site reliability engineer. With this book, professionals from around the world provide valuable insight into today's cloud engineering role. These concise articles explore the entire cloud computing experience, including fundamentals, architecture, and migration. You'll delve into security and compliance, operations and reliability, and software development. And examine networking,

organizational culture, and more. You're sure to find 1, 2, or 97 things that inspire you to dig deeper and expand your own career. "Three Keys to Making the Right Multicloud Decisions," Brendan O'Leary "Serverless Bad Practices," Manases Jesus Galindo Bello "Failing a Cloud Migration," Lee Atchison "Treat Your Cloud Environment as If It Were On Premises," Iyana Garry "What Is Toil, and Why Are SREs Obsessed with It?", Zachary Nickens "Lean QA: The QA Evolving in the DevOps World," Theresa Neate "How Economies of Scale Work in the Cloud," Jon Moore "The Cloud Is Not About the Cloud," Ken Corless "Data Gravity: The Importance of Data Management in the Cloud," Geoff Hughes "Even in the Cloud, the Network Is the Foundation," David Murray "Cloud Engineering Is About Culture, Not Containers," Holly Cummins

A Comprehensive, Proven Approach to IT Scalability from Two Veteran Software, Technology, and Business Executives In The Art of Scalability, AKF Partners cofounders Martin L. Abbott and Michael T. Fisher cover everything IT and business leaders must know to build technology infrastructures that can scale smoothly to meet any business requirement. Drawing on their unparalleled experience managing some of the world’s highest-transaction-volume Web sites, the authors provide detailed models and best-practice approaches available in no other book. Unlike previous books on scalability, The Art of Scalability doesn’t limit its coverage to technology. Writing for both technical and nontechnical decision-makers, this book covers everything that impacts scalability, including architecture, processes, people, and organizations. Throughout, the authors address a broad spectrum of real-world challenges, from performance testing to IT governance. Using their tools and guidance, organizations can systematically overcome obstacles to scalability and achieve unprecedented levels of technical and business performance. Coverage includes Staffing the scalable organization: essential organizational, management, and leadership skills for technical leaders Building processes for scale: process lessons from hyper-growth companies, from technical issue resolution to crisis management Making better “build versus buy” decisions Architecting scalable solutions: powerful proprietary models for identifying scalability needs and choosing the best approaches to meet them Optimizing performance through caching, application and database splitting, and asynchronous design Scalability techniques for emerging technologies, including clouds and grids Planning for rapid data growth and new data centers Evolving monitoring strategies to tightly align with customer requirements

Fully updated! Fifty Powerful, Easy-to-Use Rules for Supporting Hyper Growth “Whether you’re taking on a role as a technology leader in a new company or you simply want to make great technology decisions, Scalability Rules will be the go-to resource on your bookshelf.” –Chad Dickerson, CTO, Etsy Scalability Rules, Second Edition, is the easy-to-use scalability primer and reference for every architect, developer, network/software engineer, web professional, and manager. Authors Martin L. Abbott and Michael T. Fisher have helped scale hundreds of high-growth companies and thousands of

systems. Drawing on their immense experience, they present 50 up-to-the-minute technical best practices for supporting hyper growth practically anywhere. Fully updated to reflect new technical trends and experiences, this edition is even easier to read, understand, and apply. Abbott and Fisher have also added powerful "stories behind the rules": actual experiences and case studies from CTOs and technology executives at Etsy, NASDAQ, Salesforce, Shutterfly, Chegg, Warby Parker, Twitter, and other scalability pioneers. Architects will find powerful technology-agnostic insights for creating and evaluating designs. Developers will discover specific techniques for handling everything from databases to state. Managers will get invaluable help in setting goals, making decisions, and interacting with technical teams. Whatever your role, you'll find practical risk/benefit guidance for setting priorities, translating plans into action, and gaining maximum scalability at minimum cost. You'll learn how to Simplify architectures and avoid "over-engineering" Design scale into your solution, so you can scale on a just-in-time basis Make the most of cloning and replication Separate functionality and split data sets Scale out, not up Get more out of databases without compromising scalability Eliminate unnecessary redirects and redundant double-checking Use caches and CDNs more aggressively, without unacceptable complexity Design for fault tolerance, graceful failure, and easy rollback Emphasize statelessness, and efficiently handle state when you must Effectively utilize asynchronous communication Learn from your own mistakes and others' high-profile failures Prioritize your actions to get the biggest "bang for the buck"

Based on the popular Artech House classic, Digital Communication Systems Engineering with Software-Defined Radio, this book provides a practical approach to quickly learning the software-defined radio (SDR) concepts needed for work in the field. This up-to-date volume guides readers on how to quickly prototype wireless designs using SDR for real-world testing and experimentation. This book explores advanced wireless communication techniques such as OFDM, LTE, WLA, and hardware targeting. Readers will gain an understanding of the core concepts behind wireless hardware, such as the radio frequency front-end, analog-to-digital and digital-to-analog converters, as well as various processing technologies. Moreover, this volume includes chapters on timing estimation, matched filtering, frame synchronization message decoding, and source coding. The orthogonal frequency division multiplexing is explained and details about HDL code generation and deployment are provided. The book concludes with coverage of the WLAN toolbox with OFDM beacon reception and the LTE toolbox with downlink reception. Multiple case studies are provided throughout the book. Both MATLAB and Simulink source code are included to assist readers with their projects in the field.