

**Course Title: RDBMS Concepts**

**Duration: 2 days**

Almost all the business applications require a database to store data in. Developers, therefore, need to work with some database platform or the other while writing programs for an application. In order to work with databases effectively, the developers need to be familiar with the concepts of relational database management systems (RDBMS).

This two-day training program introduces the participants to the basic concepts and principles of RDBMS.

### Program Objectives

At the end of this program, the participants should have a fair understanding of the following:

- Key concepts and terminology of RDBMS
- Basics of database modeling using E-R diagrams
- Key concepts of database design
- Common levels of database normalization

### Audience

This program is suitable for software professionals who are new to relational database management systems, as well as experienced developers who want to get a clear and formal understanding of the core concepts of RDBMS.

### Course Summary

Day	Module	Topic
Day 1	Module 1	Introduction to Relational Database System Concepts
	Module 2	Transaction Properties
	Module 3	Database Design
	Module 4	Building a Logical Database Model (E-R diagrams)
Day 2	Module 5	Translating E-R Diagrams into Tables
	Module 6	Database Normalization
	Module 7	Security
	Module 8	Transaction Processing
	Module 9	Distributed Databases and Client-Server Computing

## Course Details

### Module 1: Introduction to Relational Database System Concepts

- Data models
- Schemas
- Instances
- DBMS architecture and data independence
- Database languages

### Module 2: Transaction Properties

- Atomicity
- Consistency
- Isolation
- Durability
- Recovery

### Module 3: Database Design

- Requirement analysis
- Diagrammatic representation
- Translating diagrams to tables
- Refining tables based on fixed set of rules
- Tuning for better performance using indexes
- Security (deciding on users and privileges)

### Module 4: Building a Logical Database Model (E-R diagrams)

- Understanding entities, attributes, relationships
- Relationships between entities (one-to-one, one-to-many, many-to-many)
- Creating entity-relationship diagrams
- Exclusive and recursive relationships
- Supertype / subtype entities

### Module 5: Translating E-R diagrams into Tables

- Constraints
- Translating entities and relations to tables
- Defining columns
- Selecting primary keys
- Enforcing relationships with foreign keys
- Enforcing business rules using NOT NULL, UNIQUE and CHECK constraints
- Assigning DEFAULT values
- DELETE and UPDATE rules

### Module 6: Database Normalization

- Normalization as a design technique
- Progressive steps to normalization (first, second, third and Boyce-Codd normal forms)

### Module 7: Security

- Database views
- Users and roles

### Module 8: Transaction Processing

- Queries and transaction processing

### Module 9: Distributed Databases and Client-Server Computing

- Single tier computing
- Two tier computing
- N-tier computing