OBJECT-ORIENTED MODELING AND DESIGN

Subject   Code

:

06CS71

IA   Marks

:

25

No. of Lecture Hrs./ Week

:

04

Exam Hours

:

03

Total No. of Lecture Hrs.

:

52

Exam Marks

:

100

PART - A

Written by Administrator
Sunday, 08 November 2009 09:30 -

UNIT - 1

INTRODUCTION, MODELING CONCEPTS, CLASS MODELING: What is Object Orientation? What is OO development? OO themes; Evidence for usefulness of OO development; OO modeling history.Modeling as Design Technique: Modeling; abstraction; The three models.Class Modeling: Object and class concepts; Link and associations concepts; Generalization and inheritance; A sample class model; Navigation of class models; Practical tips.

7 Hours

UNIT - 2

ADVANCED CLASS MODELING, STATE MODELING: Advanced object and class concepts; Association ends; N-ary associations; Aggregation; Abstract classes; Multiple inheritance; Metadata; Reification; Constraints; Derived data; Packages; Practical tips.State Modeling: Events, States, Transitions and Conditions; State diagrams; State diagram behavior; Practical tips.

6 Hours

UNIT - 3

ADVANCED STATE MODELING, INTERACTION MODELING: Advanced State Modeling: Nested state diagrams; Nested states; Signal generalization; Concurrency; A sample state

model; Relation of class and state models; Practical tips. Interaction Modeling: Use case models; Sequence models; Activity models.Use case relationships; Procedural sequence models; Special constructs for activity models.

6 Hours

UNIT - 4

PROCESS OVERVIEW, SYSTEM CONCEPTION, DOMAIN ANALYSIS: Process Overview: Development stages; Development life cycle. System Conception: Devising a system concept; Elaborating a concept; Preparing a problem statement. Domain Analysis: Overview of analysis; Domain class model; Domain state model; Domain interaction model; Iterating the analysis.

7 Hours

PART - B

UNIT - 5

APPLICATION ANALYSIS, SYSTEM DESIGN:󰀀󰀀󰀀󰀀󰀀󰀀󰀀󰀀 Application Analysis: Application

interaction model; Application class model; Application state model; Adding operations. Overview of system design; Estimating performance; Making a reuse plan; Breaking a system in to sub-systems; Identifying concurrency; Allocation of sub-systems; Management of data storage; Handling global resources; Choosing a software control strategy; Handling boundary conditions; Setting the trade-off priorities; Common architectural styles; Architecture of the ATM system as the example.

7 Hours

UNIT - 6

CLASS DESIGN, IMPLEMENTATION MODELING, LEGACY SYSTEMS: Class Design: Overview of class design; Bridging the gap; Realizing use cases; Designing algorithms; Recursing downwards, Refactoring; Design optimization; Reification of behavior; Adjustment of inheritance; Organizing a class design; ATM example.Implementation Modeling: Overview of implementation; Fine-tuning classes; Fine-tuning generalizations; Realizing associations; Testing.Legacy Systems: Reverse engineering; Building the class models; Building the interaction model; Building the state model; Reverse engineering tips; Wrapping; Maintenance.

7 Hours

UNIT - 7

DESIGN PATTERNS – 1: What is a pattern and what makes a pattern? Pattern categories; Relationships between patterns; Pattern description.

Communication Patterns: Forwarder-Receiver; Client-Dispatcher-Server; Publisher-Subscriber.

6 Hours

UNIT - 8

DESIGN PATTERNS – 2, IDIOMS: Management Patterns: Command processor; View handler. Idioms: Introduction; What can idioms provide? Idioms and style; Where to find idioms; Counted Pointer example.

6 Hours

TEXT BOOKS:

1. **Object-Oriented Modeling and Design with UML** – Michael Blaha, James Rumbaugh, 2nd Edition, Pearson Education, 2005.

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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REFERENCE BOOKS:

1.   **Object-Oriented Analysis and Design with Applications** – Grady Booch et al, 3rd Edition, Pearson Education, 2007.

2.   **Practical Object-Oriented Design with UML** – Mark Priestley, 2nd Edition, Tata McGraw-Hill, 2003.

3.   **Object-Oriented Design with UML and JAVA** – K. Barclay, J. Savage, Elsevier, 2008.

4.   **The Unified Modeling Language User Guide** – Booch, G., Rumbaugh, J., and Jacobson I, 2nd Edition, Pearson, 2005.

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

6.   **Object-Oriented Systems Analysis and Design Using UML** – Simon Bennett, Steve McRobb and Ray Farmer, 2nd Edition, Tata McGraw-Hill, 2002.