



Developing Data Models with LookML

Course description

In this comprehensive course, you will dive deep into LookML (Looker Modeling Language), the powerful language used to define data models within the Looker platform. You will learn how to transform raw database schemas into a semantic layer that empowers business users with intuitive, self-service analytics. This course covers everything from basic view and field definitions to advanced concepts like Persistent Derived Tables (PDTs), explores, joins, and performance optimization techniques. You will gain hands-on experience in building robust, maintainable, and scalable data models that serve as the foundation for Looker dashboards, reports, and embedded analytics.

- Course level: Advanced
- Duration: 2 days

Activities

This course includes interactive presentations, extensive hands-on labs, live demonstrations, and collaborative group exercises designed to solidify your understanding of LookML.

Course objectives

In this course, you will learn to:

- Understand the core principles and architecture of LookML and its role in Looker's data platform.

- Define database connections and structure a LookML project effectively.
- Create and manage LookML views, including defining dimensions, measures, and calculated fields using SQL.
- Configure LookML explores and establish various types of joins between views to create meaningful analytical contexts.
- Implement advanced LookML features such as extends, refinements, includes, and Liquid templating for modularity and reusability.
- Optimize query performance and manage data freshness using Persistent Derived Tables (PDTs), Incremental PDTs, and datagroups.
- Integrate LookML projects with Git for version control, collaboration, and deployment best practices.
- Apply security and governance principles using access grants and other LookML constructs.
- Troubleshoot common LookML errors and implement best practices for maintainability and documentation.

Intended audience

This course is intended for data professionals who are responsible for building and maintaining data models in Looker:

- Data Analysts
- Data Engineers
- Business Intelligence (BI) Developers
- Analytics Engineers
- Database Administrators (DBAs)
- Solutions Architects
- Anyone responsible for creating or managing the semantic layer in Looker

Prerequisites

We recommend that attendees of this course have:

- Strong proficiency in SQL (Structured Query Language).
- A foundational understanding of data warehousing and relational database concepts.
- Familiarity with a basic text editor or Integrated Development Environment (IDE).
- Prior exposure to Git or other version control systems is beneficial but not strictly required.

Course outline

Module 1: Introduction to LookML and Data Modeling Fundamentals

- Overview of Looker and its analytical ecosystem
- What is LookML? The semantic layer concept
- Understanding the LookML project structure (models, views, explores)
- Configuring database connections and data sources
- LookML file types: .model, .view, .explore, .dashboard
- Hands-on Lab: Setting up a new LookML project and connecting to a database

Module 2: Building Core Views and Fields

- Defining basic views from database tables (sql_table_name)
- Dimensions: types (string, number, date, tier, yesno) and their attributes
- Measures: aggregate functions (sum, count, avg, min, max, median) and custom measures
- Creating calculated fields using sql expressions (e.g., concatenations, case statements)
- Understanding label, description, group_label for user experience
- Hands-on Lab: Developing a basic view with various dimensions and measures

Module 3: Configuring Explores and Joins

- The role of Explores in Looker: defining analytical subjects
- Types of joins: left_outer, inner, full_outer, cross
- Join relationships: one_to_one, many_to_one, one_to_many, many_to_many
- Implementing sql_on conditions for joining views
- Understanding fanout and symmetric aggregates to prevent data duplication
- Explore parameters: always_filter, always_join, from, fields
- Hands-on Lab: Building an Explore with multiple joined views and custom join conditions

Module 4: Advanced LookML Constructs and Reusability

- extends vs. refinements: modularity and overriding definitions
- Using include statements for file organization
- Introduction to Liquid templating for dynamic LookML

- Implementing parameters for user-driven filters
- Leveraging sets for predefined field groupings in the UI
- drills and drill_fields for interactive data exploration
- Hands-on Lab: Applying extends and Liquid templating for flexible models

Module 5: Performance Optimization with Derived Tables and Caching

- Understanding data freshness and Looker's caching mechanism
- Persistent Derived Tables (PDTs): definition, lifecycle, and use cases
- Creating PDTs with sql_table_name, persist_for, materialization
- Incremental PDTs for efficient data updates
- datagroups for managing PDT rebuilds and cache invalidation
- Aggregate Awareness: optimizing queries by leveraging pre-aggregated tables
- Best practices for PDT management and error handling
- Hands-on Lab: Implementing PDTs and datagroups to improve query performance

Module 6: Version Control, Collaboration, and Deployment

- Integrating LookML projects with Git repositories
- Development mode vs. Production mode workflow
- Branching strategies for team collaboration
- Committing, pushing, and deploying LookML changes
- Resolving merge conflicts in LookML
- Using the Looker IDE: validation, formatting, and shortcuts
- Troubleshooting common LookML syntax and runtime errors
- Hands-on Lab: Collaborating on a LookML project using Git and resolving conflicts

Module 7: Security, Governance, and Advanced Features

- Implementing access grants for row-level and column-level security
- Using constants and manifest files for project-wide configurations
- Creating LookML dashboards for version-controlled reporting
- Understanding required_access_grants for explore and view visibility
- Leveraging user_attribute for dynamic filtering and personalization
- Best practices for LookML documentation and code style
- Hands-on Lab: Applying access grants and building a LookML dashboard

Module 8: Course Wrap-up

- Review of key LookML concepts and best practices
- Overview of advanced topics: Looker API, custom visualizations, embedded analytics
- Resources for continuous learning and community engagement
- Q&A session
- Course summary and next steps for your LookML journey

Your course overview ends here.
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