

SOFTWARE ARCHITECTURES

Written by Administrator
Sunday, 08 November 2009 09:31 -

Subject Code

:

06IS72

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IA Marks

:

25

No. of Lecture Hrs./ Week

:

04

Exam Hours

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:

03

Total No. of Lecture Hrs.

:

52

Exam Marks

:

100

PART - A

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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

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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.

6 Hours

UNIT - 4

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

7 Hours

PART - B

UNIT - 5

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ARCHITECTURAL PATTERNS – 2: Distributed Systems: Broker; Interactive Systems: MVC, Presentation-Abstraction-Control.

7 Hours

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.

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1. **Mary Shaw and David Garlan:** Software Architecture- Perspectives on an Emerging Discipline, 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.

Web site for Patterns:

<http://www.hillside.net/patterns/>