DevOps

A Software Architect's Perspective

Len Bass

Ingo Weber

Liming Zhu

Devops By Len Bass

Len Bass,Paul Clements,Rick Kazman

Devops By Len Bass:

DevOps Len Bass,Ingo Weber,Liming Zhu,2015-05-08 The First Complete Guide to DevOps for Software Architects DevOps promises to accelerate the release of new software features and improve monitoring of systems in production but its crucial implications for software architects and architecture are often ignored In DevOps A Software Architect s Perspective three leading architects address these issues head on The authors review decisions software architects must make in order to achieve DevOps goals and clarify how other DevOps participants are likely to impact the architect s work They also provide the organizational technical and operational context needed to deploy DevOps more efficiently and review DevOps impact on each development phase The authors address cross cutting concerns that link multiple functions offering practical insights into compliance performance reliability repeatability and security This guide demonstrates the authors ideas in action with three real world case studies datacenter replication for business continuity management of a continuous deployment pipeline and migration to a microservice architecture Comprehensive coverage includes Why DevOps can require major changes in both system architecture and IT roles How virtualization and the cloud can enable DevOps practices Integrating operations and its service lifecycle into DevOps Designing new systems to work well with DevOps practices Integrating DevOps with agile methods and TDD Handling failure detection upgrade planning and other key issues Managing consistency issues arising from DevOps independent deployment models Integrating security controls roles and audits into DevOps Preparing a business plan for DevOps adoption rollout and measurement   **Devops** Len Bass,Ingo Weber,Liming Zhu,2015-05-01 DevOps promises to accelerate the release of new software features and improve monitoring of systems in production but its crucial implications for software architects and architecture are often ignored In DevOps A Software Architect s Perspective three leading architects address these issues head on The authors review decisions software architects must make in order to achieve DevOps goals and clarify how other DevOps participants are likely to impact the architect s work They also provide the organizational technical and operational context needed to deploy DevOps more efficiently and review DevOps impact on each development phase The authors also address cross cutting concerns that link multiple functions offering practical insights into compliance performance reliability repeatability and security This guide demonstrates the authors ideas in action with three real world case studies datacenter maintenance for business continuity management of a continuous deployment pipeline and migration to a microservice architecture Comprehensive coverage includes Why DevOps can require major changes in both system architecture and IT roles How virtualization and the cloud can enable DevOps practices Integrating operations and its service lifecycle into DevOps Designing new systems to work well with DevOps practices Overcoming cultural and communication differences between Dev and Ops Integrating DevOps with agile methods and TDD Handling failure detection upgrade planning and other key issues Managing consistency issues arising from DevOps independent deployment models Integrating security controls roles and audits into DevOps Preparing a business plan for

DevOps adoption rollout and measurement   **Managing Technical Debt** Philippe Kruchten,Ipek Ozkaya,2019-04-15 This is an incredibly wise and useful book The authors have considerable real world experience in delivering quality systems that matter and their expertise shines through in these pages Here you will learn what technical debt is what is it not how to manage it and how to pay it down in responsible ways This is a book I wish I had when I was just beginning my career The authors present a myriad of case studies born from years of experience and offer a multitude of actionable insights for how to apply it to your project Grady Booch IBM Fellow Master Best Practices for Managing Technical Debt to Promote Software Quality and Productivity As software systems mature earlier design or code decisions made in the context of budget or schedule constraints increasingly impede evolution and innovation This phenomenon is called technical debt and practical solutions exist In Managing Technical Debt three leading experts introduce integrated empirically developed principles and practices that any software professional can use to gain control of technical debt in any software system Using real life examples the authors explain the forms of technical debt that afflict software intensive systems their root causes and their impacts They introduce proven approaches for identifying and assessing specific sources of technical debt limiting new debt and paying off debt over time They describe how to establish managing technical debt as a core software engineering practice in your organization Discover how technical debt damages manageability quality productivity and morale and what you can do about it Clarify root causes of debt including the linked roles of business goals source code architecture testing and infrastructure Identify technical debt items and analyze their costs so you can prioritize action Choose the right solution for each technical debt item eliminate reduce or mitigate Integrate software engineering practices that minimize new debt Managing Technical Debt will be a valuable resource for every software professional who wants to accelerate innovation in existing systems or build new systems that will be easier to maintain and evolve   *Product-Focused Software Process Improvement* Xavier Franch,Tomi Männistö,Silverio Martínez-Fernández,2019-11-18 This book constitutes the refereed proceedings of the 20th International Conference on Product Focused Software Process Improvement PROFES 2019 held in Barcelona Spain in November 2019 The 24 revised full papers 4 industry papers and 11 short papers presented were carefully reviewed and selected from 104 submissions The papers cover a broad range of topics related to professional software development and process improvement driven by product and service quality needs They are organized in topical sections on testing software development technical debt estimations continuous delivery agile project management microservices and continuous experimentation This book also includes papers from the co located events 10 project papers 8 workshop papers and 4 tutorial summaries   **Technical Debt in Practice** Neil Ernst,Rick Kazman,Julien Delange,2021-08-17 The practical implications of technical debt for the entire software lifecycle with examples and case studies Technical debt in software is incurred when developers take shortcuts and make ill advised technical decisions in the initial phases of a project only to be confronted with the need for costly and labor intensive workarounds later This book

offers advice on how to avoid technical debt how to locate its sources and how to remove it It focuses on the practical implications of technical debt for the entire software life cycle with examples and case studies from companies that range from Boeing to Twitter Technical debt is normal it is part of most iterative development processes But if debt is ignored over time it may become unmanageably complex requiring developers to spend all of their effort fixing bugs with no time to add new features and after all new features are what customers really value The authors explain how to monitor technical debt how to measure it and how and when to pay it down Broadening the conventional definition of technical debt they cover requirements debt implementation debt testing debt architecture debt documentation debt deployment debt and social debt They intersperse technical discussions with Voice of the Practitioner sidebars that detail real world experiences with a variety of technical debt issues   **Foundations of Scalable Systems** Ian Gorton,2022-06-30 In many systems scalability becomes the primary driver as the user base grows Attractive features and high utility breed success which brings more requests to handle and more data to manage But organizations reach a tipping point when design decisions that made sense under light loads suddenly become technical debt This practical book covers design approaches and technologies that make it possible to scale an application quickly and cost effectively Author Ian Gorton takes software architects and developers through the foundational principles of distributed systems You ll explore the essential ingredients of scalable solutions including replication state management load balancing and caching Specific chapters focus on the implications of scalability for databases microservices and event based streaming systems You will focus on Foundations of scalable systems Learn basic design principles of scalability its costs and architectural tradeoffs Designing scalable services Dive into service design caching asynchronous messaging serverless processing and microservices Designing scalable data systems Learn data system fundamentals NoSQL databases and eventual consistency versus strong consistency Designing scalable streaming systems Explore stream processing systems and scalable event driven processing   Future-Proof Software-Systems Frank J. Furrer,2019-09-25 This book focuses on software architecture and the value of architecture in the development of long lived mission critical trustworthy software systems The author introduces and demonstrates the powerful strategy of Managed Evolution along with the engineering best practice known as Principle based Architecting The book examines in detail architecture principles for e g Business Value Changeability Resilience and Dependability The author argues that the software development community has a strong responsibility to produce and operate useful dependable and trustworthy software Software should at the same time provide business value and guarantee many quality of service properties including security safety performance and integrity As Dr Furrer states Producing dependable software is a balancing act between investing in the implementation of business functionality and investing in the quality of service properties of the software systems The book presents extensive coverage of such concepts as Principle Based Architecting Managed Evolution Strategy The Future Principles for Business Value Legacy Software Modernization Migration Architecture Principles for Changeability

Architecture Principles for Resilience Architecture Principles for Dependability The text is supplemented with numerous figures tables examples and illustrative quotations Future Proof Software Systems provides a set of good engineering practices devised for integration into most software development processes dedicated to the creation of software systems that incorporate Managed Evolution **Engineering AI Systems** Len Bass,Qinghua Lu,Ingo Weber,Liming Zhu,2025-03-03 Master the Engineering of AI Systems The Essential Guide for Architects and Developers In today s rapidly evolving world integrating artificial intelligence AI into your systems is no longer optional Engineering AI Systems Architecture and DevOps Essentials is a comprehensive guide to mastering the complexities of AI systems engineering This book combines robust software architecture with cutting edge DevOps practices to deliver high quality reliable and scalable AI solutions Experts Len Bass Qinghua Lu Ingo Weber and Liming Zhu demystify the complexities of engineering AI systems providing practical strategies and tools for seamlessly incorporating AI in your systems You will gain a comprehensive understanding of the fundamentals of AI and software engineering and how to combine them to create powerful AI systems Through real world case studies the authors illustrate practical applications and successful implementations of AI in small to medium sized enterprises across various industries and offer actionable strategies for designing building and operating AI systems that deliver real business value Lifecycle management of AI models from data preparation to deployment Best practices in system architecture and DevOps for AI systems System reliability performance and security in AI implementations Privacy and fairness in AI systems to build trust and achieve compliance Effective monitoring and observability for AI systems to maintain operational excellence Future trends in AI engineering to stay ahead of the curve Equip yourself with the tools and understanding to lead your organization s AI initiatives Whether you are a technical lead software engineer or business strategist this book provides the essential insights you need to successfully engineer AI systems Register your book for convenient access to downloads updates and or corrections as they become available See inside book for details *Systems Analysis and Design* David P. Tegarden,Binny Samuel,Roman Lukyanenko,Alan Dennis,Barbara Haley Wixom,2025-08-19 Enables readers to analyze and design systems not just read about IT Systems Analysis and Design An Object Oriented Approach with UML Seventh Edition captures the dynamic aspects of the field by keeping students focused on doing SAD while presenting the core set of skills that every systems analyst needs to know today and in the future The team of expert authors introduces each major technique explains what it is explains how to do it presents an example and provides opportunities for students to practice before they do it for real in a project After reading each chapter students will be able to perform that step in the system development process NEW TO THIS EDITION A greater emphasis on developing information systems using an incremental and iterative approach and verifying validating and testing throughout the book Chapter on agile development Chapter that overviews the supporting workflows of the Unified Process Greatly expanded the Library Management System LMS example integrated throughout the chapters Converted the Campus Housing example to a set of

Your Turn exercises Also suggested answers to each exercise are included in the Instructor s Manual Appendix section on sequence decision and looping repeating programming structures New and expanded sections on storytelling NoSQL data distribution and peer to peer architecture Expanded coverage of the interdependencies among the functional Chapter 3 structural Chapter 4 and behavioral Chapter 5 models New and revised figures throughout the book Updated MS Word templates that can be used for system requests system proposals use case descriptions CRC cards contracts method specifications use case test plan class test plan and class invariant test specifications WILEY ADVANTAGE Focuses on real world application by guiding students through practice problems and using the technique in a project Presents a contemporary object oriented approach using UML Unified Modeling Language Integrates stories feedback and advice from a diverse industry advisory board of IS professionals and consultants Provides chapters that each cover a different step in the Systems Development Life Cycle SDLC process **Red Hat RHCE 8 (EX294) Cert Guide** Sander van Vugt,2020-09-18 Learn prepare and practice for Red Hat RHCE 8 EX294 exam success with this Cert Guide from Pearson IT Certification a leader in IT certification learning Master RHCE 8 EX294 exam topics Assess your knowledge with chapter ending quizzes Review key concepts with step by step exercises code examples and complete labs after every chapter designed to closely resemble the exam Practice with realistic exam questions from four full practice exams two printed in the book and two more on the companion website Supplement your learning with an hour of video mentoring Red Hat RHCE 8 EX294 Cert Guide is the authoritative exam study guide Leading Red Hat and Linux consultant trainer and author Sander van Vugt walks you through the RHCE EX 294 objectives so you have a full study resource He shares preparation hints and test taking tips helping you identify areas of weakness and improve both your conceptual knowledge and hands on skills Material is presented in a concise manner focusing on increasing your understanding retention of exam topics and hands on practice so you can feel ready to take the exam The book presents you with an organized test preparation routine through the use of proven series elements and techniques Exam topic lists make referencing easy Chapter ending Exam Preparation Tasks help you drill on key concepts you must know thoroughly Review questions help you assess your knowledge and a final preparation chapter guides you through tools and resources to help you craft your final study plan The end of chapter labs are an essential part of learning each topic and cover each chapter s key concepts so you can test yourself and put your knowledge to work The companion website contains two additional practice exams flashcards that test you on the glossary terms in the book an hour of video mentoring from the author and study resources Well regarded for its level of detail assessment features and challenging review questions and exercises this study guide helps you master the concepts and techniques that will enable you to succeed on the exam the first time The study guide helps you master all the topics on the RHCE 8 exam including Understanding configuration management Installing Ansible and setting up managed environments Using ad hoc commands Getting started with playbooks Working with variables and facts Using task control Deploying files

Using Ansible roles Using Ansible in large environments Troubleshooting Ansible Managing software with Ansible Managing users processes tasks and storage   Software Architecture in Practice Len Bass,Paul Clements,Rick Kazman,2021-06-30 The Definitive Practical Proven Guide to Architecting Modern Software Fully Updated with New Content on Mobility the Cloud Energy Management DevOps Quantum Computing and More Updated with eleven new chapters Software Architecture in Practice Fourth Edition thoroughly explains what software architecture is why it s important and how to design instantiate analyze evolve and manage it in disciplined and effective ways Three renowned software architects cover the entire lifecycle presenting practical guidance expert methods and tested models for use in any project no matter how complex You ll learn how to use architecture to address accelerating growth in requirements system size and abstraction and to manage emergent quality attributes as systems are dynamically combined in new ways With insights for utilizing architecture to optimize key quality attributes including performance modifiability security availability interoperability testability usability deployability and more this guide explains how to manage and refine existing architectures transform them to solve new problems and build reusable architectures that become strategic business assets Discover how architecture influences and is influenced by technical environments project lifecycles business profiles and your own practices Leverage proven patterns interfaces and practices for optimizing quality through architecture Architect for mobility the cloud machine learning and quantum computing Design for increasingly crucial attributes such as energy efficiency and safety Scale systems by discovering architecturally significant influences using DevOps and deployment pipelines and managing architecture debt Understand architecture s role in the organization so you can deliver more value Register your book for convenient access to downloads updates and or corrections as they become available See inside book for details   Software Architecture in Practice, 4th Edition Len Bass,Paul Clements,Rick Kazman,2021 The Definitive Practical Proven Guide to Architecting Modern Software Now Fully Updated Now with nine new chapters Software Architecture in Practice Fourth Edition thoroughly explains what software architecture is why it s important and how to design instantiate analyze evolve and manage it in disciplined and effective ways Three renowned software architects cover the entire lifecycle presenting practical guidance expert methods and tested models for use in any project no matter how complex You ll learn how to use architecture to address accelerating growth in requirements system size and abstraction and to manage emergent quality attributes as systems are dynamically combined in new ways With insights for utilizing architecture to optimize key quality attributes including performance modifiability security availability interoperability testability usability deployability and more this guide explains how to manage and refine existing architectures transform them to solve new problems and build reusable architectures that become strategic business assets Discover how architecture influences and is influenced by technical environments project lifecycles business profiles and your own practices Leverage proven patterns interfaces and practices for optimizing quality through architecture Architect for mobility the cloud machine learning and quantum computing Design for increasingly

crucial attributes such as energy efficiency and safety Scale systems by discovering architecturally significant influences using DevOps and deployment pipelines and managing architecture debt Understand architecture s role in the organization so you can deliver more value **Software Architecture in Practice**□□□ □□□(□□□) Len Bass, Paul Clements, Rick Kazman,2022-04-25 Software Architecture in Practice DevOps DevOps GOTOP **DevOps: A Journey from Microservice to Cloud Based Containerization** Hitesh Kumar Sharma,Anuj Kumar,Sangeeta Pant,Mangey Ram,2024-01-23 Transitioning to DevOps requires a change in culture and mindset At its simplest DevOps is about removing the barriers between two traditionally siloed teams development and operations In some organizations there may not even be separate development and operations teams engineers may do both With DevOps the two teams work together to optimize both the productivity of developers and the reliability of operations They strive to communicate frequently increase efficiencies and improve the quality of services they provide to customers They take full ownership for their services often beyond where their stated roles or titles have traditionally been scoped by thinking about the end customer s needs and how they can contribute to meeting those needs Quality assurance and security teams may also become tightly integrated within these teams Organizations using a DevOps model regardless of their organizational structure have teams that view the entire development and infrastructure lifecycle as part of their responsibilities In this book we introduce the DevOps culture and the tools and techniques under this technical cultural umbrella We explain microservice containers Docker Container Kubernetes etc and the significance of these in adopting the DevOps culture for successful software development **Practical DevOps** Joakim Verona,2016-02-16 Harness the power of DevOps to boost your skill set and make your IT organization perform better About This Book Get to know the background of DevOps so you understand the collaboration between different aspects of an IT organization and a software developer Improve your organization s performance to ensure smooth production of software and services Deploy top quality software and ensure software maintenance and release management with this practical guide Who This Book Is For This book is aimed at developers and system administrators who wish to take on larger responsibilities and understand how the infrastructure that builds today s enterprises works This book is also great for operations personnel who would like to better support developers You do not need to have any previous knowledge of DevOps What You Will Learn Appreciate the merits of DevOps and continuous delivery and see how DevOps supports the agile process Understand how all the systems fit together to form a larger whole Set up and familiarize yourself with all the tools you need to be efficient with DevOps Design an application that is suitable for continuous deployment systems with Devops in mind Store and manage your code effectively using different options such as Git Gerrit and Gitlab Configure a job to build a sample CRUD application Test the code using automated regression testing with Jenkins Selenium Deploy your code using tools such as Puppet Ansible Palletops Chef and Vagrant Monitor the health of your code with Nagios Munin and Graphite Explore the workings of Trac a tool used for issue tracking In Detail DevOps is a practical field that focuses on delivering business value as efficiently as

possible DevOps encompasses all the flows from code through testing environments to production environments It stresses the cooperation between different roles and how they can work together more closely as the roots of the word imply Development and Operations After a quick refresher to DevOps and continuous delivery we quickly move on to looking at how DevOps affects architecture You ll create a sample enterprise Java application that you ll continue to work with through the remaining chapters Following this we explore various code storage and build server options You will then learn how to perform code testing with a few tools and deploy your test successfully Next you will learn how to monitor code for any anomalies and make sure it s running properly Finally you will discover how to handle logs and keep track of the issues that affect processes Style and approach This book is primarily a technical guide to DevOps with practical examples suitable for people who like to learn by implementing concrete working code It starts out with background information and gradually delves deeper into technical subjects **DevOps for the Modern Enterprise** Mirco Hering,2018-04-03 Many organizations are facing the uphill battle of modernizing their legacy IT infrastructure Most have evolved over the years by taking lessons from traditional or legacy manufacturing creating a production process that puts the emphasis on the process instead of the people performing the tasks allowing the organization to treat people like resources to try to achieve high quality outcomes But those practices and ideas are failing modern IT where collaboration and creativeness are required to achieve high performing high quality success Mirco Hering a thought leader in managing IT within legacy organizations lays out a roadmap to success for IT managers showing them how to create the right ecosystem how to empower people to bring their best to work every day and how to put the right technology in the driver s seat to propel their organization to success But just having the right methods and tools will not magically transform an organization the cultural change that is the hardest is also the most impactful Using principles from Agile Lean and DevOps as well as first hand examples from the enterprise world Hering addresses the different challenges that legacy organizations face as they transform into modern IT departments DevOps - A Business Perspective Oleg Skrynnik,2018-12-14 This book explains the management aspects of DevOps for those who are professionally engaged in information and technology management It does not show DevOps as a phenomenon associated with new automation tools programming techniques or technologies It differs from other books by the structural nature of the narrative perhaps excessively structured approach and by the attempt to cover fully the phenomenon of DevOps at a basic fundamental level By this approach this book not only creates awareness of the new subject area but is also helps building the basics The reader learns about the origins of DevOps the inevitability of its emergence the key prerequisites and their reflection in practices about the practices themselves and the principles on which they are based This book is the core literature of the EXIN DevOps Foundation certification This exam tests the understanding of basic DevOps concepts and how they relate to each other as well as the value of DevOps for the business EXIN DevOps Foundation is the first level of the EXIN DevOps certification program The EXIN DevOps Professional certification tests the knowledge of DevOps practices and

how to integrate teams The EXIN DevOps Master certification is about promoting organizational change and leading the way towards continuous delivery and improvement   The The DevOps 2.2 Toolkit Viktor Farcic,2018-03-13 Learn from an expert on how use self adapting and self healing systems within Docker Key Features Viktor Farcic shows you all aspects in the creation of self adapting and self healing systems in both a practical and hands on approach Learn how to choose a successful solution for metrics storage and query including InfluxDB Nagios and Sensu Prometheus and Graphite Discover how to integrate Docker Flow Monitor with Docker Flow Proxy How to apply Docker self healing and self adaptive to both services and infrastructure Book Description Building on The DevOps 2 0 Toolkit and The DevOps 2 1 Toolkit Docker Swarm Viktor Farcic brings his latest exploration of the Docker technology as he records his journey to explore two new programs self adaptive and self healing systems within Docker The DevOps 2 2 Toolkit Self Sufficient Docker Clusters is the latest book in Viktor Farcic s series that helps you build a full DevOps Toolkit This book in the series looks at Docker the tool designed to make it easier in the creation and running of applications using containers In this latest entry Viktor combines theory with a hands on approach to guide you through the process of creating self adaptive and self healing systems Within this book Viktor will cover a wide range of emerging topics including what exactly self adaptive and self healing systems are how to choose a solution for metrics storage and query the creation of cluster wide alerts and what a successful self sufficient system blueprint looks like Work with Viktor and dive into the creation of self adaptive and self healing systems within Docker What you will learn Let Viktor Farcic show you all aspects in the creation of self adapting and self healing systems in both a practical and hands on approach Learn how to choose a successful solution for metrics storage and query including InfluxDB Nagios and Sensu Prometheus and Graphite Understand how to integrate Docker Flow Monitor with Docker Flow Proxy The creation of cluster wide alerts by creating alerts based on metrics How to apply self healing and self adaptive to both services and infrastructure Who this book is for This book is for professionals experienced with Docker looking to create both self adapting and self healing systems using the software   The DevOps Handbook Gene Kim,Jez Humble,Patrick Debois,John Willis,2016-10-06 Increase profitability elevate work culture and exceed productivity goals through DevOps practices More than ever the effective management of technology is critical for business competitiveness For decades technology leaders have struggled to balance agility reliability and security The consequences of failure have never been greater whether it s the healthcare gov debacle cardholder data breaches or missing the boat with Big Data in the cloud And yet high performers using DevOps principles such as Google Amazon Facebook Etsy and Netflix are routinely and reliably deploying code into production hundreds or even thousands of times per day Following in the footsteps of The Phoenix Project The DevOps Handbook shows leaders how to replicate these incredible outcomes by showing how to integrate Product Management Development QA IT Operations and Information Security to elevate your company and win in the marketplace   **Achieving DevOps** Dave Harrison,Knox Lively,2019-05-22 Ben is stuck A development lead with a strong

vision for how the intersection of development and operations at his office can be improved he can t help but feel overwhelmed and discouraged by common problems such as slow turnaround time rushed and ineffective handover documentation mounting technical debt and a lagging QA process What steps should Ben take to build the momentum needed to create positive changes within his company In this unique business novel by Dave Harrison and Knox Lively two DevOps professionals with years of diverse experience in the industry you follow Ben as he solves work frustrations in order to adopt Agile DevOps and microservices architectures for his organization Achieving DevOps addresses the Now what moment many DevOps professionals face on their journey The story provides you with the knowledge you need to navigate the internal political waters build management support show measurable results and bring DevOps successfully into your organization Come away with practical lessons and timeless business concepts You ll know how to effect change in a company from the bottom up gain support and instill a pattern of progressively building on success Experience Ben s progress vicariously in Achieving DevOps and bridge the gap between inspiration and the implementation of your own DevOps practices Who This Book Is For Those serving as change agents who are working to influence and move their organizations toward a DevOps approach to software development and deployment those working to effect change from the bottom up such as development leads QA leads project managers and individual developers and IT directors CTOs and others at the top of an organization who are being asked to lend their support toward DevOpsimplementation efforts

Devops By Len Bass Book Review: Unveiling the Power of Words

In a global driven by information and connectivity, the ability of words has become more evident than ever. They have the capacity to inspire, provoke, and ignite change. Such may be the essence of the book **Devops By Len Bass**, a literary masterpiece that delves deep into the significance of words and their effect on our lives. Written by a renowned author, this captivating work takes readers on a transformative journey, unraveling the secrets and potential behind every word. In this review, we will explore the book is key themes, examine its writing style, and analyze its overall effect on readers.

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Devops By Len Bass Introduction

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