

SOFTWARE ARCHITECTURES

Written by Administrator
Sunday, 08 November 2009 11:36 -

Subject Code

: 06IS72

IA Marks

: 25

No. of Lecture Hours/Week

: 04

Exam Hours

: 03

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Total No. of Lecture Hours

: 52

Exam Marks

: 100

PART - A

Unit - 1

Introduction: The Architecture Business Cycle: Where do architectures come from? Software processes and the architecture business cycle; What makes a “good” architecture?

What software architecture is and what it is not; Other points of view; Architectural patterns, reference models and reference architectures; Importance of software architecture; Architectural structures and views.

6 Hours

unit - 2

Architectural Styles and Case Studies: Architectural styles; Pipes and filters; Data abstraction and object-oriented organization; Event-based, implicit invocation; Layered systems; Repositories; Interpreters; Process control; Other familiar architectures; Heterogeneous architectures.

Case Studies: Keyword in Context; Instrumentation software; Mobile robotics; Cruise control; Three vignettes in mixed style.

7 Hours

unit - 3

Quality: Functionality and architecture; Architecture and quality attributes; System quality attributes; Quality attribute scenarios in practice; Other system quality attributes; Business qualities; Architecture qualities.

Achieving Quality: Introducing tactics; Availability tactics; Modifiability tactics; Performance tactics; Security tactics; Testability tactics; Usability tactics; Relationship of tactics to architectural patterns; Architectural patterns and styles.

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6 Hours

unit - 4

Architectural Patterns – 1: Introduction; from mud to structure: Layers, Pipes and Filters, Blackboard.

7 Hours

PART - B

Unit - 5

Architectural Patterns – 2: Distributed Systems: Broker; Interactive Systems: MVC, Presentation-Abstraction-Control.

7 Hours

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unit - 6

Architectural Patterns – 3: Adaptable Systems: Microkernel; Reflection.

6 Hours

unit - 7

Some Design Patterns: Structural decomposition: Whole – Part; Organization of work: Master – Slave; Access Control: Proxy.

6 Hours

Unit - 8

Designing and Documenting Software Architecture: Architecture in the life cycle; Designing the architecture; Forming the team structure; Creating a skeletal system.

Uses of architectural documentation; Views; Choosing the relevant views; Documenting a view; Documentation across views.

7 Hours

Text Books:

1. **Software Architecture in Practice** - Len Bass, Paul Clements, Rick Kazman, 2nd Edition, Pearson Education, 2003.
2. **Pattern-Oriented Software Architecture A System of Patterns, Volume 1** - Frank Buschmann, Regine Meunier, Hans Rohnert, Peter Sommerlad, Michael Stal, John Wiley and Sons, 2006
3. **Software Architecture- Perspectives on an Emerging Discipline** - Mary Shaw and David Garlan, Prentice-Hall of India, 2007.

Reference Book:

1. **Design Patterns- Elements of Reusable Object-Oriented Software** - E. Gamma, R. Helm, R. Johnson, J. Vlissides, Addison-Wesley, 1995.