th: Deep Dive into System Design Interview

Distributed Systems

Module Overview

This module talks about establishing the basic principles of distributed systems. It explains the scope of their functionality by discussing what distributed systems can and can't achieve. It also covers the basic algorithms and protocols of distributed systems through easy-to-follow examples and diagrams, which illustrate the thinking behind design decisions and expand on how they can be practiced.

Module Objectives

Learn some of the complexities inherent in distributed systems.

Learn the key design problems in distributed systems.

Learn the basic concepts and theorems of distributed systems.

Start Learning

28 Lessons

2 Quizzes

108 Illustrations

Contents (Module 1)

Module 2

1. Introduction to Distributed Systems

- Getting Started
- Fallacies of Distributed Computing
- Difficulties Designing Distributed Systems
- Measures of Correctness in Distributed Systems
- System Models
- Types of Failures
- The Tale of Exactly-Once Semantics
- Failure in the World of Distributed Systems
- Stateless and Stateful Systems
- Quiz

2. Basic Concepts and Theorems

- Partitioning
- Algorithms for Horizontal Partitioning
- Replication
- Single-Master Replication Algorithm
- Multi-Master Replication Algorithm
- Quorums in Distributed Systems
- Safety Guarantees in Distributed Systems
- ACID Transactions
-

- The CAP Theorem
- Consistency Models
- CAP Theorem's Consistency Model
- Isolation Levels and Anomalies
- Prevention of Anomalies in Isolation Levels
- Consistency and Isolation
- Hierarchy of Models
- Why All the Formalities?
- Quiz

3. Conclusion

- Final Remarks

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