

Build AI Agents with Enterprise Databases

Build AI agents that can leverage enterprise databases using the MCP Toolbox for Databases. You will define secure database interaction tools, and implement intelligent querying capabilities (leveraging vector embeddings, structured queries).



DURATION

230 minutes (On-demand)

0 days (ILT)



LEVEL

Advanced



FORMAT

On-demand

What you'll learn

- Securely connect AI agents to your existing databases (AlloyDB, Cloud SQL, Spanner) by using the MCP Toolbox for Databases.
- Construct and utilize AI agents, using Agent Development Kit (ADK), that use database tools for intelligent querying and semantic search.

Overview	2 modules 1 lab
Who this course is for	<ul style="list-style-type: none">• Data Engineers• Database Engineers• App Developers• AI Engineers
Prerequisites	<ul style="list-style-type: none">• Experience with Google Cloud Console, gcloud CLI, IAM, and fundamental Google Cloud services (projects, billing, networking, and security concepts)• Strong proficiency in SQL (complex queries, joins, aggregations, subqueries) and practical experience with relational databases (e.g. Cloud SQL, AlloyDB, Spanner)• Understanding of database schema design.• Intermediate Python skills• Basic understanding of Generative AI (LLMs) and API interactions.

Module 01 Securely connect AI to Your Enterprise Databases

Topics	This module introduces the foundational concepts for connecting AI agents to enterprise databases. You will learn about the architecture of the MCP Toolbox for Databases and how to set up a database instance, specifically Cloud SQL or AlloyDB, for AI integration. The lessons cover deploying and configuring the toolbox, defining simple database tools, and verifying the connection.
Objectives	<ul style="list-style-type: none">• Explain the architectural role of MCP Toolbox for Databases in connecting AI systems to enterprise databases.• Provision and configure a database suitable for AI agent integration.• Deploy and configure the MCP Toolbox for Databases and define initial database tools in tools.yaml.

Module 02 Build Conversational AI Agents with Database Access

Topics	In this module, you will build a foundational AI agent using the Agent Development Kit (ADK). You will design the agent to use the database tools created in the previous module for tasks like SQL querying and semantic search. The module focuses on implementing these capabilities using AlloyDB with vector embeddings and tracing the agent's reasoning process as it interacts with the databases.
Objectives	<ul style="list-style-type: none">• Design AI agent interaction flows that use exposed database tools for intelligent querying and semantic search.• Build a foundational AI agent using ADK that consumes database tools for semantic search.• Trace and debug an agent's reasoning process as it interacts with AlloyDB and Cloud SQL via MCP Toolbox tools.