

Software Engineering Principles

Chapter 1: Development Methodologies

Software development methodologies provide structured approaches to building software systems efficiently and effectively.

1.1 Agile Development

Agile methodology emphasizes iterative development, collaboration, and flexibility in response to changing requirements.

1.1.1 Scrum Framework

Scrum is an agile framework that organizes work into time-boxed iterations called sprints.

1.1.2 Kanban Method

Kanban visualizes workflow and limits work in progress to improve efficiency and identify bottlenecks.

1.2 Waterfall Model

The waterfall model follows a linear sequential approach where each phase must be completed before the next begins.

Chapter 2: Code Quality and Testing

Maintaining high code quality through testing and best practices is essential for sustainable software development.

2.1 Unit Testing

Unit tests verify that individual components of the software work correctly in isolation.

2.1.1 Test-Driven Development

TDD involves writing tests before implementing functionality, ensuring code meets requirements from the start.

2.2 Integration Testing

Integration tests verify that different components work correctly when combined together.