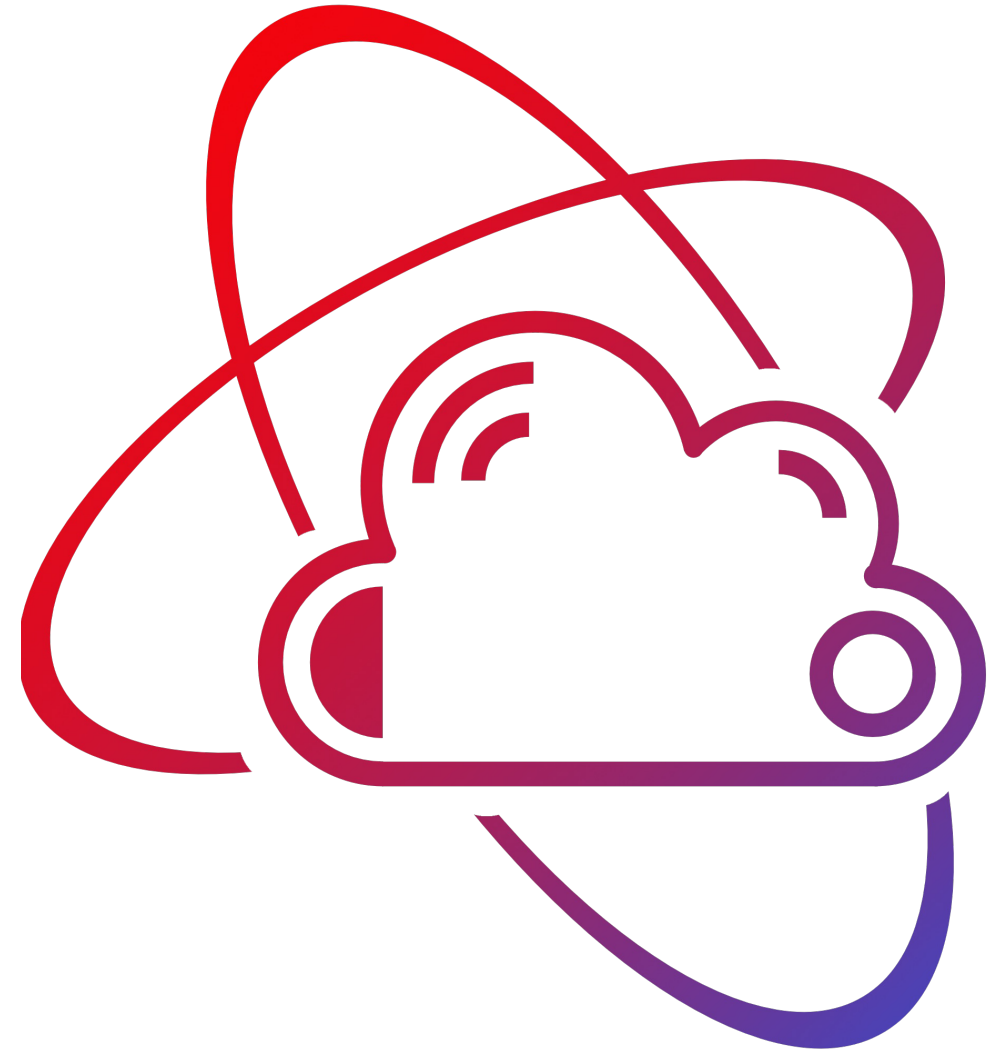


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Cloud Computing Architecture

Introduction to Relational and NoSQL
Databases



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Acknowledgement of Country

We respectfully acknowledge the Wurundjeri People of the Kulin Nation, who are the Traditional Owners of the land on which Swinburne's Australian campuses are located in Melbourne's east and outer-east, and pay our respect to their Elders past, present and emerging.

We are honoured to recognise our connection to Wurundjeri Country, history, culture, and spirituality through these locations, and strive to ensure that we operate in a manner that respects and honours the Elders and Ancestors of these lands.

We also respectfully acknowledge Swinburne's Aboriginal and Torres Strait Islander staff, students, alumni, partners and visitors.

We also acknowledge and respect the Traditional Owners of lands across Australia, their Elders, Ancestors, cultures, and heritage, and recognise the continuing sovereignties of all Aboriginal and Torres Strait Islander Nations.

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Introduction to Relational and NoSQL Databases

In this Presentation:

- Relational Databases
- NoSQL Databases
- Comparisons: Relational and NoSQL Databases

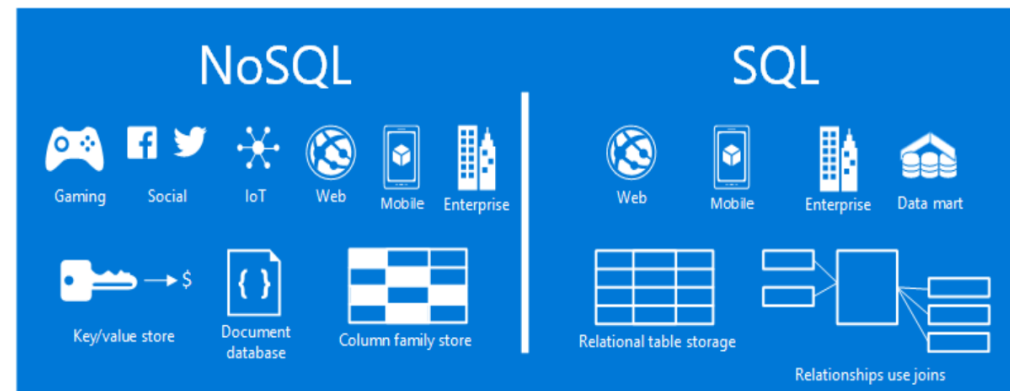
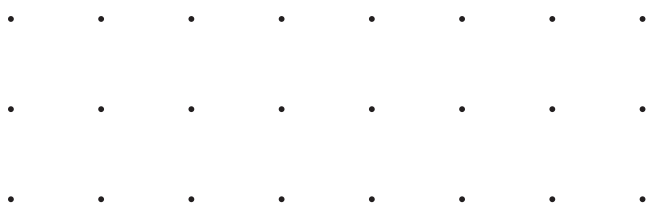
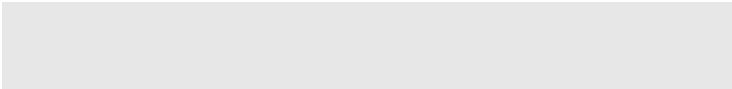
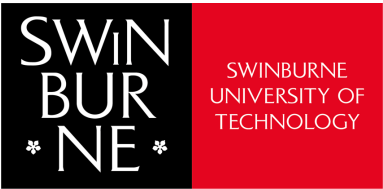


Image from: <https://www.linkedin.com/pulse/nosql-vs-sql-diponkar-paul>



Relational Databases



What are Relational Databases?

Relational Database Model

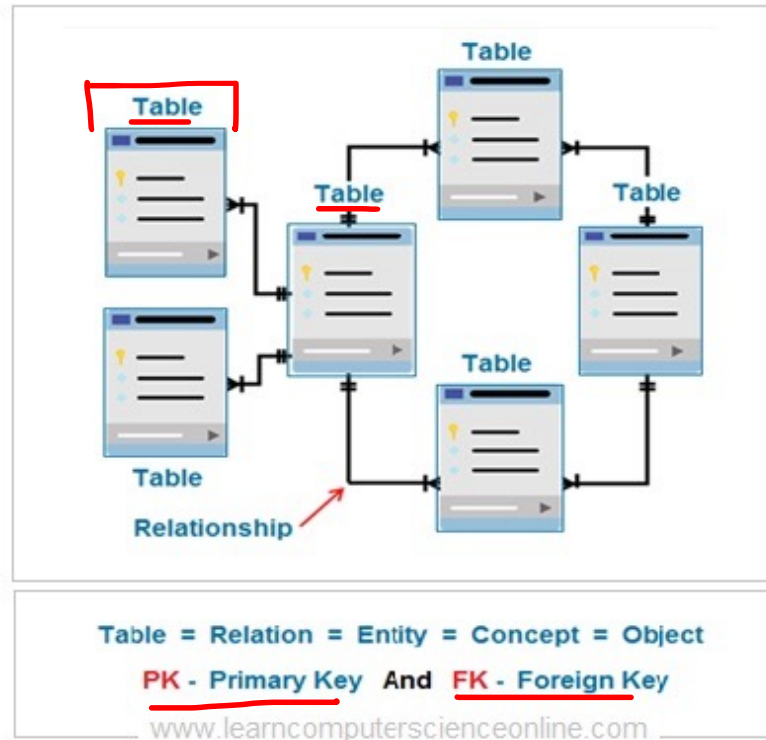


Image from:
<https://www.learncomputerscienceonline.com/relational-database/>

When are Relational Databases most useful?

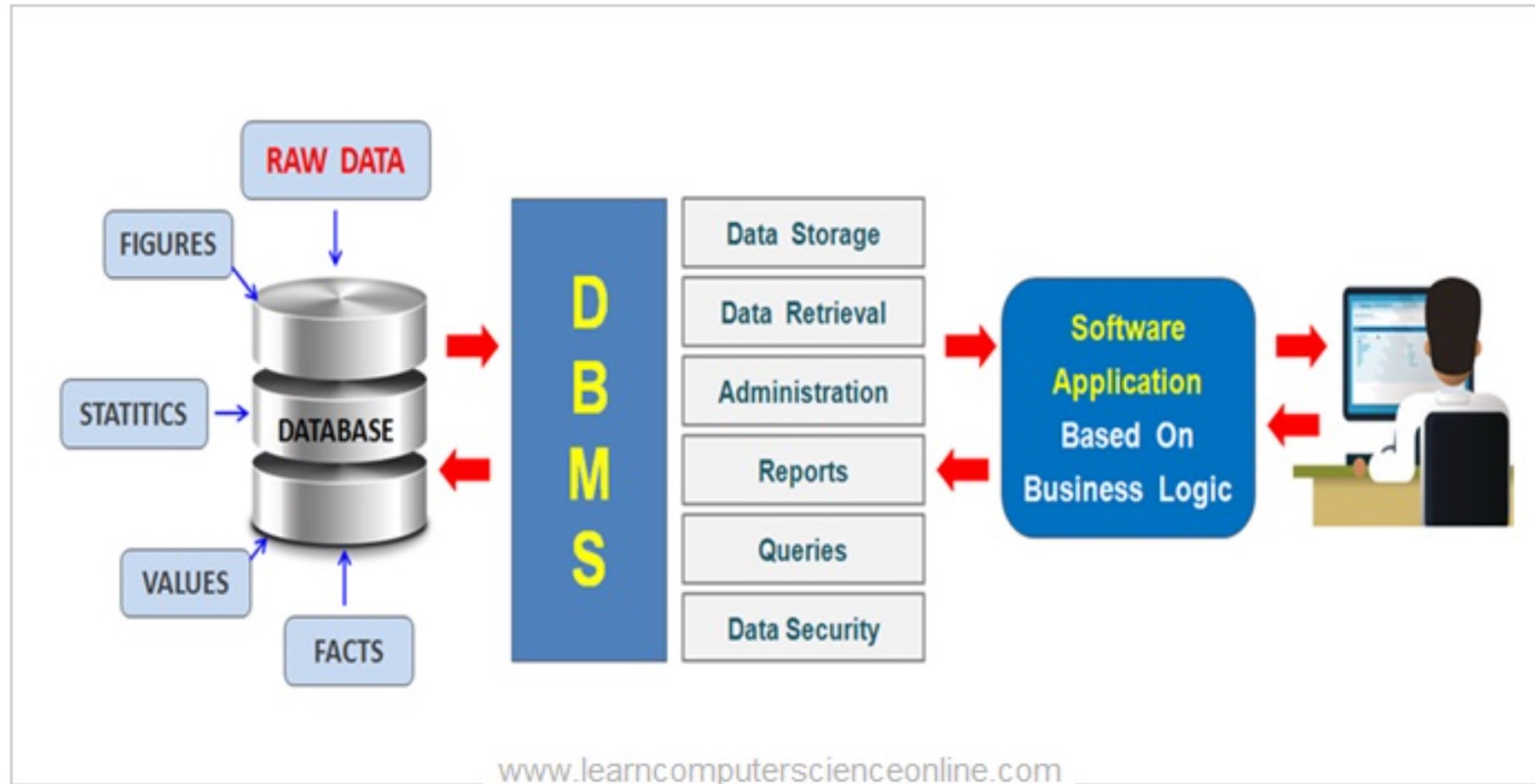


Image from:
<https://www.learncomputerscienceonline.com/relational-database/>

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NoSQL Databases

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What are NoSQL Databases?

3 Main Characteristics of NoSQL



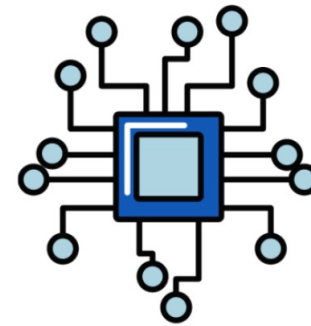
Schema-agnostic

No up-front schema design required during application development



Non-relational

No forcing of non-relational data into rows and columns



Inherently distributable

Distributed on commodity hardware for high availability & large-scale data management

Image from: <https://thedigitalskye.com/2021/03/09/7-must-know-ideas-about-nosql/>

When are NoSQL Databases most useful?

Common Use Cases for NoSQL

Key-value database

Deliver web advertisements
Store & retrieve user session data
High-speed in-memory data
caching



Column-oriented database

Store sparse data (i.e. columns
don't have a value)
Record & analyze log files
Build data summaries

Document database

Publish digital content (Content
Management System)
Manage unstructured data feeds
Join data streams

Graph database

Build a web of facts
Reconstruct processes
Manage social graphs (e.g. social
networks, organized crime detection)

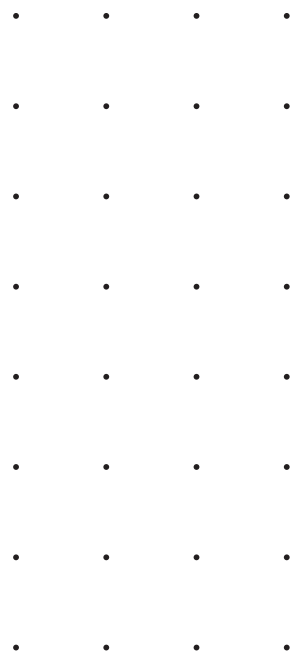
Source: NoSQL for Dummies by Adam Fowler

Image from: <https://thedigitalskye.com/2021/03/09/7-must-know-ideas-about-nosql/>

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Comparisons: Relational and NoSQL Databases

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ACID vs. BASE model



ACID

- SQL
- **A**tomicity, **C**onsistency, **I**solation, and **D**urability

→ Highly consistent but poorly scalable

BASE

- NoSQL
- **B**asically **A**vailable, **S**oft state, **E**ventually **C**onsistent

→ Highly scalable but could be inconsistent at some point

Introduction to Relational and NoSQL Databases: Comparisons: Relational and NoSQL Databases

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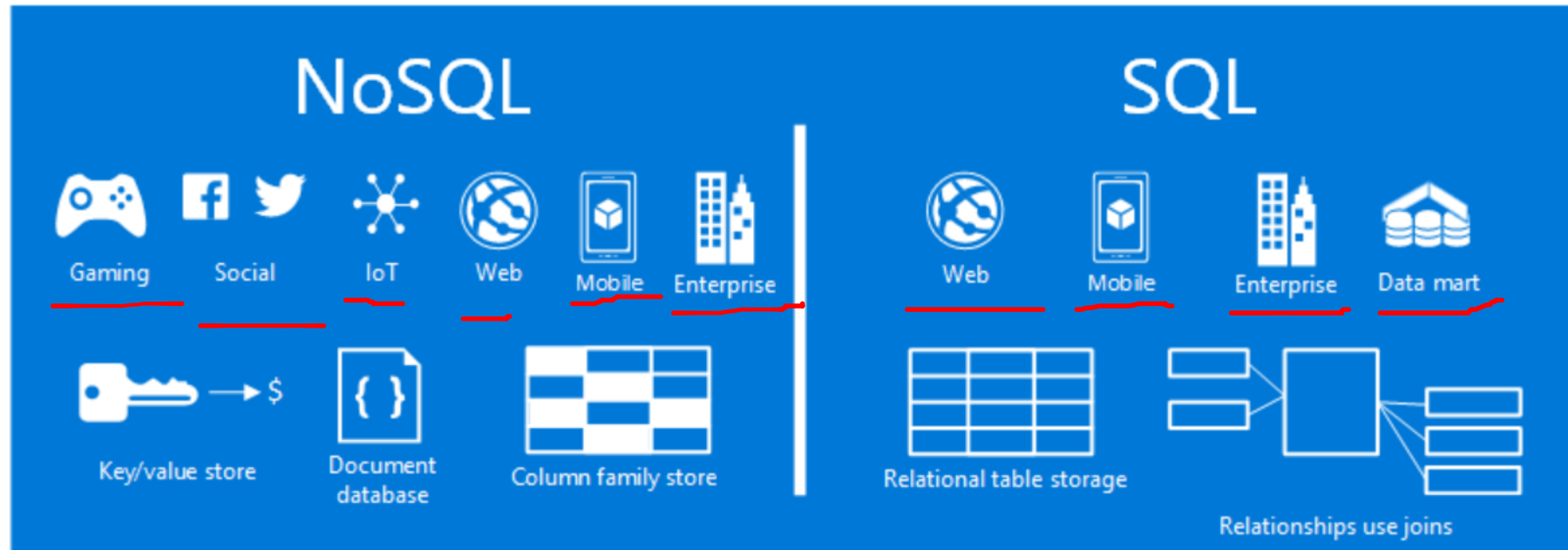


Image from: <https://www.linkedin.com/pulse/nosql-vs-sql-diponkar-paul>

Want to learn more?

Check out:

[AWS Academy – ACF Module 8: Databases](#)

[AWS Documentation](#)

