OrientDB Design & Development

Two-Day Training Syllabus

Day One (Design & Modeling)

* Class Structure and Goals
  + Training goals
  + Intended audience
  + Course agenda
  + About certification
* Use Case Overview
  + Extension of core OrientDB demonstration database
  + Key objects
  + Exercise and quiz summary
* What is a Graph Database?
  + Index-free adjacency
  + Vertices
  + Edges
  + Graph navigation
* OrientDB Multi Model Architecture
  + Graph
  + Document
* OrientDB Connection and Storage Architecture
  + Embedded
  + Client/server
  + Storage models
  + Disk persistence
  + In-memory processing
  + Clustering
  + Relationships
  + Indexing
  + Caching
  + Transactions
* Classes
  + Schema-full
  + Schema-less
  + Hybrid
  + Base classes
  + Attributes
  + Properties
  + Inheritance
* Relationships
  + One-to-one
  + One-to-many
  + Many-to-many
  + Embedded
  + Referenced
* Documents
  + Terminology across RDBMS, document databases, and OrientDB
  + Document collections
  + Identifying a document
  + Documents and schema
  + Relationships
* Graphs
  + Terminology across RDBMS, graph databases, and OrientDB
  + Base classes
  + Vertices
  + Edges
  + Lightweight vs. standard edges
  + Graphs and schema
  + Relationships
* A Workflow for Modeling
  + User stories
  + Defining major artifacts
  + Testing model with sample queries
  + Adjusting the model
* Evolving the Model
  + Dealing with application changes
  + Planning for data fluctuations
  + Maintaining information and code integrity

Day Two (Interaction & Development)

* APIs
  + OrientDB
  + TinkerPop/Blueprints
  + Choosing the optimal API
* OrientDB Object Model
* Establishing a Connection
  + Connection options
  + Browsing classes
  + Querying metadata
  + Error handling
* OrientDB SQL
  + Standards
  + Enhancements
  + Major data types
* Creating New Records
  + Record ids
  + Defining classes
  + Extending base classes
  + Linking documents
  + Linking vertices
  + Working with binary data
* Querying the Database
  + Browsing classes
  + Querying metadata
  + Working across the graph
  + SELECT, MATCH, and TRAVERSE
  + MATCH shorthand
  + Sorting and aggregation
  + Expanding results
  + Making the most of fetch plans
* Indexing
  + Defining effective indexes
  + Filtering using indexes
  + Unique indexes
  + Composite indexes
  + Querying against indexes
* Updating Existing Records
  + Single values
  + Multiple values
  + Version control
  + Schema-less updates
* Removing Data
  + Removing properties from a class
  + Deleting single records
  + Maintaining data integrity
  + Dropping classes
* Multi user considerations
  + Concurrency
  + Transactions
* Designing and Using Functions and Methods
  + Comparison with RDBMS stored procedures
  + Examples
  + Interacting with the database API
  + Accessing Java packages
  + Developing functions and methods
* Creating and Utilizing Hooks
  + Comparison with RDBMS triggers
  + Custom cascading deletes
  + Implementing algorithms
  + Enforcing constraints
* Best practices