UNIT I

Syllabus : Introduction to Object Oriented Methodology : Study of various design methodologies like Object Oriented Design by Booch, Object Modeling Techniques by Rumbaugh, Object-Oriented Analysis by Codd Yourdon and Object-Oriented Software Engineering by Ivar Jacobson

Unified Approach : Unification of Booch, Rumbaugh and Jacobson methodologies, Object - Oriented Analysis, Object Oriented Design, Iterative Development & Continuous Testing, Modelling based on UML , Layered Approach

Unified Modeling Language : Introduction to Modeling and UML2.0, MDA, UML2.0 Structure, UML Building Blocks, UML common Mechanisms, Introduction to all UML2.0 Diagram notational Techniques, 4+1View

UNIT II

Syllabus : Object Oriented Analysis Process : Use Case Modeling: Actor Identification, Actor Classification, Actor Generalization, Use Case Identification, Uses/Include/Extend Association, Writing a formal use case, Forward Engineering (Use case realization)

Class Modeling : Approach for identifying class, Approaches for identifying classes, Class pattern approach, Class Responsibilities, Collaboration Approach, Naming Classes, Class associations Generalization specialization relationship, Aggregation and Composition Relationships

UNIT III

Syllabus : Activity Diagram : Activity and Actions, Activity Edge, Decision and Merge Points, Fork-Join, Control Flow, Constraints on Action, Swim Lanes.

Sequence Diagram : Context, Objects and Roles, Links, Object Life Line, Message or stimulus, Activation/Focus of Control, delete object, Modelling Interactions.

Collaboration Diagram : Objects and Links, Messages and stimuli, Active Objects, Communication Diagram, Iteration Expression, Parallel Execution, Guard Expression, Timing Diagram.

State Diagram : State Machine, Triggers and Ports, Transitions and conditions, Initial and Final State, nested state, Composite States, Submachine States.

UNIT IV

Syllabus : Object Oriented Design Process : Designing Business Layer: Object Oriented Constraints Language (OCL), Designing Business Classes: The Process, Designing Well Defined Class Visibility, Attribute Refinement, Method Design Using UML Activity Diagram, Packaging and Managing Classes.

Designing Access Layer : Object Relational Systems, Object Relation Mapping, Table Class Mapping, Table - Inherited Classes Mapping, Designing the Access Layer Classes: create mirror classes, identify access layer class relationships, eliminate redundant classes, create method classes.

Designing View Layer : View Layer Classes Design, Identifying View Classes by Analyzing Use Cases, Macro-Level Design Process – identify view layer objects, and build prototype for view layer Interface.

Test Usability and User satisfaction : Component and Deployment Design using Component and Deployment Diagram.

UNIT V

Syllabus : Introduction and need of Design Principles : General Responsibility Assignment Software Patterns (GRASP): Introduction, Creator, Information Expert, Low coupling, Controller, High Cohesion, Polymorphism, Pure fabrication, Indirection, Protected Variations. Introduction to GOF design patterns : Types of design patterns: Creational Pattern : Singleton, Factory

Structural Pattern : Adapter, Façade Behavioral Patterns: Strategy, State

UNIT VI

Syllabus : Anatomy of Software Architecture, Quality attributes in architecture design, Designing Object-Oriented Software Architecture, Designing Client/Server Software Architecture, Designing Service-Oriented Architectures, Designing Component-Based Software Architectures, Designing Concurrent and Real-Time Software Architectures. Product Line Architecture design

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