

Common Database Types



Relational

Traditional databases using structured tables with rows and columns, connected through relationships.

- Structured tables with schemas
- ACID compliance
- SQL query language
- Foreign key relationships
- Data integrity & consistency
- Mature ecosystem

Best For:

Financial systems, E-commerce, CRM, ERP, Banking, Inventory management



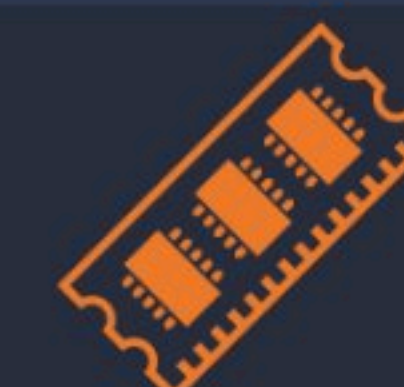
Document

NoSQL databases storing data in flexible, JSON-like documents with dynamic schemas.

- JSON/BSON document format
- Flexible schema design
- Nested data structures
- Horizontal scaling
- Rich query capabilities
- Easy object mapping

Best For:

Content management, Catalogs, User profiles, Mobile apps, Real-time web apps



In-Memory

Ultra-fast databases storing data in RAM for lightning-speed access and processing.

- RAM-based storage
- Microsecond latency
- High-speed processing
- Data caching layer
- Session storage
- Real-time analytics

Best For:

Caching, Session storage, Real-time analytics, Gaming leaderboards, Financial trading



Graph

Specialized databases for managing highly connected data using nodes, edges, and properties.

- Nodes and relationships
- Complex relationship queries
- Graph traversal algorithms
- Pattern recognition
- Network analysis
- Path finding capabilities

Best For:

Social networks, Recommendation engines, Fraud detection, Knowledge graphs, Network topology



Time-Series

Optimized for time-stamped data, providing efficient storage and analysis of temporal information.

- Time-indexed data
- High ingestion rates
- Data compression
- Retention policies
- Aggregation functions
- Downsampling capabilities

Best For:

IoT monitoring, System metrics, Financial data, Sensor data, Application performance



Spatial

Specialized databases for geographic and geometric data with location-based query capabilities.

- Geographic data types
- Spatial indexing
- Location-based queries
- GIS integration
- Geometric calculations
- Map visualization support

Best For:

GIS applications, Location services, Mapping, Urban planning, Environmental monitoring



Columnar

Optimized for analytical workloads by storing data in columns rather than rows for fast aggregations.

- Column-oriented storage
- Analytical processing
- Data compression
- Fast aggregations
- OLAP optimization
- Parallel processing

Best For:

Data warehousing, Business intelligence, Analytics, Reporting, Big data processing



Key-Value

Simple NoSQL databases using key-value pairs for fast, distributed data storage and retrieval.

- Simple key-value pairs
- High performance
- Horizontal scaling
- Distributed architecture
- Eventual consistency
- Minimal overhead

Best For:

Caching, Session management, Shopping carts, User preferences, Configuration data



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