

NoSQL Databases

4IT370

1-3 June 2026

Large volumes and high complexity of data that organizations manage today is challenging traditional approaches to data management. To address such challenges relational databases have introduced a range of advanced features that support the management of complex data objects at scale. More recently, a new generation of non-relational databases known as NoSQL have become popular. NoSQL databases include a diverse range of products designed to manage vast volumes of different types of data using cloud infrastructure. In this 3-day course we discuss motivations for NoSQL and cover a range of advanced database techniques with practical demonstrations and hands-on exercises using leading NoSQL databases.

Course Content

- *Introduction: Data management challenges, benefits and limitations of relational databases*
- *Advanced SQL features: User Defined Types, Collections, Object types and methods, etc.*
- *Management of semi-structured data: XML and JSON data types, XQuery*
- *NoSQL concepts and techniques: horizontal scalability and sharding, schema-less data, CAP theorem, data replication and BASE consistency*
- *NoSQL databases: MongoDB, Neo4j, Amazon DynamoDB, AWS Athena, Amazon Redshift, etc.*
- *Summary: SQL vs NoSQL- benefits and drawbacks, future developments*
- *Practical hand-on exercises using a selection of NoSQL database*

Presenter

Dr George Feuerlicht is an Associate Professor at the Department of Information Technologies at the Unicorn University and a visiting lecturer at the Prague University of Economics and Business. George has been involved in database research and teaching for over four decades. He has presented seminars and professional development courses in Australia, Europe, Asia and USA. He is the author of over 100 publications across a range of topics in computer science. He holds a PhD in Electrical Engineering from the Imperial College, London University, U.K.