Software Architecture: Principles and Practices

Course Outline

What is Software Architecture?
Enterprise, system, and software architecture
Typical software architecture
Architectural patterns, reference models, and reference architectures
Why is software architecture important?
Architectural structures

The Architecture Business Cycle
The architecture business cycle introduction
Factors influencing an architecture

The World Wide Web—A Case Study

Understanding Quality Attributes
Quality attributes defined
Quality attributes and architecture
Problems defining quality attributes requirements
Quality attribute scenarios
Quality Attribute Workshop

Achieving Quality Attributes
Patterns for software architecture
Tactics defined
Attribute-Driven Design

Documenting Software Architectures
View-based documentation
Types of views
Documenting interfaces, rationale, variation, etc.
Documenting behaviors
Standard organization for documentation
Deciding which views are relevant

Architecture Evaluation
Why, when, benefits, and costs of architecture evaluation
Architecture evaluation techniques
Architecture Tradeoff Analysis Method

Software Product Lines
Architectural reuse
Software product lines defined
Software product line scope
Software product line commonalities and variations
Documenting software product lines
Evaluating software product lines architectures
Barriers and costs to adopting software product lines

Celsius Tech Case Study