1. NoSQL (Not Only SQL) is a category of databases designed to **handle large volumes** of unstructured, semi-structured, and structured data. Unlike traditional relational databases (RDBMS), which use **fixed schemas** and SQL for queries, **NoSQL databases provide flexible schema designs and various data models**, making them ideal for modern applications that require **scalability, high availability, and fast performance**.

NoSQL is suitable for the following scenarios:

* When handling **large-scale, unstructured, or semi-structured** data.
* When **fast read/write operations** with high availability are needed.
* When traditional relational models with **strict schemas are too rigid**.
* When building **microservices architectures**, real-time analytics, or big data applications.

1. NoSQL vs SQL

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| --- | --- | --- |
|  | SQL | NoSQL |
| Schema | Fixed, predefined schema | Flexible, dynamic schema |
| Scalability | Vertical (Scale-up) | Horizontal (Scale-out) |
| Data Storage | Tables with rows and columns | Documents, key-value pairs, columns |
| Use cases | Banking, ERP, CRM(Structured data) | Social Media, Content management (varied data) |

1. 2 Real-world examples:

* **Social Media Applications:** To store and manage user-generated content like posts, comments, and likes, which vary in structure and size.
* **E-commerce Product Catalogs:** Products have diverse attributes that can be stored flexibly in document-based NoSQL databases.