

20232022 - Data (RDBMS + SQL)

Document status	REVIEWED
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Delivered by	Vinsys
Theme	Build
Sub theme	Local development
Module	Data (RDBMS + SQL)
Duration	1.5 days

Pre-requisites

N/A

Learning Objectives

Upon completion of this module, the participant will be able to:

1. Understand the importance of RDBMS
2. Be able to model and store data in RDBMS tables
3. Be able to write SQL commands to create tables and indexes, keys, insert/update/delete data and query data in a relational DBMS
4. Be able to execute queries using tools such as GUI [Oracle SQL Developer](#)
5. Know the challenges and limitations of RDBMS
6. Be able to choose between RDBMS vs NoSQL databases
7. Know the different types of NoSQL options
8. Know the challenges and limitations of NoSQL

Topics

1. RDBMS (1 day)
 - a. Walkthrough on the Service Operations lifecycle
 - b. Introduction to key production process focus areas
 - c. RDBMS overview covering the need for 2/3 tier architectures and databases as a central store for data
 - d. Tables, relationship, keys and normalization
 - e. SQL inserts, updates, select, delete and merge
 - f. [SQL Query construct - simple select, where clause, order by, group by functions, some important SQL functions for Oracle](#)
 - g. [Data Modeling, types and Normalization basics](#)
 - h. Other SQL concepts such as views, indexes, partitions
 - i. Exposure to tools such as SQL Developer
 - j. Database transactions and overview of ACID properties
 - k. Java exercise to cover basic CRUD operations using JDBC which demonstrate connectivity and basic transactions
2. NoSQL (0.5 day)
 - a. Need for NoSQL and brief overview of the different types
 - b. Limitations of RDBMS and advantages of NoSQL (covering challenges around unstructured data, schemas, relationships, object relational mapping, horizontal scalability)
 - c. [High level introduction to Hive database](#)
 - d. Basic of document database (MongoDB), covering purpose, use cases, benefits and drawbacks
 - e. ~~Basics of a key value database (Redis) covering purpose, use cases, benefits and drawbacks~~
 - f. ~~Other options such as Neo4j, Cassandra, big data systems and cloud storage~~

Pre-reading, Resources, Hands-on sessions / exercises

- [Backup Information of Production TradeFinder Databases](#)
- [Zurich Data Dump](#)

- [Forge security in Anthos](#)
- [Data Completeness - Rules](#)
- [ORA-03 - Failed Registry Key Creation](#)

Assignments and Evaluations (optional)

Each topic should have hands-on assignments to confirm learnings.