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Software Engineering Books to Read in 2021

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Software development is constantly changing and sometimes it is difficult to keep up to date with so many techniques. However, if you look closely you will see that what happens in most cases is not the development of new ideas, but rather the recycling of ideas developed decades ago.

Once I realized that I shifted my learning goals from Technologies X, Y, Z to universal principles. By doing that, I started to have a better understanding of how things work. This is helping me to build better systems and make more conscious technical decisions.

1 - Domain Modeling Made Functional: Tackle Software Complexity with Domain-Driven Design and F#

Domain-Driven Design (DDD) is a trending topic and there are many books about this subject, but most of them are theoretical and difficult to apply to a real problem. This book takes a pragmatic approach and the author guides you through the development of a real system. It combines the techniques of DDD with Functional Programming to model the business requirements from a complex domain.

2 - Clean Architecture: A Craftsman's Guide to Software Structure and Design

Design a system to be modular is not an easy task. We have to consider many aspects of the system and sometimes we need to make decisions early on in the project that when are not properly implemented can compromise the maintenance of your software in the future. This book introduces the main concepts that you should take into consideration when you're designing a system. However, the author does not go much into details and many topics are not well explained.

3 - Growing Object-Oriented Software, Guided by Tests

Test-Driven Development is a technique to help developers to design better systems. This

book is a practical guide that takes you through the development of an application. It describes some design techniques and tools you can use to design systems that are easy to change and maintain. You're going to learn how to properly use mocks during development. This will help you to write tests that are actually testing behavior and not implementation details.

4 - Patterns of Enterprise Application Architecture

This is a classic book that every software engineer should read. The book introduces the main patterns used in enterprise applications. It is interesting to see how the same fundamental design ideas can be modified and applied to solve different problems in the last 20 years.

5 - Decomposing Monolith to Microservices: Evolutionary Patterns to Transform Your Monolith

Microservices are becoming more popular every day and many companies are migrating their Monolithic applications to Microservices, but this is not an easy task. How should you do it? Should you start from the application layer or the database layer? Which one is better? What are other people doing? If you have these questions this book will be great for you. The book is full of practical advice to guide you through your transition process while keeping the business working as usual.

6 - A Philosophy of Software Design

This short book is a real gem. It is something I wish every software engineer could read. It presents some techniques to deal with one of the most difficult problems in software development: manage complexity. It presents a set of techniques that you can use to tackle complexity and design better systems that are easy to change and maintain.

7 - Database Internals: A Deep-Dive into How Distributed Data Systems Work

This book is a practical introduction to the database world. The author presents the main concepts used to build a database. The first part will guide you through how storage engines work and how data is stored. You will learn the basics about B-Trees and LSM trees and what databases use to improve performance. In the second part, you will learn how databases work with distributed systems. It explains how data can be distributed among multiple nodes and what you should take into consideration to achieve consistency.

8 - Terraform Up and Running: Writing Infrastructure as Code

This book is a practical introduction to Terraform. It guides you through the main

concepts of Infrastructure as Code (IaC) in an easy and accessible way. Most of the things you need to know to write IaC are covered with practical examples. The author shows how to build a web cluster with reusable and unit-tested modules.

9 - The Phoenix Project: A Novel About IT, DevOps, and Helping Your Business Win

This is a classic DevOps book. The author describes a fictional dysfunctional organization that is suffering from projects behind schedule and many quality issues. Then, it shows how some DevOps principles can be used to identify what is not properly working in your organization and what you can do to improve that. It's a fantastic journey and you are probably going to find some similarities with your own organization.

10 - Extreme Programming Explained: Embrace Change

This is one of my favorite books. It will totally change the way you see Agile development. You will understand that Agile is not about process, but rather about people and collaboration. It contains a lot of practices that you can start to use in your team to improve the way your organization is building software.

Happy reading

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