

### Software Development

Development Process

Design Principles

Design Patterns

Requirement Analysis

### Design Quality

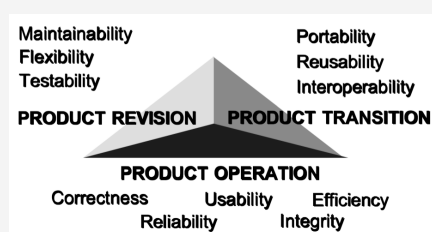
Quality Models

Design Quality Metrics

Design Quality Characteristics

O-O Metrics : C&K and MOOD

### McCall's Triangle of Quality



### Quality Characteristics

Modularity

Cohesion

Coupling

Understandability

Sufficiency

Robustness

Flexibility

Reusability

Efficiency

Reliability

### Architectures

Software components

Key Factors

Architectural styles

### Quality Attributes

Correctness

Maintainability

Usability

### Program Representation

AST

CFG

Data Dependency Graph

Optimisations

### Software Evolution

Evolution vs Maintenance

Laws of Software Evolution

Staged Model of Evolution

Legacy Software Evolution

Wrapping, Migration

### Architectural Styles

Layered

MVC

Pipe-and-Filter

Client-Server

Peer-to-peer

Service-Oriented

Publish-Subscribe

Edge-dominant

3-Tier / Multi-tier

Implicit Invocation

### Design Patterns

Input Control Patterns: Front Controller, Page Controller

Request encapsulation and execution pattern: Command pattern, Application controller, Command processor

Output Control Patterns: Template View, Transform View

Access Control Patterns: Firewall proxy, Authorization

Messaging Patterns: Channel, Endpoint, Translator, Router, scatter-gather, aggregator, splitter

Object Interaction Patterns: Observer, Mediator, Facade, Memento, Data Transfer Object, Double dispatch

### Design Principles

Information Hiding

Separation of Concerns

Open Close Principle

Interface Segregation Principle

Program to Interface

Dependency Inversion

Object composition over inheritance

C

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