



Introduction to Graph Databases

by John Singer



Module 0. About the Course (7 min)

Module 1. Introduction to the Graph Data Model (28 min)

- *Graph Theory*
 - History Of Graph Theory
 - Types & Functions Of Graph Theory
 - Review Of Graph Theory
- *Anatomy of a Node*
 - Properties of a Node
 - Review
- *Anatomy of a Relationship*
 - Properties on a Relationship
 - Review
- *Properties and Paths*
 - Properties
 - Paths

Module 2. The Graph Database Eco-System (65 min)

- *Overview*
- *Graph Database*
 - Graph Data Pipeline
 - What Makes A Database
 - 3 Graph Database Archetypes
- *Graph Analytics*
 - Pattern Based Query
 - Algorithms
 - Types Of Graphs
 - Types Of Graph Algorithms
 - Review
 - Visualization Products
 - Visualization Process
 - Visualization
 - Circle Packing
 - Force Directed
 - Review
 - Queries, Algo's And Visualization
- *Semantic Web Graph Database*
 - Semantic Web Graph Database
 - FOAF
 - Property Graphs Vs. RDF Graph DBMS
- *Summary*



Module 3. Agile Graph Data Modeling (39 min)

- *Graph Data Modeling Overview*
- *Agile Graph Data Modeling*
 - Information Data Modeling
 - Zachman Framework
 - Architecture
- *Graph Data Modeling Process*
 - Process Overview-Data Prototype
 - Process Overview-Graph Design
 - Schema First
 - Scheme Last
 - Review
- *Working with Users*
 - Working With Users Tables
 - Deliverables
 - Meeting Style
 - Review
- *Summary*

Module 4. Entity Modeling (42 min)

- *Overview*
- *Representing Things*
 - Entity Extraction Process
 - Create Node Types
 - Classification
 - Representing Things Review
- *Describing Things*
 - Descriptive Properties
 - Examples
 - Classification & Categorization
- *Categorizing Things Part 1 & 2*
- *Entity Definition Best/Worst Practices*
 - Avoid Complex Types For Properties
 - Normalize Complex Properties
 - Labels
 - Best / Worst Practices Examples
- *Summary*

Module 5. Relationship Modeling (38 min)

- *Overview*
- *Representing Connections*
 - Data Interesting vs. Boring
 - Representing Connections: Databases



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- How Many Relationships Can Have A Node?
- *Naming Relationships*
 - Naming Relationships
 - Abstract vs. Specific Relationships
- *Relationship Direction*
 - How Important Is Direction?
 - Symmetric Relationships
- *Describing Relationships*
 - Relationship Name, Direction, Properties
- *Relationship Best/Worst Practices*
 - Avoid Using Relationships To Model Entities
 - When Good Relationships Go Bad
- *Summary*

Module 6. Complex Object Modeling (40 min)

- *Overview*
- *Complex Object Modeling*
- *Resolving Hypergraphs Part 1 & 2*
- *Complex Objects*
 - Primary keys
 - Anchor nodes
 - Cardinality
 - Complex object modeling
- *Data Structures-Linked Lists and Trees*
 - Data structures
 - Modeling time
 - Tracking events
- *Managing Slowly Changing Dimensions*
 - Update process
- *Summary*