

Database Design – Course Description

Overview

This course engages students to analyze complex business scenarios and create a data model — a conceptual representation of an organization’s information. Students will learn how to examine data requirements and design a vendor-neutral relational database. Group collaboration and project management skills are developed as entity relationship diagram models are completed. This course culminates with a project that challenges students to design a database solution for a business or organization.

Available Curriculum Languages:

- English, Simplified Chinese, Brazilian Portuguese, Spanish, Indonesian

Duration

- Recommended total course time: 90 hours*
- Professional education credit hours for educators who complete Oracle Academy training: 30

** Course time includes instruction, self-study/homework, practices, projects, and assessment*

Target Audiences

Educators

- College/university faculty who teach computer programming, information communications technology (ICT), or a related subject
- Secondary school teachers who teach computer programming, ICT, or a related subject

Students

- Students who wish to learn the techniques and tools to design, build and extract information from a database
- Students who possess basic mathematical, logical, and analytical problem-solving skills
- Novice programmers, as well as those at advanced levels, to learning the SQL Programming language to an advanced level

Prerequisites

Required

- Ease with using a computer
- General knowledge of databases and query activity

Suggested

- None

Suggested Next Courses

- Database Programming with SQL

Lesson-by-Lesson Topics

Introduction

- Introduction to the Oracle Academy
- Data vs. Information
- History of the Database
- Major Transformations in Computing

Entities and Attributes

- Conceptual and Physical Models
- Entities, Instances, Attributes, and Identifiers
- Entity Relationship Modeling and ERDs

Relationship Basics

- Identifying Relationships
- ER Diagramming Conventions
- Speaking ERDish and Drawing Relationships
- Matrix Diagrams

Super/Sub Types and Business Rules

- Supertypes and Subtypes
- Documenting Business Rules

Relationship Fundamentals

- Relationship Transferability
- Relationship Types
- Resolving Many-to-Many Relationships
- Understanding CRUD Requirements

UIDs and Normalization

- Artificial, Composite, and Secondary UIDs
- Normalization and First Normal Form
- Second Normal Form
- Third Normal Form

Arcs, Hierarchies, and Recursive Modeling

- Arcs
- Hierarchies and Recursive Relationships

Changes and Historical Modeling

- Modeling Historical Data
- Modeling Change: Time
- Modeling Change: Price
- Drawing Conventions for Readability

Mapping

- Introduction to Relational Database Concepts
- Basic Mapping: The Transformation Process
- Relationship Mapping
- Subtype Mapping

Creating Database Projects

- System Development Life Cycle
- Project Overview and Getting Started
- Presentation Project Management
- Final Presentation Components

Presenting Database Projects

- Creating Tables for the Final Presentation
- Preparing Written Documentation
- Preparing Visual Materials
- Final Presentations