

**TECH**   
KNOWLEDGE

# **Database Design and Implementation Foundations with SQL**

# About Course

This course will help participants to design and develop databases. It starts by explaining basic concepts about the database, followed by the methodologies and steps about database design that will be explained by going through conceptual, logical and physical designs. Even though database design might seem confusing and complex, this course will provide you with our secret easy, steps-by-steps rules that were developed and tested throughout many years. Design will be followed by learning implementation techniques. Participants will be shown how to install the PostgreSQL database management system. After that, they will be shown how to develop/build the designed database practically using the SQL language. This course is prepared with many real-life examples and case studies to be used in the explanation. At the same time, there will be a lot of practical exercises and small projects to help in strengthening the understanding of the concepts.


# Outline

- Introduction
- What is a database?
- How do databases exist?
- Data, information and knowledge
- Database types/models
- Database applications
- Database and ERP systems

## **Database design:**

- Conceptual design:
  - What is an entity?
  - What is an attribute?
  - Identifiers & keys
    - Primary key (P.K)
    - Foreign key (F.K)
    - Surrogate key
  - Identifying relationships
- Logical design:
  - Building relationships
    - Maximum cardinality
      - One to many
      - Many to many
      - One to one
    - Minimum cardinality
      - Zero
      - One
  - Entity relationship diagrams (ERDs)
  - Normalization
- Physical design

## Database implementation:

- SQL Language
  - MySQL Installation
  - Database development with SQL DDL statements
    - Creating tables
    - Creating columns
    - Creating relationships
    - Assigning PKs & FKs
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- A decorative graphic consisting of thick, yellow, rounded lines and shapes. It includes a horizontal bar at the top, a vertical line on the right, and several circular and rectangular shapes that resemble stylized connectors or nodes, all rendered in a light yellow color.

# This course is important for:

- Professional who need to deals with designing databases.
- Professional who need to deals with creating databases.
- Professional who is concerned with storing data.
- Professional who is concerned with retrieving data.

# The course is available with the following modes:

- **Online live instructor-led mode:**

The course will be delivered using ZOOM application. Participants are required to install ZOOM application to their computers.

- **Face to face instructor-led mode:**

The course will be held in a training venue at reputable hotel or business center. The participants will be informed about the venue details after registration. Participants are required to bring their own computing devices.

# Duration

- One day, from 9 am - 5 pm , including refreshments and lunch break.

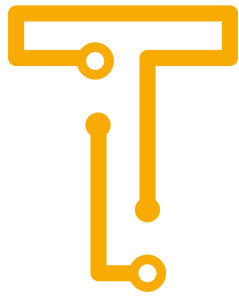
# Software Requirements

Participants are required to have the following software to be installed prior to the course session:

- **ZOOM**

# Course Prerequisites

To have good understanding for the course, it is important to have at least basic computer skills and basic understanding for relational database concepts.



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