



data directions inc.

***Introduction
to
Relational Database Design***

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COURSE OVERVIEW

Course Description:

This course is designed to familiarize the student in Relational Database Design concepts. The course will cover database theory, evolution of the relational model and relational model software support. The course will also cover graphical data modeling, normalization techniques, and physical/logical database design considerations. A brief review of Structured Query Language (*SQL*) as a vehicle for the database structure definition will be presented.

Course Duration:

2 Days - This is a lecture with student workshops class.

Course Prerequisites:

The student should be familiar with general application programming techniques.

Course Materials:

Class notes will be provided.

Course Objectives:

Through the lecture and workshop sessions the student will gain a thorough knowledge of Relational Database theory and design. The student will understand the relational model, its rules and construction. The student will learn how to apply data normalization and database design techniques in developing good relational database designs. The student will become familiar with the use of Structured Query Language (*SQL*) in the development of relational databases and their manipulation.

COURSE OUTLINE

I) Course Overview and Review of Objectives

I) Database Concepts and History

- A) Database definitions
 - 1) what is a database?
 - 2) database models
- B) Purposes of database usage
 - 1) data organization efficiencies
 - 2) normalization
 - 3) views
 - 4) referential integrity
- C) Data Base Management Systems (*DBMS's*)
 - 1) what's out there
 - 2) DBMS functions

I) The Relational Database Model

- A) History
- B) Table concepts
 - 1) tables, rows and columns
 - 2) system tables
 - 3) data types
- C) Codd's Rules

I) The Data Model

- A) Entities
- B) Attributes
- C) Relationships
- D) Keys
- E) Artificial Keys
- F) Surrogate Keys
- G) *Exercise*

COURSE OUTLINE

I) Application logical database design

- A) Normalization
- B) 1st Normal Form
- C) 2nd Normal Form
- D) 3rd Normal Form
- E) *Exercise*
- F) 4th Normal Form
- G) 5th Normal Form

I) Other Topics

- A) Views
- B) Referential integrity

I) Overview of Structured Query Language (SQL)

- A) Data Definition Language (DDL)
- B) Data Control Language (DCL)
- C) Data manipulation language (DML) - Inquiry
- D) Data Manipulation Language (DML) - Update
- E) Embedded SQL/Cursors
- F) The Plan
- G) Dynamic SQL

I) Physical Database Design

- A) Performance Considerations
- B) Application profile
- C) Indexes
- D) "De-Normalization"
- E) Commits

I) Review and Questions