Course Outline – Data Modeling 101

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Data modeling 101</th>
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<tbody>
<tr>
<td>Course Duration</td>
<td>2 days</td>
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<tr>
<td>Pre-requisite</td>
<td>Business Analysis Essentials, Requirements Development, Documentation, and Management, Use Case Modeling</td>
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Course Description
- This course will enable participants to get a detailed understanding of various concepts of data modeling.

Learning Outcome
- How logical data models relate to requirements
- Identifying entities and attributes
- Determining relationships and business rules
- Data integrity through normalization

Detailed Course Outline

Day 1

1) Introduction to Logical Data Modeling 2 hours
- Importance of logical data modeling in requirements
- When to use logical data models
- Relationship between logical and physical data model
- Elements of a logical data model
- Read a high-level data model
- Data model prerequisites
- Data model sources of information
- Developing a logical data model

2) Project Context and Drivers 2 hours
- Importance of well-defined solution scope
- Functional decomposition diagram
- Context-level data flow diagram
- Sources of requirements
  - Functional decomposition diagrams
  - Data flow diagrams
  - Use case models
  - Workflow models
  - Business rules
  - State diagrams
  - Class diagrams
  - Other documentation
- Types of modeling projects
  - Transactional business systems
  - Business intelligence and data warehousing systems
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- Integration and consolidation of existing systems
- Maintenance of existing systems
- Enterprise analysis
- Commercial off-the-shelf application

3) Conceptual Data Modeling 2 hours

- Discovering entities
- Defining entities
- Documenting an entity
- Identifying attributes
- Distinguishing between entities and attributes

4) Conceptual Data Modeling-Identifying Relationships and Business Rules 2 hours

- Integrate model fundamental relationships
- Cardinality of relationships
  - One-to-one
  - One-to-many
  - Many-to-many
- Is the relationship mandatory or optional?
- Naming the relationships

Day 2

5) Identifying Attributes 2 hours

- Discover attributes for the subject area
- Assign attributes to the appropriate entity
- Name attributes using established naming conventions
- Documenting attributes

6) Advanced Relationships 2 hours

- Modeling many-to-many relationships
- Model multiple relationships between the same two entities
- Model self-referencing relationships
- Model ternary relationships
- Identify redundant relationships
7) Completing the Logical Data Model 1 hour
   - Use super types and subtypes to manage complexity
   - Use super types and subtypes to represent rules and constraints

8) Data Integrity Through Normalization 2 hours
   - Normalize a logical data model
     - First normal form
     - Second normal form
     - Third normal form
   - Reasons for de-normalization
   - Transactional vs. business intelligence applications

9) Verification and Validation 1 hour
   - Verify the technical accuracy of a logical data model
   - Use CASE tools to assist in verification
   - Verify the logical data model using other models
     - Data flow diagram
     - CRUD matrix
   - Program closure and feedback