5 Days

Object-Oriented Analysis and Design Using UML

The Object-Oriented Analysis and Design Using UML course imparts learning to efficiently utilize object-oriented technologies and software modeling as functional to a software development process. This course will provide hands-on exercises followed by a theoretical base that will build one practical, comprehensive, object-oriented analysis and design (OOAD) road map from requirements gathering to system design.

Completion of this training course will enable candidates in:

- Using object-oriented technologies.
- Creating a system design (the Solution model) supporting the functional requirements (FRs).
- Performing object-oriented analysis and design.
- Using Unified Modeling Language 2.2.
- Following a software development process using an OO software project.

Course Benefits:

Attaining certification of this course, individuals will receive benefits of using the widely accepted graphical modeling language?the Unified Modeling Language (UML) version 2.2. Using UML will help to communicate concepts and decisions, understand the problem, manage the complexity of artifacts and propose solutions for the same.

Course Details

Course Outline

1. Examining Object-Oriented Concepts and Terminology

- Describing the important object-oriented (OO) concepts
- Describing the fundamental OO terminology

2. Introducing Modeling and the Software Development Process

- Describing the Object-Oriented Software Development (OOSD) process
- Describing how modeling supports the OOSD process
- Describing the benefits of modeling software
- Explaining the purpose, activities, and artifacts of the following OOSD workflows (disciplines): Requirements Gathering, Requirements Analysis, Architecture, Design, Implementation, Testing & Deployment

3. Creating Use Case Diagrams

- Justify the need for a Use Case diagram
- Identifying and Describing the essential elements in a UML Use Case diagram
- Developing a Use Case diagram for a software system based on the goals of the business owner
- Developing elaborated Use Case diagrams based on the goals of all the stakeholders
- Recognizing and document use case dependencies using UML notation for extends, includes, and generalization
- Describing how to manage the complexity of Use Case diagrams by creating UML packaged views

4. Creating Use Case Scenarios and Forms

- Identifying and document scenarios for a use case
- Creating a Use Case form describing a summary of the scenarios in the main and alternate flows
- Describing how to reference included and extending use cases.
- Identifying and document non-functional requirements (NFRs), business rules, risks, and priorities for a use case
- Identifying the purpose of a Supplementary Specification Document

5. Creating Activity Diagrams

- Identifying the essential elements in an Activity diagram
- Modeling a Use Case flow of events using an Activity diagram

6. Determining the Key Abstractions

- Identifying a set of candidate key abstractions
- Identifying the key abstractions using CRC analysis

7. Constructing the Problem Domain Model

- Identifying the essential elements in a UML Class diagram
- Constructing a Domain model using a Class diagram
- Identifying the essential elements in a UML Object diagram
- Validate the Domain model with one or more Object diagrams

8. Transitioning from Analysis to Design using Interaction Diagrams

- Explaining the purpose and elements of the Design model
- Identifying the essential elements of a UML Communication diagram
- Creating a Communication diagram view of the Design model
- Identifying the essential elements of a UML Sequence diagram
- Creating a Sequence diagram view of the Design model

9. Modeling Object State Using State Machine Diagrams

- Model object state

- Describing the essential elements of a UML State Machine diagram

10. Applying Design Patterns to the Design Model

- Defining the essential elements of a software pattern
- Describing the Composite pattern
- Describing the Strategy pattern
- Describing the Observer pattern
- Describing the Abstract Factory pattern

11. Introducing Architectural Concepts and Diagrams

- Distinguishing between architecture and design
- Describing tiers, layers, and systemic qualities
- Describing the Architecture workflow
- Describing the diagrams of the key architecture views
- Selecting the Architecture type
- Creating the Architecture workflow artifacts

12. Introducing the Architectural Tiers

- Describing the concepts of the Client and Presentation tiers
- Describing the concepts of the Business tier
- Describing the concepts of the Resource and Integration tiers
- Describing the concepts of the Solution model

13. Refining the Class Design Model

- Refining the attributes of the Domain model
- Refining the relationships of the Domain model
- Refining the methods of the Domain model
- Declaring the constructors of the Domain model
- Annotate method behavior
- Create components with interfaces

14. Overview of Software Development Processes

- Explain the best practices for OOSD methodologies
- Describing the features of several common methodologies
- Choose a methodology that best suits your project
- Developing an iteration plan

15. Overview of Frameworks

- Defining a framework
- Describing the advantages and disadvantages of using frameworks
- Identifying several common frameworks
- Understanding the concept of creating your own business domain frameworks

16. Course Review

- Reviewing the key features of object orientation
- Reviewing the key UML diagrams
- Reviewing the Requirements Analysis (Analysis) and Design workflows

Who Should Attend

The Object-Oriented Design using UML training is ideal for:

- Application Developers
- System Analysts
- Java Developers
- Java EE Developers

Pre Requisite

- Understand object-oriented concepts and methodology
- Demonstrate a general understanding of programming, preferably using the Java programming language
- Understand the fundamentals of the systems development process

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