DATABASE DESIGN FUNDAMENTALS COURSE

DURATION

9 Hours of Interactive Training

COURSE OVERVIEW

The Database Design Fundamentals course teaches students how to plan and design relational databases. You will learn about the theory behind relational databases, relational database nomenclature, and relational algebra. The course includes sections on Structured Query Language (SQL) and optimizing databases through normalization.

This course covers all of the objectives necessary to pass the CIW Database Design Methodology exam.

BENEFITS

- Identify relational data modelling schemas, characteristics, and manipulation
- Apply normalization techniques and processes
- Identify SQL commands and syntax
- Define and describe the use of relational algebra in order to create new relationships from existing database relations
- Identify elements of database security.

CONTACT

Website:  www.mobilemouse.com.au
Email:  officeadmin@mobilemouse.com.au
Telephone:  +961+8+9404 7041
Fax:  +961+8+9467 9132

PRICING

Contact Mobile MOUSE for pricing.

ADVANTAGES OF ONLINE COURSES

- Session times are at your discretion
- You can pick and choose which sessions to cover and in any order
- Learn at your own pace
- Free repetition (for a period of 6 months)
- Multiple course levels at a discounted price
- Many of the courses are internationally accredited
- Training from the comfort of your home or workstation
- Training can be accessed from any location
MOBILE MOUSE
DATABASE DESIGN FUNDAMENTALS ONLINE COURSE OUTLINE

SESSION 1
Section A: Introduction to Databases
- Databases
- Flat File Databases
- Relational Databases
- RDBMS Benefits
- Relational Database Management
- RDBMS Disadvantages

Section B: Relational Database Fundamentals
- History
- Application Components
- Two-Tier Client/Server
- Browser Market Share
- Three-Tier Client/Server
- Relational/SQL Model Terminology
- Representative Tables
- Entity Relationships
- Primary Key
- Data Models
- Entity-Relationship Model
- Design Language
- Strong/Weak Entities

Section C: Relationships
- Relationship Degrees
- Binary Relationships
- Relational Integrity
- Referential Integrity Completeness
- Many-Many Relationship
- Foreign Key Constraint Actions
- Data Integrity

SESSION 2
Section A: Conceptual Design Phase
- Database Design
- Identify Entities
- Attributes/Domains
- Sample Data Types
- Identify Relationships
- Candidate/Primary Keys
- Entity-Relationship Diagrams
- IE Method
- Chen Data Model
- Problems/Anomalies
- Row Insert Anomalies
- Delete Anomaly
- Update Anomaly

Section D: Database Languages and Dictionaries
- Database Languages
- Structured Query Language
- Data Definition Language
- Data Manipulation Language
- Data Control Language
- Data Dictionaries

Section B: Normalization Techniques Part I
- Database Normalization
- Normal Forms
- First Normal Form Rules
- First Normal Form Example
- First Normal Form Anomalies
- Second Normal Form
- Second Normal Form Example
- Second Normal Form Rules
- Second Normal Form Anomalies
- Section C: Normalization Techniques Part II
- Third Normal Form Rules
- Boyce-Codd Normal Form
- BCNF Primary Key
- Prime Attributes
- Third Normal Form Revisited
- BCNF Example
- BCNF Determinates
- Data Normalization

Section D: Logical Database Design
- Logical Data Model
- Resolve M:N Relationships
- Complex Relationships
- Recursive Relationships
- Attributes in a Relationship
- Remove Redundant Relationships
- Creating a Logical Model
- Example of DDL
- Validating the Logical Model
- Creating an Enterprise Data Model
### Section E: Physical Database Design
- **DBMS**
- **DDL Example 1**
- **DDL Example 2**
- **Enterprise Constraints**
- **Check Constraints**
- **Column Level Constraints**
- **Foreign Key Constraints**
- **Using Secondary Indexes**

### Session 3

#### Section A: Physical Database Design Considerations
- Denormalization
- Denormalize Foreign Keys
- Denormalize for Aggregation
- Creating User Views
- Database Access Rules
- Grant/Revoke Statement

#### Section B: Introduction to SQL
- Structured Query Language
- Accuracy Scale
- Data Types
- Data Definition Language
- Create Schema
- Alter Table Command
- Alter/Drop Command
- Alter/Drop Domain

#### Section C: Insert, Delete, and Update Data
- **Insert**
- **Inserting Data**
- **Delete**
- **Referential Integrity**
- **Update**
- **Updating Data**
- **Multiple Tables**

### Session 4

#### Section A: Filtering with LIKE
- **LIKE**
- **LIKE Clause in a Sequence**
- **Underscore Wildcard**
- **Square Bracket Wildcard**
- **Null Handling**

#### Section B: Sorting Result Sets
- **ORDER BY**
- **Multiple ORDER BY**
- **Retrieving Data by Relations**
- **Relating Tables**

#### Section C: Data Control Language
- **DCL**
- **Grant**
- **Revoke**

### Section D: Working with Select Statements
- **Select**
- **Using Select**
- **Column Aliases**
- **Distinct**

### Section E: Filtering with Comparison Operators
- **WHERE**
- **Comparison Operators**
- **Multiple Boolean Operators**
- **WHERE Clause Values**
- **IN Operator**

### Section D: Relational Algebra
- **RA Defined**
- **Selection**
- **Projection**
- **Cartesian Product**
- **Unions**
- **Union with Projection**
- **Difference**
- **Intersection**
- **Creating Unions/Projections**

### Section E: Composite Joins
- Joins/Theta-Join
- Equi-Join
- Natural Join
- Outer Join/Semi Join
- Inner Join
- Right and Left Outer Join

### Section F: Transactions
- Transaction Control
- ACID Properties
- Lost Updates
- Dirty Reads
- Non-Repeatable Reads
- Phantoms
- Serializability
- Concurrency Control Methods
- Deadlock Error
- Timestamps
- Transaction Examples
- Concurrency Control Review
- Optimistic Concurrency Control

### Section G: Database Security
- Security
- SQL Injection
- Security Techniques