

Get started with data modeling, schemas, and databases

- Video:** Introduction to Course 2
2 min
- Reading:** Helpful resources and tips
10 min
- Video:** Ed: Overcome imposter syndrome
2 min
- Reading:** Course 2 overview
10 min
- Video:** Welcome to week 1
48 sec
- Ungraded Plugin:** Your business intelligence roadmap
15 min
- Video:** Data modeling, design patterns, and schemas
4 min
- Video:** Get the facts with dimensional models
4 min
- Video:** Dimensional models with star and snowflake schemas
2 min
- Reading:** Design efficient database systems with schemas
20 min
- Video:** Different data types, different databases
6 min
- Reading:** Database comparison checklist
10 min
- Practice Quiz:** Test your knowledge: Data modeling, schemas, and databases
4 questions

Choose the right database

How data moves

Data-processing with Dataflow

Organize data in BigQuery

Review: Data models and pipelines

[Optional] Review Google Data Analytics Certificate content

Database comparison checklist

In this lesson, you have been learning about the different aspects of databases and how they influence the way a business intelligence system functions. The database framework—including how platforms are organized and how data is stored and processed—affects how data is used. Therefore, understanding different technologies helps you make more informed decisions about the BI tools and processes you create. This reading provides a breakdown of databases including OLAP, OLTP, row-based, columnar, distributed, single-homed, separated storage and compute, and combined.

OLAP versus OLTP

Database technology	Description	Use
OLAP	Online Analytical Processing (OLAP) systems are databases that have been primarily optimized for analysis.	<ul style="list-style-type: none">Provide user access to data from a variety of source systemsUsed by BI and other data professionals to support decision-making processesAnalyze data from multiple databasesDraw actionable insights from data delivered to reporting tables
OLTP	Online Transaction Processing (OLTP) systems are databases that have been optimized for data processing instead of analysis.	<ul style="list-style-type: none">Store transaction dataUsed by customer-facing employees or customer self-service applicationsRead, write, and update single rows of dataAct as source systems that data pipelines can be pulled from for analysis

Row-based versus columnar

Database technology	Description	Use
Row-based	Row-based databases are organized by rows.	<ul style="list-style-type: none">Traditional, easy to write database organization typically used in OLTP systemsWrites data very quicklyStores all of a row's values togetherEasily optimized with indexing
Columnar	Columnar databases are organized by columns instead of rows.	<ul style="list-style-type: none">Newer form of database organization, typically used to support OLAP systemsRead data more quickly and only pull the necessary data for analysisStores multiple row's columns together

Distributed versus single-homed

Database technology	Description	Use
Distributed	Distributed databases are collections of data systems distributed across multiple physical locations.	<ul style="list-style-type: none">Easily expanded to address increasing or larger scale business needsAccessed from different networksEasier to secure than a single-homed database system
Single-homed	Single-homed databases are databases where all of the data is stored in the same physical location.	<ul style="list-style-type: none">Data stored in a single location is easier to access and coordinate cross-teamCuts down on data redundancyCheaper to maintain than larger, more complex systems

Separated storage and compute versus combined

Database technology	Description	Use
Separated storage and compute	Separated storage and computing systems are databases where less relevant data is stored remotely, and relevant data is stored locally for analysis.	<ul style="list-style-type: none">Run analytical queries more efficiently because the system only needs to process the most relevant dataScale computation resources and storage systems separately based on your organization's custom needs
Combined storage and compute	Combined systems are database systems that store and analyze data in the same place.	<ul style="list-style-type: none">Traditional setup that allows users to access all possible data at onceStorage and computation resources are linked, so resource management is straightforward

Mark as completed