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Course 416: Applying UML to Classic Systems Analysis and Design (4 day)

Course Description...

Regardless of the software development approach, from the classic waterfall to extreme programming (XP), all of the experts agree that quality software development requires both analysis and design. The Unified Modeling Language provides a common, standard notation for recording both analysis models and design artifacts. This course delves into the processes of both analysis and design using UML as the notation language.

Expected Student Outcomes...

After completion of this course a student will be able to...

- Demonstrate the importance of modeling in the software development life cycle.
- Become conversant with the UML notation and symbols.
- Use the UML notation to build analysis models to create detailed systems specifications.
- Employ the UML notation to create effective and efficient system designs.

Who should attend...

Software developers, system architects, analysts, designers, and anyone interested in understanding the UML as applied to analysis and design of systems.

Prerequisites...

A good understanding of object-oriented technologies and a basic understanding of analysis and design.



Course Outline...

Introduction and Overview

Course Objectives

Unit 1: Analysis, Design, Modeling and the UML

- Analysis
 - Requirements analysis
 - Systems analysis
- Design
- Modeling
 - Analysis modeling
 - Design modeling
 - Answering questions
- The Unified Modeling Language (UML)

Unit 2: The Object-Oriented Paradigm

- Classes and objects
- Characteristic of objects
 - Structure
 - Inheritance
 - Encapsulation
 - Polymorphism
- Messages and communication
- Associations

Unit 3: Domain Modeling

- Data analysis and modeling
- Identifying objects and classes
 - Spot the noun
 - Categorizing objects
 - Class types
- Inheritance
- Class structures
 - Aggregations
 - Collections
- Identifying attributes
 - Attribute dependency
- Drawing the object model
 - Objects, attributes and associations
 - Links and messages

Unit 4: Use Case and the Behavior Model

- Use Cases
- Use Case extensions
 - Use Case relationships
 - The <<extends>> relationship
 - The <<includes>> relationship

Unit 5: Analyzing the Use Cases

- Object stereotypes
- Activity diagrams
- Sequence diagrams



Unit 6: Defining the Processes

- Collaboration diagrams
- Events and responses
- State charts
- Analyzing with dynamic modeling

Unit 7: Adding the Methods

- Class diagrams revisited
- Assigning methods
 - Method dependency
- Primary methods
- Object/class hierarchy
 - Method encapsulation
- Using partitions to simplify the model
 - Concurrency
- Design best practices
 - Cohesion
 - Complexity
 - Coupling
 - Congruence

Unit 8: Physical Design

- Allocation
- Persistence
- Implementation diagrams
 - Component diagram
 - Deployment diagram
- Design considerations

Unit 9: Patterns

- The pattern concept
- Familiar patterns
- Useful analysis patterns
- Useful design patterns

Unit 10: An Analysis and Design Process

- Requirements analysis
- System specifications
- System analysis
- High-level system design
- Physical design

Unit 11: The Bottom Line

Ideas to use

Where to go for more information

Please contact your ROI representative to discuss course tailoring!!!