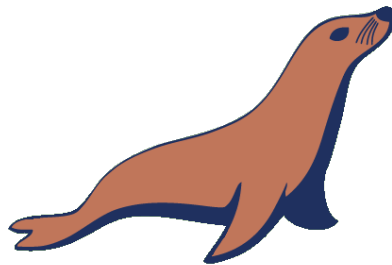




Data Modelling Tools

AUTM08016



Dr Diarmuid Ó Briain
Version 1.0 [01 January 2024]



TUS

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1. Description

This module considers database design, the purpose of a database as well as database objects. Database Operations to create/modify the structure of a relational database, to define relationships between objects and data administration and the role of the database administrator, enforcing business rules.

Interacting with databases via complex Structured Query Language (SQL) queries. The client/server architecture of web based database systems and the build a server-side database using Python. Insert, retrieve, update, append, delete data in a SQL database. Appreciate the fundamentals of Graphical User Interface Design (GUI) to access and edit data. Consider the security issues and networks around the securing of a database.

2. Learning Outcomes

On completion of this module the learner will/should be able to;

1. Develop an entity relationship model for a business information system.
2. Write and interpret complex queries in SQL.
3. Construct and implement a schema for an enterprise database.
4. Build a server side database and develop a web based front end to query the data.
5. Identify and critically evaluate the strategic options available to enterprises to provide for security of data.

3. Assessment

Learners must achieve at least 40% in the module assessment.

4. Reading Resources

J. Bush, *Learn SQL Database Programming: Query and manipulate databases from popular relational database servers using SQL*. Packt Publishing Ltd, 2020.

J. A. Hoffer, R. Venkataraman, and H. Topi, *Modern Database Management, Global Edition*. Pearson Education, 2019.

A. Lukaszewski and A. Reynolds, *MySQL for Python*. Packt Publishing Ltd, 2010.

A. Meier and M. Kaufmann, *SQL & NoSQL Databases: Models, Languages, Consistency Options and Architectures for Big Data Management*. Springer, 2019.

4.1 URL Resources

- <https://www.w3schools.com/sql/>
- <https://www.khanacademy.org/computing/computer-programming/sql>

4.2 Other Resources

- Moodle page for the module will contain lecture notes, tutorials, practicals, and quizzes

5. Table of Contents

0. Module Introduction
1. Build a Linux Platform on VirtualBox
 - 1a. Build a VM on AWS
2. Introduction to Databases
3. Build an SQLite Database
4. LAMP Servers
5. Files, Spreadsheets and Serialisation
6. Administrating MariaDB
7. Front-end Application Development
8. Database Replication