MongoDB vs SQL: A Comparative Analysis

1. Introduction to MongoDB and SQL
2. Brief overview of each database technology
3. Purpose of the presentation: Compare and contrast MongoDB and SQL in terms of features, architecture, use cases, and advantages.

MongoDB

- NoSQL database
- Document-oriented
- Developed by MongoDB Inc.
- Schema-less
- Uses JSON-like documents for data storage
- Designed for scalability, flexibility, and performance

SQL (Structured Query Language)

- Relational database management system (RDBMS)
- Table-based structure
- Standardized language for managing and manipulating relational databases
- Supports ACID properties (Atomicity, Consistency, Isolation, Durability)
- Widely used in traditional database systems

Feature Comparison

- Data Model:
  - MongoDB: Document-oriented
  - SQL: Table-based (relational)
- Scalability:
  - MongoDB: Horizontal scaling with sharding
  - SQL: Vertical scaling
- Schema:
  - MongoDB: Schema-less, flexible
  - SQL: Strict schema definition, rigid structure
- Query Language:
  - MongoDB: MongoDB Query Language (MQL)
  - SQL: Structured Query Language (SQL)
- Transactions:
  - MongoDB: Limited support for multi-document transactions
  - SQL: Full support for ACID transactions

Use Cases and Considerations

- MongoDB Use Cases:
  - Big data applications
  - Real-time analytics
  - Content management systems
  - Mobile and IoT applications
- SQL Use Cases:
  - Enterprise applications
  - Financial systems
  - Online transaction processing (OLTP)
  - Data warehousing
- Considerations:
  - Consider data structure and scalability requirements
  - Choose based on specific project needs and use cases
  - Evaluate factors such as performance, flexibility, and ease of development