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# NoSQL Databases

An abstract network diagram with nodes and lines, rendered in a dark, semi-transparent style. The nodes are represented by small circles in various colors (blue, orange, purple, green, black) and are interconnected by a dense web of thin, dark lines. The overall effect is a complex, interconnected structure that suggests a database or network topology.

Introduction

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# Topics we cover

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01

What is a NoSQL database?

02

Types of NoSQL Database

03

NoSQL Database features

04

Difference between RDBMS and NoSQL databases

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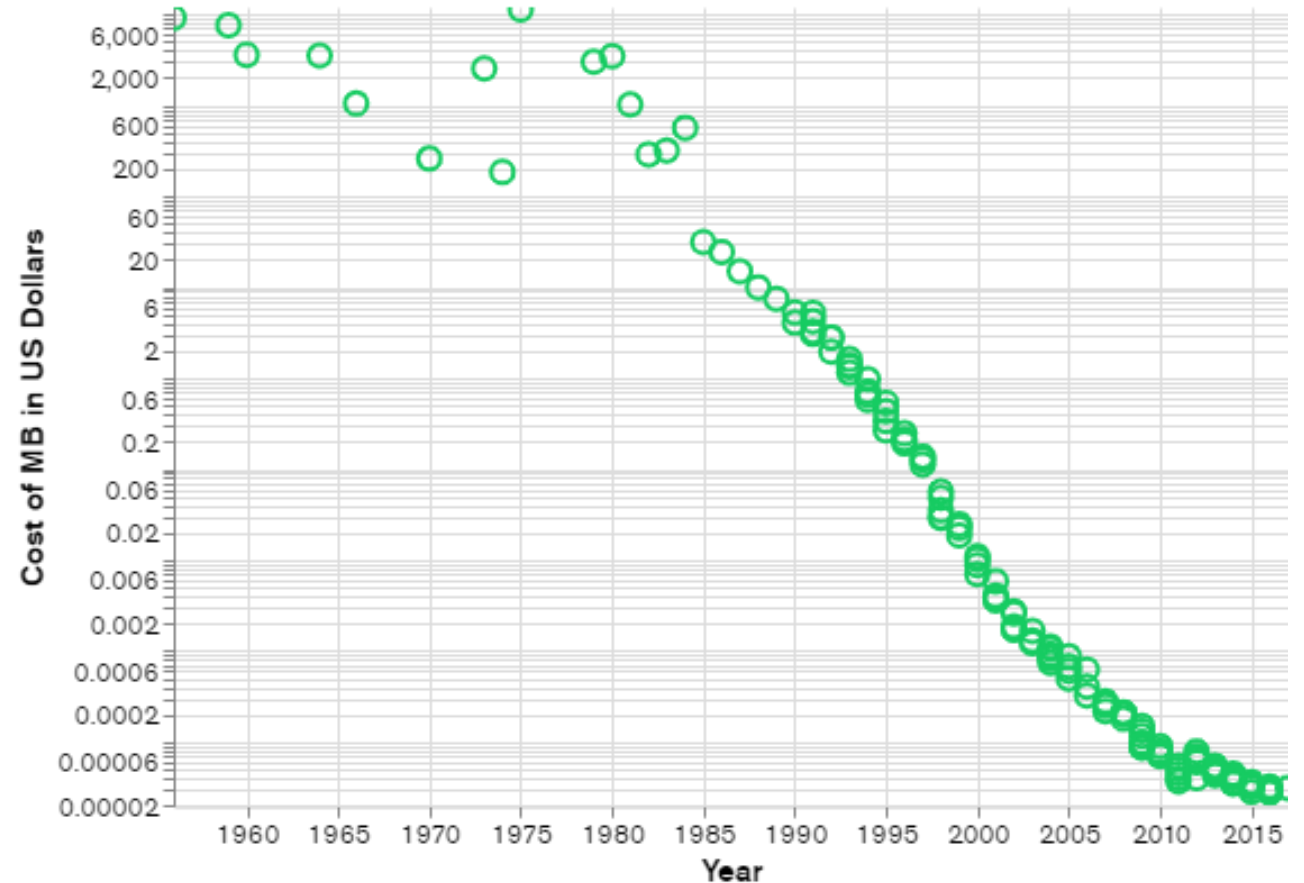
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# What is a NoSQL Database

NoSQL refers to Non-relational databases

They can store data in a non tabular format

Result of cost storage decrease in the late 2000s



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# What is a NoSQL Database

The amount of data that applications needed to store and query increased

Defining the schema in advance became nearly impossible

The need to rapidly adapt to changing requirements

```
{
  "sport": "ten_pin_bowling",
  "athlete_name": "Earl Anthony",
  "career_earnings": {value: NumberDecimal("1441061"), currency: "USD"},
  "300_games": 25,
  "career_titles": 43,
  "other_sports": "baseball"
}

{
  "sport": "tennis",
  "athlete_name": "Martina Navratilova",
  "career_earnings": {value: NumberDecimal("216226089"), currency: "USD"},
  "event": {
    "type": "singles",
    "career_tournaments": 390,
    "career_titles": 167
  }
}
```

Common fields

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# Types of NoSQL Database



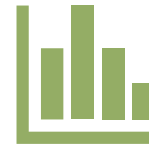
Document  
databases



Key-value  
databases



Wide-column  
stores



Graph  
databases

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# Types of NoSQL Database

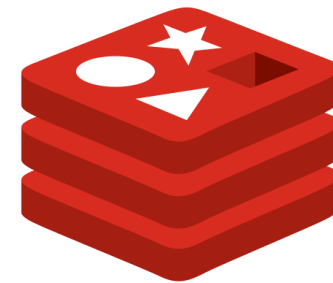
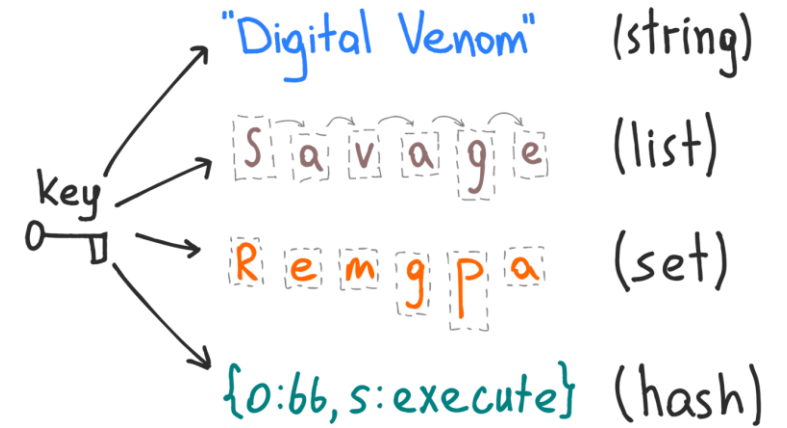
Document Databases



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# Types of NoSQL Database

Key-value Databases



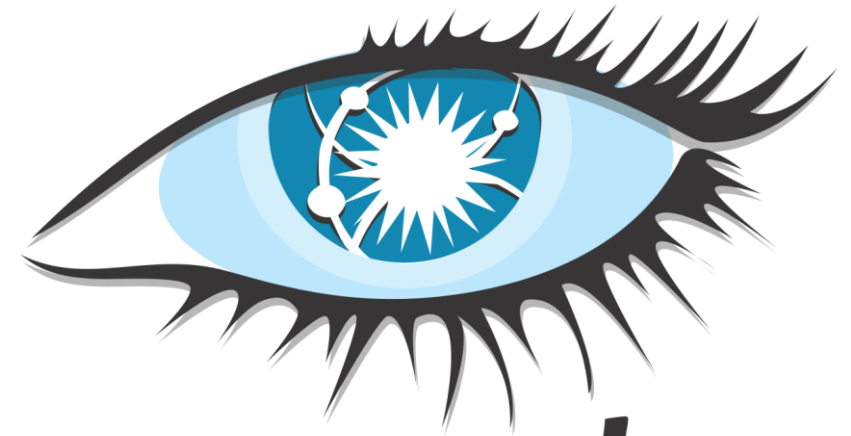
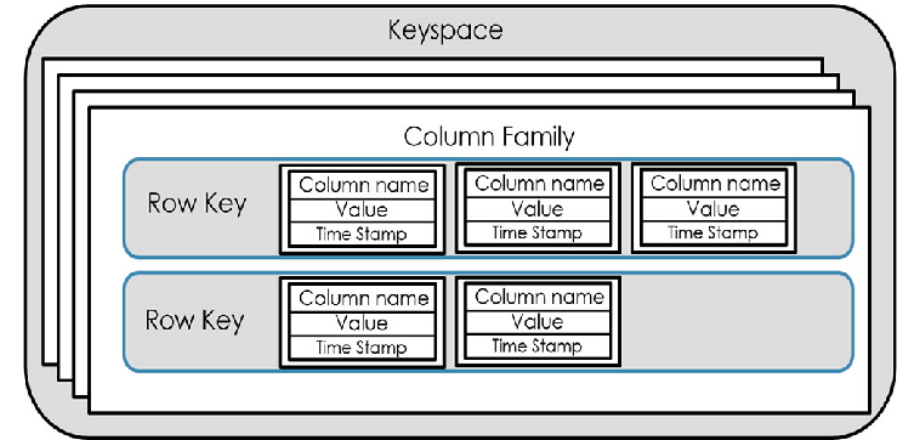
redis

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# Types of NoSQL Database

Wide column stores



***cassandra***

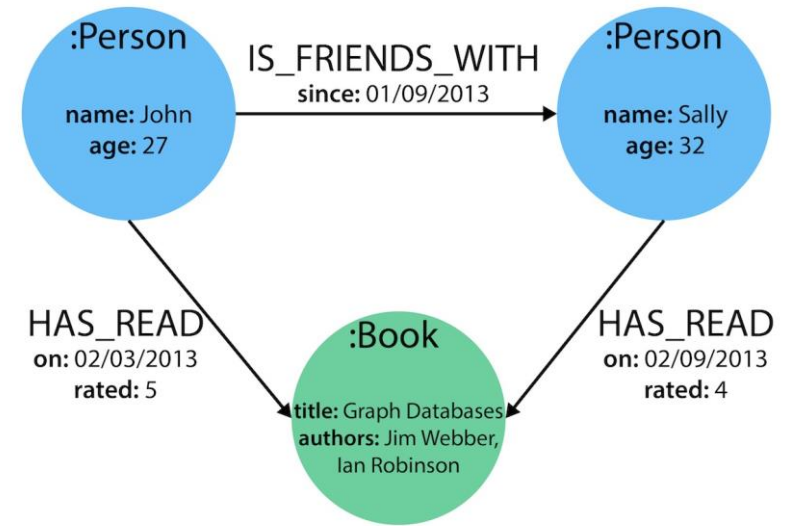
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# Types of NoSQL Database

Graph Databases



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# NoSQL Database features



FLEXIBLE  
SCHEMAS



HORIZONTAL  
SCALING



FAST QUERIES



EASE OF USE FOR  
DEVELOPERS

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# Difference between RDBMS and NoSQL databases

## RDBMS vs NoSQL: Data Modeling Example

Users

ID	first_name	last_name	cell	city
1	Leslie	Yepp	8125552344	Pawnee

Hobbies

ID	user_id	hobby
10	1	scrapbooking
11	1	eating waffles
12	1	working

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# Difference between RDBMS and NoSQL databases

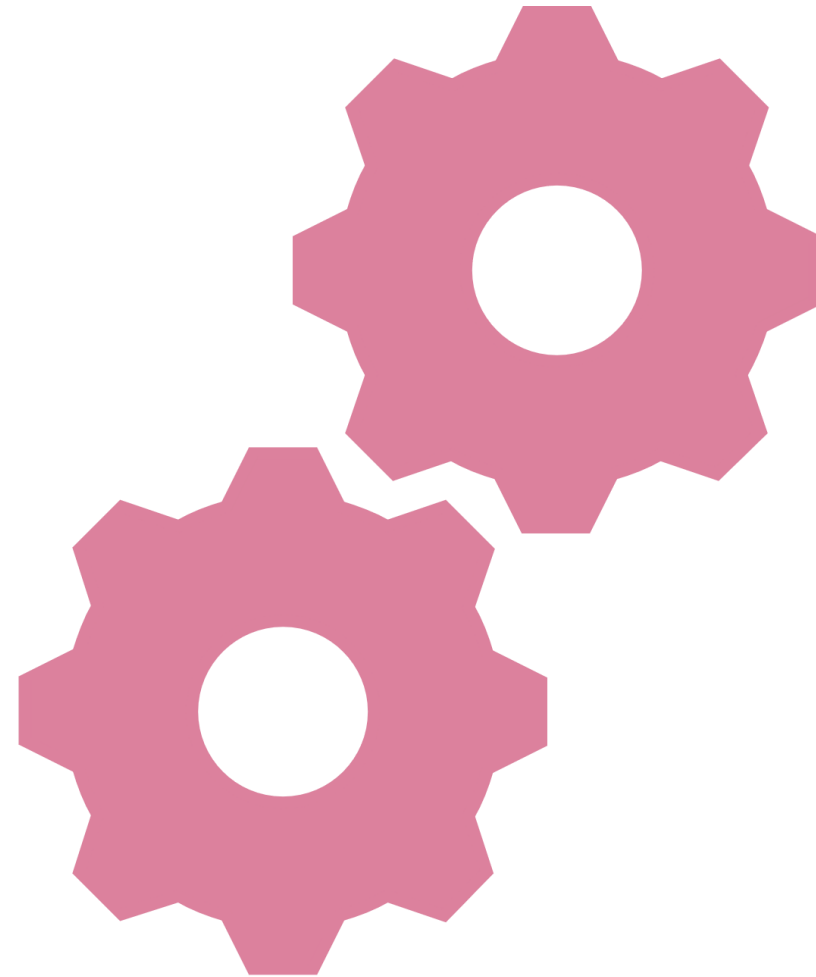
RDBMS vs NoSQL: Data Modeling Example

```
{  
  "_id": 1,  
  "first_name": "Leslie",  
  "last_name": "Yepp",  
  "cell": "8125552344",  
  "city": "Pawnee",  
  "hobbies": ["scrapbooking", "eating waffles", "working"]  
}
```

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# Difference between RDBMS and NoSQL databases

- Flexibility of the schema
- Scaling technique
- Support for transactions
- Reliance on data to object mapping



# When should NoSQL be used?



Fast-paced Agile development



Storage of structured and semi-structured data



Huge volumes of data



Requirements for scale-out architecture



Modern application paradigms like microservices and real-time streaming

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# Questions

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