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Mastering Python Design Patterns **Learning Python Design Patterns** **Design Patterns Python Programming with Design Patterns Django Design Patterns and Best Practices Python Programming Patterns Architecture Patterns with Python Practical Python Design Patterns Python: Master the Art of Design Patterns** [Python: Master the Art of Design Patterns](#) **Design Patterns in Python MongoDB and Python Mastering Python Design Patterns** **Learning Python** [Easy Learning Design Patterns Python \(2 Edition\)](#) **Microservice Patterns and Best Practices Django Design Patterns and Best Practices Learning Python Design Patterns Architecture Patterns with Python** [Python in Practice Infrastructure as Code, Patterns and Practices](#) [Easy Learning Design Patterns Python 3](#) **Automate the Boring Stuff with Python, 2nd Edition** *Mastering Object-Oriented Python - Second Edition* *Powerful Python* [Python Cookbook](#) **Python 3 Object Oriented Programming Software Architecture with Python** [Robust Python Writing Idiomatic Python 3.3](#) **Python Object-Oriented Programming** [Test-Driven Development with Python](#) **Practices of the Python Pro** *Paradigms of Artificial Intelligence Programming* **Deep Learning for Coders with fastai and PyTorch** **The Rust Programming Language (Covers Rust 2018)** **Principles of Package Design** [A Pattern Language](#) *Domain-driven Design* **Python 3 Object-Oriented Programming**

Learning Python Design Patterns Jul 17 2021 This book takes a tutorial-based and user-friendly approach to covering Python design patterns. Its concise presentation means that in a short space of time, you will get a good introduction to various design patterns. If you are an intermediate level Python user, this book is for you. Prior knowledge of Python programming is essential. Some knowledge of UML is also required to understand the UML diagrams which are used to describe some design patterns.

Python 3 Object-Oriented Programming Aug 25 2019 Uncover modern Python with this guide to Python data structures, design patterns, and effective object-oriented techniques **Key Features** In-depth analysis of many common object-oriented design patterns that are more suitable to Python's unique style Learn the latest Python syntax and libraries Explore abstract design patterns and implement them in Python 3.8 **Book Description** Object-oriented programming (OOP) is a popular design paradigm in which data and behaviors are encapsulated in such a way that they can be manipulated together. This third edition of Python 3 Object-Oriented Programming fully explains classes, data encapsulation, and exceptions with an emphasis on when you can use each principle to develop well-designed software. Starting with a detailed analysis of object-oriented programming, you will use the Python programming language to clearly grasp key concepts from the object-oriented paradigm. You will learn how to create maintainable applications by studying higher level design patterns. The book will show you the complexities of string and file manipulation, and how Python distinguishes between binary and textual data. Not one, but two very powerful automated testing systems, unittest and pytest, will be introduced in this book. You'll get a comprehensive introduction to Python's concurrent programming ecosystem. By the end of the book, you will have thoroughly learned object-oriented principles using Python syntax and be able to create robust and reliable programs confidently. What you will learn Implement objects in Python by creating classes and defining methods Grasp common concurrency techniques and pitfalls in Python 3 Extend class functionality using inheritance Understand when to use object-oriented features, and more importantly when not to use them Discover what design patterns are and why they are different in Python Uncover the simplicity of unit testing and why it's so important in Python Explore concurrent object-oriented programming Who this book is for If you're new to object-oriented programming techniques, or if you have basic Python skills and wish to learn in depth how and when to correctly apply OOP in Python, this is the book for you. If you are an object-oriented programmer for other languages or seeking a leg up in the new world of Python 3.8, you too will find this book a useful introduction to Python. Previous experience with Python 3 is not necessary.

Python Programming Patterns Jul 29 2022 The real-world guide to enterprise-class Python development.-- The right way to write Python: using modularization, toolkits, frameworks, abstract data types, and object-oriented techniques.-- Includes more than 20 proven object-oriented patterns for large-scale Python development.-- Detailed coverage of persistence, concurrent programming, metaprogramming, functional programming, and more. Python isn't just a tool for creating short Web scripts and simple prototypes: its advantages are equally compelling in large-scale development. In this book, Thomas Christopher shows developers the best ways to write large programs with Python, introducing powerful design patterns that deliver unprecedented levels of robustness, scalability, and reuse. Python Programming Patterns teaches both the Python programming language and how to "program in the large" in Python, using object-oriented techniques. Thomas Christopher demonstrates how to write Python code that leverages "programming-in-the-large" software structuring techniques, including modularization, toolkits, frameworks, abstract data types, and especially object-orientation. He presents more than 20 powerful object-oriented design patterns for Python, including creational, structural, and behavior patterns. The book includes detailed coverage of key topics such as persistence, concurrent programming, and metaprogramming (Python's term for reflection or introspection). Christopher also presents useful fun

Infrastructure as Code, Patterns and Practices Apr 13 2021 Use Infrastructure as Code (IaC) to automate, test, and streamline infrastructure for business-critical systems. In Infrastructure as Code, Patterns and Practices you will learn how to: Optimize infrastructure for modularity and isolate dependencies Test infrastructure configuration Mitigate, troubleshoot, and isolate failed infrastructure changes Collaborate across teams on infrastructure development Update infrastructure with minimal downtime using blue-green deployments Scale infrastructure systems supporting multiple business units Use patterns for provisioning tools, configuration management, and image building Deliver secure infrastructure configuration to production Infrastructure as Code, Patterns and Practices teaches you to automate infrastructure by applying changes in a codified manner. You'll learn how to create, test, and deploy infrastructure components in a way that's easy to scale and share across an entire organization. The book is full of flexible automation techniques that work whether you're managing your personal projects or making live network changes across a large enterprise. A system administrator or infrastructure engineer will learn essential software development practices for managing IaC, while developers will benefit from in-depth coverage of assembling infrastructure as part of DevOps culture. While the patterns and techniques are tool agnostic, you'll appreciate the easy-to-follow examples in Python and Terraform. About the technology Infrastructure as Code is a set of practices and processes for provisioning and maintaining infrastructure using scripts, configuration, or programming languages. With IaC in place, it's easy to test components, implement features, and scale with minimal downtime. Best of all, since IaC follows good development practices, you can make system-wide changes with just a few code commits! About the book Infrastructure as Code, Patterns and Practices teaches flexible techniques for building resilient, scalable infrastructure, including structuring and sharing modules, migrating legacy systems, and more. Learn to build networks, load balancers, and firewalls using Python and Terraform, and confidently update infrastructure while your software is running. You'll appreciate the expert advice on team collaboration strategies to avoid instability, improve security, and manage costs. What's inside Optimize infrastructure for modularity and isolate dependencies Mitigate, troubleshoot, and isolate failed infrastructure changes Update infrastructure with minimal downtime using blue-green deployments Use patterns for provisioning tools, configuration management, and image building About the reader For infrastructure or software engineers familiar with Python, provisioning tools, and public cloud providers. About the author Rosemary Wang is an educator, contributor, writer, and speaker. She has worked on many infrastructure as code projects, and open source tools such as Terraform, Vault, and Kubernetes. Table of Contents PART 1 FIRST STEPS 1 Introducing infrastructure as code 2 Writing infrastructure as code 3 Patterns for infrastructure modules 4 Patterns for infrastructure dependencies PART 2 SCALING WITH YOUR TEAM 5 Structuring and sharing modules 6 Testing

7 Continuous delivery and branching models 8 Security and compliance PART 3 MANAGING PRODUCTION COMPLEXITY 9 Making changes 10 Refactoring 11 Fixing failures 12 Cost of cloud computing 13 Managing tools

Deep Learning for Coders with fastai and PyTorch Jan 29 2020 Deep learning is often viewed as the exclusive domain of math PhDs and big tech companies. But as this hands-on guide demonstrates, programmers comfortable with Python can achieve impressive results in deep learning with little math background, small amounts of data, and minimal code. How? With fastai, the first library to provide a consistent interface to the most frequently used deep learning applications. Authors Jeremy Howard and Sylvain Gugger, the creators of fastai, show you how to train a model on a wide range of tasks using fastai and PyTorch. You'll also dive progressively further into deep learning theory to gain a complete understanding of the algorithms behind the scenes. Train models in computer vision, natural language processing, tabular data, and collaborative filtering Learn the latest deep learning techniques that matter most in practice Improve accuracy, speed, and reliability by understanding how deep learning models work Discover how to turn your models into web applications Implement deep learning algorithms from scratch Consider the ethical implications of your work Gain insight from the foreword by PyTorch cofounder, Soumith Chintala

Writing Idiomatic Python 3.3 Jul 05 2020 The "Writing Idiomatic Python" book is finally here! Chock full of code samples, you'll learn the "Pythonic" way to accomplish common tasks. Each idiom comes with a detailed description, example code showing the "wrong" way to do it, and code for the idiomatic, "Pythonic" alternative. *This version of the book is for Python 3.3+. There is also a Python 2.7.3+ version available.* "Writing Idiomatic Python" contains the most common and important Python idioms in a format that maximizes identification and understanding. Each idiom is presented as a recommendation to write some commonly used piece of code. It is followed by an explanation of why the idiom is important. It also contains two code samples: the "Harmful" way to write it and the "Idiomatic" way. * The "Harmful" way helps you identify the idiom in your own code. * The "Idiomatic" way shows you how to easily translate that code into idiomatic Python. This book is perfect for you: * If you're coming to Python from another programming language * If you're learning Python as a first programming language * If you're looking to increase the readability, maintainability, and correctness of your Python code What is "Idiomatic" Python? Every programming language has its own idioms. Programming language idioms are nothing more than the generally accepted way of writing a certain piece of code. Consistently writing idiomatic code has a number of important benefits: * Others can read and understand your code easily * Others can maintain and enhance your code with minimal effort * Your code will contain fewer bugs * Your code will teach others to write correct code without any effort on your part

Python: Master the Art of Design Patterns Mar 25 2022 Ensure your code is sleek, efficient and elegant by mastering powerful Python design patterns About This Book Learn all about abstract design patterns and how to implement them in Python 3 Understand the structural, creational, and behavioral Python design patterns Get to know the context and application of design patterns to solve real-world problems in software architecture, design, and application development Discover how to simplify Design Pattern implementation using the power of Python 3 Who This Book Is For If you have basic Python skills and wish to learn in depth how to correctly apply appropriate design patterns, this course is tailor made for you. What You Will Learn Discover what design patterns are and how to apply them to writing Python Implement objects in Python by creating classes and defining methods Separate related objects into a taxonomy of classes and describe the properties and behaviors of those objects via the class interface Understand when to use object-oriented features, and more importantly when not to use them Get to know proven solutions to common design issues Explore the design principles that form the basis of software design, such as loose coupling, the Hollywood principle, and the Open Close principle, among others Use Structural Design Patterns and find out how objects and classes interact to build larger applications Improve the productivity and code base of your application using Python design patterns Secure an interface using the Proxy pattern In Detail Python is an object-oriented scripting language that is used in everything from data science to web development. Known for its simplicity, Python increases productivity and minimizes development time. Through applying essential software engineering design patterns to Python, Python code becomes even more efficient and reusable from project to project. This learning path takes you through every traditional and advanced design pattern best applied to Python code, building your skills in writing exceptional Python. Divided into three distinct modules, you'll go from foundational to advanced concepts by following a series of practical tutorials. Start with the bedrock of Python programming - the object-oriented paradigm. Rethink the way you work with Python as you work through the Python data structures and object-oriented techniques essential to modern Python programming. Build your confidence as you learn Python syntax, and how to use OOP principles with Python tools such as Django and Kivy. In the second module, run through the most common and most useful design patterns from a Python perspective. Progress through Singleton patterns, Factory patterns, Facade patterns and more all with detailed hands-on guidance. Enhance your professional abilities in software architecture, design, and development. In the final module, run through the more complex and less common design patterns, discovering how to apply them to Python coding with the help of real-world examples. Get to grips with the best practices of writing Python, as well as creating systems architecture and troubleshooting issues. This Learning Path combines some of the best that Packt has to offer in one complete, curated package. It includes content from the following Packt products: Python 3 Object-Oriented Programming - Second Edition by Dusty Phillips Learning Python Design Patterns - Second Edition by Chetan Giridhar Mastering Python Design Patterns by Sakis Kasampalis Style and approach Advance your Python code through three distinct modules that each build on preceding content. Get the complete coverage of Python design patterns you need to write elegant and efficient code that's reusable and powerful.

Test-Driven Development with Python May 03 2020 By taking you through the development of a real web application from beginning to end, the second edition of this hands-on guide demonstrates the practical advantages of test-driven development (TDD) with Python. You'll learn how to write and run tests before building each part of your app, and then develop the minimum amount of code required to pass those tests. The result? Clean code that works. In the process, you'll learn the basics of Django, Selenium, Git, jQuery, and Mock, along with current web development techniques. If you're ready to take your Python skills to the next level, this book—updated for Python 3.6—clearly demonstrates how TDD encourages simple designs and inspires confidence. Dive into the TDD workflow, including the unit test/code cycle and refactoring Use unit tests for classes and functions, and functional tests for user interactions within the browser Learn when and how to use mock objects, and the pros and cons of isolated vs. integrated tests Test and automate your deployments with a staging server Apply tests to the third-party plugins you integrate into your site Run tests automatically by using a Continuous Integration environment Use TDD to build a REST API with a front-end Ajax interface

Architecture Patterns with Python Jun 27 2022 As Python continues to grow in popularity, projects are becoming larger and more complex. Many Python developers are now taking an interest in high-level software design patterns such as hexagonal/clean architecture, event-driven architecture, and the strategic patterns prescribed by domain-driven design (DDD). But translating those patterns into Python isn't always straightforward. With this hands-on guide, Harry Percival and Bob Gregory from MADE.com introduce proven architectural design patterns to help Python developers manage application complexity—and get the most value out of their test suites. Each pattern is illustrated with concrete examples in beautiful, idiomatic Python, avoiding some of the verbosity of Java and C# syntax. Patterns include: Dependency inversion and its links to ports and adapters (hexagonal/clean architecture) Domain-driven design's distinction between entities, value objects, and aggregates Repository and Unit of Work patterns for persistent storage Events, commands, and the message bus Command-query responsibility segregation (CQRS) Event-driven architecture and reactive microservices

Python in Practice May 15 2021 Winner of the 2014 Jolt Award for "Best Book" "Whether you are an experienced programmer or are starting your career, Python in Practice is full of valuable advice and example to help you improve your craft by thinking about problems from different perspectives, introducing tools, and detailing techniques to create more effective solutions." —Doug Hellmann, Senior Developer, DreamHost If you're an experienced Python programmer, Python in Practice will help you improve the quality, reliability, speed, maintainability, and usability of all your Python programs. Mark Summerfield focuses on four key themes: design patterns for coding elegance, faster processing through concurrency and compiled Python (Cython), high-level networking, and graphics. He identifies well-proven design patterns that are useful in Python, illuminates them with expert-quality code, and explains why some object-oriented design patterns are irrelevant to Python. He also explodes several

counterproductive myths about Python programming—showing, for example, how Python can take full advantage of multicore hardware. All examples, including three complete case studies, have been tested with Python 3.3 (and, where possible, Python 3.2 and 3.1) and crafted to maintain compatibility with future Python 3.x versions. All code has been tested on Linux, and most code has also been tested on OS X and Windows. All code may be downloaded at www.qtrac.eu/pipbook.html. Coverage includes Leveraging Python's most effective creational, structural, and behavioral design patterns Supporting concurrency with Python's multiprocessing, threading, and concurrent.futures modules Avoiding concurrency problems using thread-safe queues and futures rather than fragile locks Simplifying networking with high-level modules, including xmlrpclib and RPyC Accelerating Python code with Cython, C-based Python modules, profiling, and other techniques Creating modern-looking GUI applications with Tkinter Leveraging today's powerful graphics hardware via the OpenGL API using pyglet and PyOpenGL

Easy Learning Design Patterns Python 3 Mar 13 2021 Design pattern is a approach to solve some specific problems which each software developer comes across during his work. Design patterns capture higher-level constructs that commonly appear in programs. This book takes a user-friendly approach to covering Python 3 design patterns. Its concise presentation means that in a short space of time, you will get a good introduction to various design patterns.1. Strategy Pattern Principle 2. Strategy Pattern Case3. Composition Pattern Principle4. Composition Pattern Case5. Singleton Pattern Principle6. Template Pattern Principle7. Template Pattern Case8. Factory Pattern Principle9. Factory Pattern Case10. Builder Pattern Principle11. Builder Pattern Case12. Adapter Pattern Principle13. Adapter Pattern Case14. Facade Pattern Principle15. Facade Pattern Case16. Decorator Pattern Principle17. Prototype Pattern Shallow Clone18. Prototype Pattern Deep Clone19. Bridge Pattern Principle20. Bridge Pattern Case21. FlyWeight Pattern Case22. Chain Pattern Principle23. Chain Pattern Case24. Command Pattern Case25. Iterator Pattern Case26. Mediator Pattern Case27. Memento Pattern Case28. Observer Pattern Principle29. Visitor Pattern Principle30. State Pattern Case31. Proxy Pattern Principle

Python 3 Object Oriented Programming Oct 08 2020 Harness the power of Python 3 objects.

Learning Python Design Patterns Dec 02 2022 Leverage the power of Python design patterns to solve real-world problems in software architecture and design About This Book Understand the structural, creational, and behavioral Python design patterns Get to know the context and application of design patterns to solve real-world problems in software architecture, design, and application development Get practical exposure through sample implementations in Python v3.5 for the design patterns featured Who This Book Is For This book is for Software architects and Python application developers who are passionate about software design. It will be very useful to engineers with beginner level proficiency in Python and who love to work with Python 3.5 What You Will Learn Enhance your skills to create better software architecture Understand proven solutions to commonly occurring design issues Explore the design principles that form the basis of software design, such as loose coupling, the Hollywood principle and the Open Close principle among others Delve into the object-oriented programming concepts and find out how they are used in software applications Develop an understanding of Creational Design Patterns and the different object creation methods that help you solve issues in software development Use Structural Design Patterns and find out how objects and classes interact to build larger applications Focus on the interaction between objects with the command and observer patterns Improve the productivity and code base of your application using Python design patterns In Detail With the increasing focus on optimized software architecture and design it is important that software architects think about optimizations in object creation, code structure, and interaction between objects at the architecture or design level. This makes sure that the cost of software maintenance is low and code can be easily reused or is adaptable to change. The key to this is reusability and low maintenance in design patterns. Building on the success of the previous edition, Learning Python Design Patterns, Second Edition will help you implement real-world scenarios with Python's latest release, Python v3.5. We start by introducing design patterns from the Python perspective. As you progress through the book, you will learn about Singleton patterns, Factory patterns, and Facade patterns in detail. After this, we'll look at how to control object access with proxy patterns. It also covers observer patterns, command patterns, and compound patterns. By the end of the book, you will have enhanced your professional abilities in software architecture, design, and development. Style and approach This is an easy-to-follow guide to design patterns with hands-on examples of real-world scenarios and their implementation in Python v3.5. Each topic is explained and placed in context, and for the more inquisitive, there are more details on the concepts used.

Design Patterns in Python Feb 21 2022 This book is about the 23 common GoF (Gang of Four) Design Patterns implemented and in Python. A Design Pattern is a description or template that can be repeatedly applied to a commonly recurring problem in software design. You will find a familiarity with Design Patterns very useful when planning, discussing, developing, managing and documenting your applications from now on and into the future. You will learn these Design Patterns. Creational - Factory - Abstract Factory - Builder - Prototype - Singleton Structural - Decorator - Adapter - Facade - Bridge - Composite - Flyweight - Proxy Behavioral - Command - Chain of Responsibility - Observer Pattern - Interpreter - Iterator - Mediator - Memento - State - Strategy - Template - Visitor. If you want a break from your computer and read from a book for a while, then this book is for you. *** Book also provides you FREE Access to Online Instructional Videos. See video codes in the book *** Thanks, Sean Bradley

Django Design Patterns and Best Practices Aug 30 2022 If you want to learn how best to utilize commonly found patterns and learn best practices in developing applications with Django, this is the book for you. This book, like Django itself, is accessible to amateur and professional developers alike and assumes little in the way of prior experience. Although written for Python 3, the majority of the code in this book works in Python 2 or can be easily translated.

Python Programming with Design Patterns Sep 30 2022 Learn how to write Python code that's more robust, efficient, maintainable, and elegant—whether you're new to the language or you've been coding for years. Python Programming with Design Patterns combines a clear, modern introduction to modern Python with visual, example-driven explanations of 23 proven patterns for writing outstanding object-oriented code. Through these patterns and examples, best-selling patterns author James W. Cooper introduces modern techniques for creating Python objects that interact effectively to make powerful, flexible programs. Cooper's wide-ranging coverage includes abstract classes, multiple inheritance, GUI programming and widgets, graphical classes, drawing and plotting, math libraries, database programming, Python decorators, images, threads, iterators, creating executable code from Python programs, and much more. He covers the use of six leading Python development environments, and provides complete downloadable code on Github for every example program. Throughout, Cooper's informal, visual presentation makes patterns easier than ever to understand and use—so you can confidently build large, complex programs that benefit from everything Python has to offer.

Software Architecture with Python Sep 06 2020 Architect and design highly scalable, robust, clean, and highly performant applications in Python About This Book Identify design issues and make the necessary adjustments to achieve improved performance Understand practical architectural quality attributes from the perspective of a practicing engineer and architect using Python Gain knowledge of architectural principles and how they can be used to provide accountability and rationale for architectural decisions Who This Book Is For This book is for experienced Python developers who are aspiring to become the architects of enterprise-grade applications or software architects who would like to leverage Python to create effective blueprints of applications. What You Will Learn Build programs with the right architectural attributes Use Enterprise Architectural Patterns to solve scalable problems on the Web Understand design patterns from a Python perspective Optimize the performance testing tools in Python Deploy code in remote environments or on the Cloud using Python Secure architecture applications in Python In Detail This book starts off by explaining how Python fits into an application architecture. As you move along, you will understand the architecturally significant demands and how to determine them. Later, you'll get a complete understanding of the different architectural quality requirements that help an architect to build a product that satisfies business needs, such as maintainability/reusability, testability, scalability, performance, usability, and security. You will use various techniques such as incorporating DevOps, Continuous Integration, and more to make your application robust. You will understand when and when not to use object orientation in your applications. You will be able to think of the future and design applications that can scale proportionally to the growing business. The focus is on building the business logic based on the business process documentation and which frameworks are to be used when. We also cover some important patterns that are to be taken into account while solving design problems as well as those in relatively new

domains such as the Cloud. This book will help you understand the ins and outs of Python so that you can make those critical design decisions that not just live up to but also surpass the expectations of your clients. Style and approach Filled with examples and use cases, this guide takes a no-nonsense approach to help you with everything it takes to become a successful software architect.

MongoDB and Python Jan 23 2022 Learn how to leverage MongoDB with your Python applications, using the hands-on recipes in this book. You get complete code samples for tasks such as making fast geo queries for location-based apps, efficiently indexing your user documents for social-graph lookups, and many other scenarios. This guide explains the basics of the document-oriented database and shows you how to set up a Python environment with it. Learn how to read and write to MongoDB, apply idiomatic MongoDB and Python patterns, and use the database with several popular Python web frameworks. You'll discover how to model your data, write effective queries, and avoid concurrency problems such as race conditions and deadlocks. The recipes will help you: Read, write, count, and sort documents in a MongoDB collection Learn how to use the rich MongoDB query language Maintain data integrity in replicated/distributed MongoDB environments Use embedding to efficiently model your data without joins Code defensively to avoid keyerrors and other bugs Apply atomic operations to update game scores, billing systems, and more with the fast accounting pattern Use MongoDB with the Pylons 1.x, Django, and Pyramid web frameworks

The Rust Programming Language (Covers Rust 2018) Dec 30 2019 The official book on the Rust programming language, written by the Rust development team at the Mozilla Foundation, fully updated for Rust 2018. The Rust Programming Language is the official book on Rust: an open source systems programming language that helps you write faster, more reliable software. Rust offers control over low-level details (such as memory usage) in combination with high-level ergonomics, eliminating the hassle traditionally associated with low-level languages. The authors of The Rust Programming Language, members of the Rust Core Team, share their knowledge and experience to show you how to take full advantage of Rust's features--from installation to creating robust and scalable programs. You'll begin with basics like creating functions, choosing data types, and binding variables and then move on to more advanced concepts, such as: • Ownership and borrowing, lifetimes, and traits • Using Rust's memory safety guarantees to build fast, safe programs • Testing, error handling, and effective refactoring • Generics, smart pointers, multithreading, trait objects, and advanced pattern matching • Using Cargo, Rust's built-in package manager, to build, test, and document your code and manage dependencies • How best to use Rust's advanced compiler with compiler-led programming techniques You'll find plenty of code examples throughout the book, as well as three chapters dedicated to building complete projects to test your learning: a number guessing game, a Rust implementation of a command line tool, and a multithreaded server. New to this edition: An extended section on Rust macros, an expanded chapter on modules, and appendixes on Rust development tools and editions.

Learning Python Nov 20 2021 Get a comprehensive, in-depth introduction to the core Python language with this hands-on book. Based on author Mark Lutz's popular training course, this updated fifth edition will help you quickly write efficient, high-quality code with Python. It's an ideal way to begin, whether you're new to programming or a professional developer versed in other languages. Complete with quizzes, exercises, and helpful illustrations, this easy-to-follow, self-paced tutorial gets you started with both Python 2.7 and 3.3—the latest releases in the 3.X and 2.X lines—plus all other releases in common use today. You'll also learn some advanced language features that recently have become more common in Python code. Explore Python's major built-in object types such as numbers, lists, and dictionaries Create and process objects with Python statements, and learn Python's general syntax model Use functions to avoid code redundancy and package code for reuse Organize statements, functions, and other tools into larger components with modules Dive into classes: Python's object-oriented programming tool for structuring code Write large programs with Python's exception-handling model and development tools Learn advanced Python tools, including decorators, descriptors, metaclasses, and Unicode processing

Python: Master the Art of Design Patterns Apr 25 2022 Ensure your code is sleek, efficient and elegant by mastering powerful Python design patterns About This Book- Learn all about abstract design patterns and how to implement them in Python 3- Understand the structural, creational, and behavioral Python design patterns- Get to know the context and application of design patterns to solve real-world problems in software architecture, design, and application development- Discover how to simplify Design Pattern implementation using the power of Python 3 Who This Book Is For If you have basic Python skills and wish to learn in depth how to correctly apply appropriate design patterns, this course is tailor made for you. What You Will Learn- Discover what design patterns are and how to apply them to writing Python- Implement objects in Python by creating classes and defining methods- Separate related objects into a taxonomy of classes and describe the properties and behaviors of those objects via the class interface- Understand when to use object-oriented features, and more importantly when not to use them- Get to know proven solutions to common design issues- Explore the design principles that form the basis of software design, such as loose coupling, the Hollywood principle, and the Open Close principle, among others- Use Structural Design Patterns and find out how objects and classes interact to build larger applications- Improve the productivity and code base of your application using Python design patterns- Secure an interface using the Proxy pattern In Detail Python is an object-oriented scripting language that is used in everything from data science to web development. Known for its simplicity, Python increases productivity and minimizes development time. Through applying essential software engineering design patterns to Python, Python code becomes even more efficient and reusable from project to project. This learning path takes you through every traditional and advanced design pattern best applied to Python code, building your skills in writing exceptional Python. Divided into three distinct modules, you'll go from foundational to advanced concepts by following a series of practical tutorials. Start with the bedrock of Python programming - the object-oriented paradigm. Rethink the way you work with Python as you work through the Python data structures and object-oriented techniques essential to modern Python programming. Build your confidence as you learn Python syntax, and how to use OOP principles with Python tools such as Django and Kivy. In the second module, run through the most common and most useful design patterns from a Python perspective. Progress through Singleton patterns, Factory patterns, Facade patterns and more all with detailed hands-on guidance. Enhance your professional abilities in software architecture, design, and development. In the final module, run through the more complex and less common design patterns, discovering how to apply them to Python coding with the help of real-world examples. Get to grips with the best practices of writing Python, as well as creating systems architecture and troubleshooting issues. This Learning Path combines some of the best that Packt has to offer in one complete, curated package. It includes content from the following Packt products:- Python 3 Object-Oriented Programming - Second Edition by Dusty Phillips- Learning Python Design Patterns - Second Edition by Chetan Giridhar- Mastering Python Design Patterns by Sakis Kasampalis Style and approach Advance your Python code through three distinct modules that each build on preceding content. Get the complete coverage of Python design patterns you need to write elegant and efficient code that's reusable and powerful.

Principles of Package Design Nov 28 2019 Apply design principles to your classes, preparing them for reuse. You will use package design principles to create packages that are just right in terms of cohesion and coupling, and are user- and maintainer-friendly at the same time. The first part of this book walks you through the five SOLID principles that will help you improve the design of your classes. The second part introduces you to the best practices of package design, and covers both package cohesion principles and package coupling principles. Cohesion principles show you which classes should be put together in a package, when to split packages, and if a combination of classes may be considered a "package" in the first place. Package coupling principles help you choose the right dependencies and prevent wrong directions in the dependency graph of your packages. What You'll Learn Apply the SOLID principles of class design Determine if classes belong in the same package Know whether it is safe for packages to depend on each other Who This Book Is For Software developers with a broad range of experience in the field, who are looking for ways to reuse, share, and distribute their code

Automate the Boring Stuff with Python, 2nd Edition Feb 09 2021 The second edition of this best-selling Python book (over 500,000 copies sold!) uses Python 3 to teach even the technically uninclined how to write programs that do in minutes what would take hours to do by hand. There is no prior programming experience required and the book is loved by liberal arts majors and geeks alike. If you've ever spent hours renaming files or updating hundreds of spreadsheet cells, you know how tedious tasks like these can be. But what if you could have your computer do them for you? In

this fully revised second edition of the best-selling classic *Automate the Boring Stuff with Python*, you'll learn how to use Python to write programs that do in minutes what would take you hours to do by hand--no prior programming experience required. You'll learn the basics of Python and explore Python's rich library of modules for performing specific tasks, like scraping data off websites, reading PDF and Word documents, and automating clicking and typing tasks. The second edition of this international fan favorite includes a brand-new chapter on input validation, as well as tutorials on automating Gmail and Google Sheets, plus tips on automatically updating CSV files. You'll learn how to create programs that effortlessly perform useful feats of automation to:

- Search for text in a file or across multiple files
- Create, update, move, and rename files and folders
- Search the Web and download online content
- Update and format data in Excel spreadsheets of any size
- Split, merge, watermark, and encrypt PDFs
- Send email responses and text notifications
- Fill out online forms

Step-by-step instructions walk you through each program, and updated practice projects at the end of each chapter challenge you to improve those programs and use your newfound skills to automate similar tasks. Don't spend your time doing work a well-trained monkey could do. Even if you've never written a line of code, you can make your computer do the grunt work. Learn how in *Automate the Boring Stuff with Python, 2nd Edition*.

Django Design Patterns and Best Practices Aug 18 2021 Build maintainable websites with elegant Django design patterns and modern best practices

Key Features Explore aspects of Django from Models and Views to testing and deployment Understand the nuances of web development such as browser attack and data design Walk through various asynchronous tools such as Celery and Channels

Book Description Building secure and maintainable web applications requires comprehensive knowledge. The second edition of this book not only sheds light on Django, but also encapsulates years of experience in the form of design patterns and best practices. Rather than sticking to GoF design patterns, the book looks at higher-level patterns. Using the latest version of Django and Python, you'll learn about Channels and asyncio while building a solid conceptual background. The book compares design choices to help you make everyday decisions faster in a rapidly changing environment. You'll first learn about various architectural patterns, many of which are used to build Django. You'll start with building a fun superhero project by gathering the requirements, creating mockups, and setting up the project. Through project-guided examples, you'll explore the Model, View, templates, workflows, and code reusability techniques. In addition to this, you'll learn practical Python coding techniques in Django that'll enable you to tackle problems related to complex topics such as legacy coding, data modeling, and code reusability. You'll discover API design principles and best practices, and understand the need for asynchronous workflows. During this journey, you'll study popular Python code testing techniques in Django, various web security threats and their countermeasures, and the monitoring and performance of your application. What you will learn

Make use of common design patterns to help you write better code

Implement best practices and idioms in this rapidly evolving framework

Deal with legacy code and debugging

Use asynchronous tools such as Celery, Channels, and asyncio

Use patterns while designing API interfaces with the Django REST Framework

Reduce the maintenance burden with well-tested, cleaner code

Host, deploy, and secure your Django projects

Who this book is for This book is for you whether you're new to Django or just want to learn its best practices. You do not have to be an expert in Django or Python. No prior knowledge of patterns is expected for reading this book but it would be helpful.

Python Cookbook Nov 08 2020 Portable, powerful, and a breeze to use, Python is the popular open source object-oriented programming language used for both standalone programs and scripting applications. It is now being used by an increasing number of major organizations, including NASA and Google. Updated for Python 2.4, *The Python Cookbook, 2nd Edition* offers a wealth of useful code for all Python programmers, not just advanced practitioners. Like its predecessor, the new edition provides solutions to problems that Python programmers face everyday. It now includes over 200 recipes that range from simple tasks, such as working with dictionaries and list comprehensions, to complex tasks, such as monitoring a network and building a templating system. This revised version also includes new chapters on topics such as time, money, and metaprogramming. Here's a list of additional topics covered:

- Manipulating text
- Searching and sorting
- Working with files and the filesystem
- Object-oriented programming
- Dealing with threads and processes
- System administration
- Interacting with databases
- Creating user interfaces
- Network and web programming
- Processing XML
- Distributed programming
- Debugging and testing

Another advantage of *The Python Cookbook, 2nd Edition* is its trio of authors--three well-known Python programming experts, who are highly visible on email lists and in newsgroups, and speak often at Python conferences. With scores of practical examples and pertinent background information, *The Python Cookbook, 2nd Edition* is the one source you need if you're looking to build efficient, flexible, scalable, and well-integrated systems.

Mastering Python Design Patterns Dec 22 2021 This book is for Python programmers with an intermediate background and an interest in design patterns implemented in idiomatic Python. Programmers of other languages who are interested in Python can also benefit from this book, but it would be better if they first read some introductory materials that explain how things are done in Python.

Architecture Patterns with Python Jun 15 2021 As Python continues to grow in popularity, projects are becoming larger and more complex. Many Python developers are taking an interest in high-level software design patterns such as hexagonal/clean architecture, event-driven architecture, and the strategic patterns prescribed by domain-driven design (DDD). But translating those patterns into Python isn't always straightforward. With this hands-on guide, Harry Percival and Bob Gregory from MADE.com introduce proven architectural design patterns to help Python developers manage application complexity—and get the most value out of their test suites. Each pattern is illustrated with concrete examples in beautiful, idiomatic Python, avoiding some of the verbosity of Java and C# syntax. Patterns include:

- Dependency inversion and its links to ports and adapters (hexagonal/clean architecture)
- Domain-driven design's distinction between Entities, Value Objects, and Aggregates
- Repository and Unit of Work patterns for persistent storage
- Events, commands, and the message bus
- Command-query responsibility segregation (CQRS)
- Event-driven architecture and reactive microservices

Mastering Object-Oriented Python - Second Edition Jan 11 2021 Gain comprehensive insights into programming practices, and code portability and reuse to build flexible and maintainable apps using object-oriented principles

Key Features Extend core OOP techniques to increase integration of classes created with Python Explore various Python libraries for handling persistence and object serialization Learn alternative approaches for solving programming problems, with different attributes to address your problem domain

Book Description Object-oriented programming (OOP) is a relatively complex discipline to master, and it can be difficult to see how general principles apply to each language's unique features. With the help of the latest edition of *Mastering Object-Oriented Python*, you'll be shown how to effectively implement OOP in Python, and even explore Python 3.x. Complete with practical examples, the book guides you through the advanced concepts of OOP in Python, and demonstrates how you can apply them to solve complex problems in OOP. You will learn how to create high-quality Python programs by exploring design alternatives and determining which design offers the best performance. Next, you'll work through special methods for handling simple object conversions and also learn about hashing and comparison of objects. As you cover later chapters, you'll discover how essential it is to locate the best algorithms and optimal data structures for developing robust solutions to programming problems with minimal computer processing. Finally, the book will assist you in leveraging various Python features by implementing object-oriented designs in your programs. By the end of this book, you will have learned a number of alternate approaches with different attributes to confidently solve programming problems in Python. What you will learn

- Explore a variety of different design patterns for the `__init__()` method
- Learn to use Flask to build a RESTful web service
- Discover SOLID design patterns and principles
- Use the features of Python 3's abstract base
- Create classes for your own applications
- Design testable code using pytest and fixtures
- Understand how to design context managers that leverage the 'with' statement
- Create a new type of collection using standard library and design techniques
- Develop new number types above and beyond the built-in classes of numbers

Who this book is for This book is for developers who want to use Python to create efficient programs. A good understanding of Python programming is required to make the most out of this book. Knowledge of concepts related to object-oriented design patterns will also be useful.

Easy Learning Design Patterns Python (2 Edition) Oct 20 2021 Master the application design using the core design patterns and features of Python 3. the design pattern is an elected solution for solving software design problems. This book takes you through important design patterns and explains them with real-world examples. You will get to grips with low-level details and concepts that show you how to write Python code. This book will help

you learn the core concepts of design patterns and the way they can be used to resolve software design problems. and take your skills to the next level with reactive and functional patterns that help you build resilient, scalable, and robust applications. The complexity of life, because they do not understand to simplify the complex, simple is the beginning of wisdom. From the essence of practice, this book to briefly explain the concept and vividly cultivate programming interest, you will learn it easy and fast.

Practices of the Python Pro Apr 01 2020 Summary Professional developers know the many benefits of writing application code that's clean, well-organized, and easy to maintain. By learning and following established patterns and best practices, you can take your code and your career to a new level. With Practices of the Python Pro, you'll learn to design professional-level, clean, easily maintainable software at scale using the incredibly popular programming language, Python. You'll find easy-to-grok examples that use pseudocode and Python to introduce software development best practices, along with dozens of instantly useful techniques that will help you code like a pro. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the technology Professional-quality code does more than just run without bugs. It's clean, readable, and easy to maintain. To step up from a capable Python coder to a professional developer, you need to learn industry standards for coding style, application design, and development process. That's where this book is indispensable. About the book Practices of the Python Pro teaches you to design and write professional-quality software that's understandable, maintainable, and extensible. Dane Hillard is a Python pro who has helped many dozens of developers make this step, and he knows what it takes. With helpful examples and exercises, he teaches you when, why, and how to modularize your code, how to improve quality by reducing complexity, and much more. Embrace these core principles, and your code will become easier for you and others to read, maintain, and reuse. What's inside Organizing large Python projects Achieving the right levels of abstraction Writing clean, reusable code Inheritance and composition Considerations for testing and performance About the reader For readers familiar with the basics of Python, or another OO language. About the author Dane Hillard has spent the majority of his development career using Python to build web applications. Table of Contents: PART 1 WHY IT ALL MATTERS 1 | The bigger picture PART 2 FOUNDATIONS OF DESIGN 2 | Separation of concerns 3 | Abstraction and encapsulation 4 | Designing for high performance 5 | Testing your software PART 3 NAILING DOWN LARGE SYSTEMS 6 | Separation of concerns in practice 7 | Extensibility and flexibility 8 | The rules (and exceptions) of inheritance 9 | Keeping things lightweight 10 | Achieving loose coupling PART 4 WHAT'S NEXT? 11 | Onward and upward

Powerful Python Dec 10 2020 There are many books for those new to Python, new to programming, or both. Powerful Python is different. Written for experienced developers like you, its carefully crafted chapters teach intermediate and advanced strategies, patterns, and tools for modern Python. Focused on Python 3, with full support for 2.7. DRM-free digital upgrade: powerfulpython.com/book-upgrade "Feels like Neo learning Jiu jitsu in the Matrix." - John Beauford (@johnbeauford) "I just wanted to let you know what an excellent book this is... I keep going back to your book to learn Python." - Fahad Qazi, London, UK "Thanks. Keep up the good work. Your chapter on decorators is the best I have seen on that topic." - Leon Tietz, Minnesota, USA "Powerful Python is already helping me get huge optimization gains." - Timothy Dobbins (@TmthyDobbins) "What have I found good and valuable about the book so far? Everything honestly. The clear explanations, solid code examples have really helped me advance as a Python coder... Thank you! It has really helped me grasp some advanced concepts that I felt were beyond my abilities." - Nick S., Colorado, USA For data scientists, back-end engineers, web developers, sysadmins, devops, QA testers and more. What's included: An unrelenting selective spotlight on what's most valuable and impactful to working, full-time, professional Python developers Well-researched, detailed, realistic code on almost every page, powerfully illustrating key points. Very little "toy code" How to use decorators to add rich features to functions and classes; untangle distinct, frustratingly intertwined concerns in your code; and build powerful, extensible software frameworks How to use Python in ways that incentivize other developers to use and re-use your code, again and again... amplifying the impact of the code you write, and boosting your reputation among your peers Powerfully and easily weave iterators and generators throughout your applications, making them massively scalable, highly performant, and far more readable and maintainable How to fully leverage Python's exception and error model... giving you a detailed understanding even experienced Pythonistas often lack, and putting some of the most powerfully Pythonic exception-handling patterns in your toolbox How "magic methods" imbue natural, readable, expressive syntax into your classes and objects... and how to "break the rules" to craft stunningly intuitive, compellingly reusable library interfaces Valuable and powerful design patterns, and how Python's special language features give you uniquely powerful implementations not possible in other languages Deep and detailed instruction on how to write practical, realistic unit tests... using test-driven development to easily get into a state of flow... where you find yourself implementing feature after feature, keeping your focus with ease for long periods of time How to rapidly set up effective logging for scripts, sprawling Python applications, and everything in between An enthusiastic and unapologetic focus on Python 3, and what makes it great... with full explanation and support for getting the same results with Python 2.7 More at PowerfulPython.com.

Robust Python Aug 06 2020 Does it seem like your Python projects are getting bigger and bigger? Are you feeling the pain as your codebase expands and gets tougher to debug and maintain? Python is an easy language to learn and use, but that also means systems can quickly grow beyond comprehension. Thankfully, Python has features to help developers overcome maintainability woes. In this practical book, author Patrick Viafore shows you how to use Python's type system to the max. You'll look at user-defined types, such as classes and enums, and Python's type hinting system. You'll also learn how to make Python extensible and how to use a comprehensive testing strategy as a safety net. With these tips and techniques, you'll write clearer and more maintainable code. Learn why types are essential in modern development ecosystems Understand how type choices such as classes, dictionaries, and enums reflect specific intents Make Python extensible for the future without adding bloat Use popular Python tools to increase the safety and robustness of your codebase Evaluate current code to detect common maintainability gotchas Build a safety net around your codebase with linters and tests

Microservice Patterns and Best Practices Sep 18 2021 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. Microservice 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.

Mastering Python Design Patterns Jan 03 2023 Exploit various design patterns to master the art of solving problems using Python Key Features Master the application design using the core design patterns and latest features of Python 3.7 Learn tricks to solve common design and architectural challenges Choose the right plan to improve your programs and increase their productivity Book Description Python is an object-oriented scripting language that is used in a wide range of categories. In software engineering, a design pattern is an elected solution for solving software design problems. Although they have been around for a while, design patterns remain one of the top topics in software engineering, and are a ready source

for software developers to solve the problems they face on a regular basis. This book takes you through a variety of design patterns and explains them with real-world examples. You will get to grips with low-level details and concepts that show you how to write Python code, without focusing on common solutions as enabled in Java and C++. You'll also find sections on corrections, best practices, system architecture, and its designing aspects. This book will help you learn the core concepts of design patterns and the way they can be used to resolve software design problems. You'll focus on most of the Gang of Four (GoF) design patterns, which are used to solve everyday problems, and take your skills to the next level with reactive and functional patterns that help you build resilient, scalable, and robust applications. By the end of the book, you'll be able to efficiently address commonly faced problems and develop applications, and also be comfortable working on scalable and maintainable projects of any size. What you will learn Explore Factory Method and Abstract Factory for object creation Clone objects using the Prototype pattern Make incompatible interfaces compatible using the Adapter pattern Secure an interface using the Proxy pattern Choose an algorithm dynamically using the Strategy pattern Keep the logic decoupled from the UI using the MVC pattern Leverage the Observer pattern to understand reactive programming Explore patterns for cloud-native, microservices, and serverless architectures Who this book is for This book is for intermediate Python developers. Prior knowledge of design patterns is not required to enjoy this book.

Practical Python Design Patterns May 27 2022 Become a better, more productive programmer through a series of projects that will help you deeply understand and master each of the design patterns covered. In this book you will learn to write elegant "Pythonic" code to solve common programming problems. You will also experience design thinking, by identifying design patterns that would be helpful given a specific problem or situation. Python is eating the world. In recent years it has become so much more than a mere object-oriented, scripting language. Design patterns help you think of and solve problems in chunks. They help you to stand on the shoulders of the giants who have come before, instead of having to reinvent the wheel. What You Will Learn Craft cleaner code Increase your effectiveness as a programmer Write more Pythonic code Solve bigger problems Discover optimal solutions to common problems, done in a way that is uniquely Pythonic Who This Book Is For Programmers who are comfortable with Python. It is also guide for people who have mastered other programming languages and who want to make the transition to Python.

A Pattern Language Oct 27 2019 You can use this book to design a house for yourself with your family; you can use it to work with your neighbors to improve your town and neighborhood; you can use it to design an office, or a workshop, or a public building. And you can use it to guide you in the actual process of construction. After a ten-year silence, Christopher Alexander and his colleagues at the Center for Environmental Structure are now publishing a major statement in the form of three books which will, in their words, "lay the basis for an entirely new approach to architecture, building and planning, which will we hope replace existing ideas and practices entirely." The three books are *The Timeless Way of Building*, *The Oregon Experiment*, and this book, *A Pattern Language*. At the core of these books is the idea that people should design for themselves their own houses, streets, and communities. This idea may be radical (it implies a radical transformation of the architectural profession) but it comes simply from the observation that most of the wonderful places of the world were not made by architects but by the people. At the core of the books, too, is the point that in designing their environments people always rely on certain "languages," which, like the languages we speak, allow them to articulate and communicate an infinite variety of designs within a forma system which gives them coherence. This book provides a language of this kind. It will enable a person to make a design for almost any kind of building, or any part of the built environment. "Patterns," the units of this language, are answers to design problems (How high should a window sill be? How many stories should a building have? How much space in a neighborhood should be devoted to grass and trees?). More than 250 of the patterns in this pattern language are given: each consists of a problem statement, a discussion of the problem with an illustration, and a solution. As the authors say in their introduction, many of the patterns are archetypal, so deeply rooted in the nature of things that it seems likely that they will be a part of human nature, and human action, as much in five hundred years as they are today.

Paradigms of Artificial Intelligence Programming Mar 01 2020 *Paradigms of AI Programming* is the first text to teach advanced Common Lisp techniques in the context of building major AI systems. By reconstructing authentic, complex AI programs using state-of-the-art Common Lisp, the book teaches students and professionals how to build and debug robust practical programs, while demonstrating superior programming style and important AI concepts. The author strongly emphasizes the practical performance issues involved in writing real working programs of significant size. Chapters on troubleshooting and efficiency are included, along with a discussion of the fundamentals of object-oriented programming and a description of the main CLOS functions. This volume is an excellent text for a course on AI programming, a useful supplement for general AI courses and an indispensable reference for the professional programmer.

Python Object-Oriented Programming Jun 03 2020 Being familiar with object-oriented design is an essential part of programming in Python. This new edition includes all the topics that made *Python Object-Oriented Programming* an instant Packt classic. Moreover, it's packed with updated content to reflect more recent changes in the core Python libraries and cover modern third-party packages.

Design Patterns Nov 01 2022 Software -- Software Engineering.

Domain-driven Design Sep 26 2019 Describes ways to incorporate domain modeling into software development.

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