

## Summary Post

In the past 3 units, we have covered databases, particularly SQL and best practice surrounding RDBMS, namely normalization. In contrast to this, we have also begun discussing an emerging technology- NoSQL. NoSQL differs significantly from SQL, but these differences are what gives it an advantage for certain use cases. For example, NoSQL implements BASE design principles, which trade data integrity and consistency for additional speed, making them ideal for applications which have large amounts of traffic. This is opposite to the ACID principles which SQL implements, which guarantee data integrity and immediate updates, but at the cost of speed.

Another advantage of the NoSQL philosophy is that it can be specialized to support advanced structures which SQL cannot facilitate by default. An example of this is the graph database, which is a type of NoSQL database that can directly store the relationships between data entries. SQL databases cannot do this and instead have to rely on building relationships at query time through table joins on foreign keys- a process which negatively impacts performance (Oracle, N.D.).

Despite the potential of NoSQL, however, there is a growing argument that it is a situational technology and is still finding its place in the field, as opposed to outright replacing SQL. For example, a 2020 survey of over 18000 developers found that more developers are moving away from using MongoDB exclusively (3T, 2020). In addition, there is a learning curve in migrating relational data to a more unstructured, document-based format- a process which can benefit from formalization and refinement. A case study was briefly discussed in the forum as an example of this, which outlined some challenges in migrating data due to the theoretical differences between normalized data and unstructured schema (MongoDB, 2015).

### References

3T. (2020) MongoDB Trends Report 2020. Available from: <https://files.studio3t.com/pdfs/studio-3t-mongodb-trends-report-2020.pdf> [Accessed 26 July 2021].

MongoDB. (2015) Migration from SQL to MongoDB - A Case Study at TheKnot.com. Available from: <https://www.mongodb.com/presentations/migration-from-sql-to-mongodb-a-case-study-at-theknot-com> [Accessed 26 July 2021].

Oracle. (N.D.) Graph database defined. Available from: <https://www.oracle.com/za/big-data/what-is-graph-database/> [Accessed 4 July 2021].