Embedded Databases

Embedded databases works within the app itself, providing local storage and quick access to data, enhancing both performance and user experience.

- Local Storage for mobile apps
- Operate within the application
- Minimal configuration required
- Allow offline data management
- Quick data retrieval on the device

Common Embedded database types:

1- SQLite

- Lightweight and serverless SQL engine.
- Cross-platform support for mobile apps.
- ACID complaint for transaction safety. (Atomicity, Consistency, Isolation and Durability).
- Widely used in Android SDK.

2- Realm

- Object Oriented Approach for simplicity.
- Built-in support for threading.
- Fast performance for real-time updates.
- Best for collaborative apps like chat app.

3- LocalStorage

- Stores data in key-value pairs.
- Simple API for easy access.

- Data persists even when browser is closed.
- Used in Cordova / Ionic Hybrid apps.

4- Couchbase Lite

- Embedded No SQL database for mobile applications.
- Synchronizes data with couchbase server.
- Supports peer-to-peer synchronization.
- Ideal for note taking and distributed apps.

5- ExtremeDB

- High performance in-memory database.
- High-speed transactions for fast access.
- Supports both in-memory and on-disk storage.
- Used in gaming and financial apps.

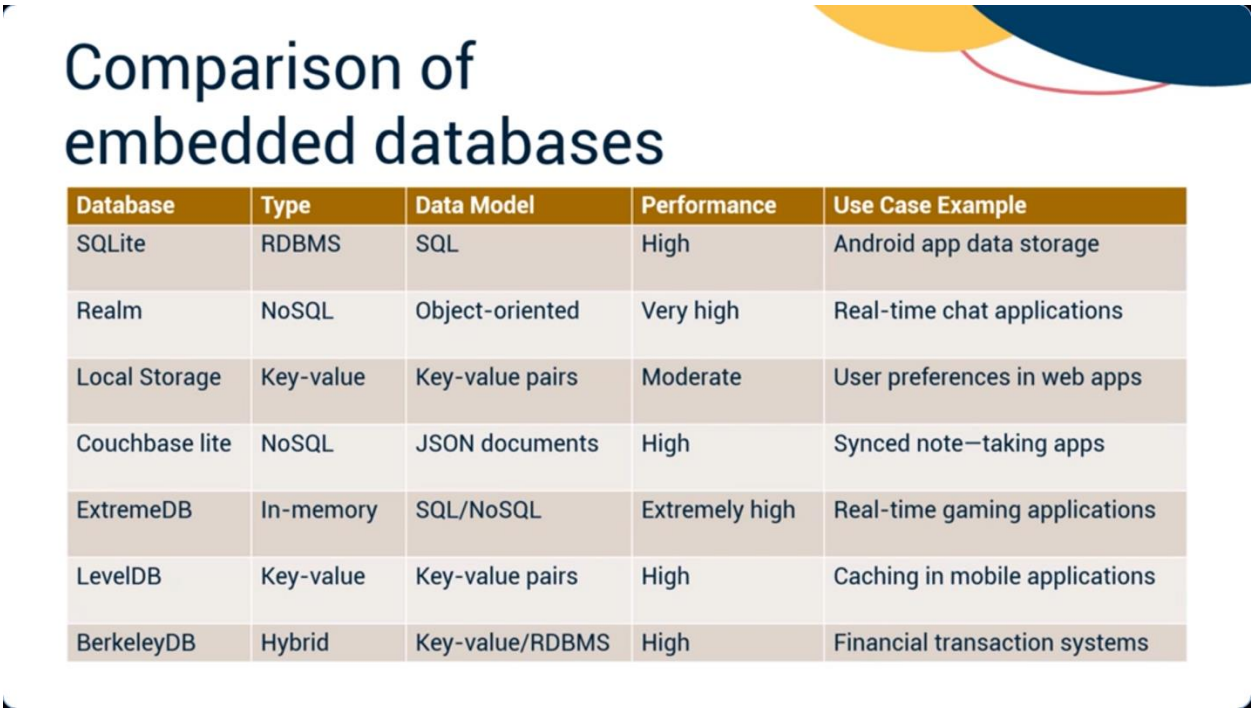
6- LevelDB

- Fast key-value storage.
- Efficient for read/write operations.
- Lightweight, easily integrates into apps.
- Used for caching and session storage.

7- BerkeleyDB

- Flexible and high performance database models.
- Supports both key-value and relational models.
- Provided multi-threaded supports with ACID-complaince.
- Used in large-scale financial apps.

Comparison between these databases



Best Practices for mobile developers

- Choose the right database for your needs.
- Optimize performance with indexing (implement indexing and queries for fast data retrieval).
- Ensure data synchronization across the devices.
  (If your apps need syncing the data opt for Couchbase Lite or Realm that allows easy syncing of data).
- Implement data security and encryption.

Real world Examples:

SQLite	Dropbox for file metadata storage
Couchbase Lite	Healthcare app patient records
Realm	Trello for task management
Berkeley DB	RPG game player profiles
LevelDB	Chrome for local data storage