GenAI TRAININGS

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Course Title
Database Management Bootcamp

Course ID
DB-701

Course Level
Beginner to Intermediate

Duration
180   Hours   (Bootcamp)
Includes instructor-led training, hands-on labs, database projects, assignments, mock exams, and interview preparation.

Delivery Mode
Hybrid / Onsite + Online LMS Support

Course Description
This bootcamp provides practical training in relational database management systems (RDBMS) using MS SQL, MySQL, Oracle, and DB2. Learners will gain skills in designing, implementing, querying, and managing databases. The program emphasizes SQL programming, database design, normalization, transactions, stored procedures, and real-world database administration tasks aligned with industry best practices.

Course Objectives
By the end of the course, learners will be able to design relational databases, write complex SQL queries, manage transactions, implement stored procedures and triggers, and perform basic database administration. Participants will also gain hands-on experience with multiple RDBMS platforms and prepare industry-standard database certifications.

Intended Audience
This course is suitable for software engineering students, aspiring to database developers, data analysts, junior developers, and IT professionals aiming to build careers in database management and administration.

Prerequisites
Basic knowledge of programming concepts and logical reasoning. Familiarity with data structures is beneficial. A laptop with a minimum i5 processor, 8GB RAM, and required RDBMS software installed is required.

Tools & Platforms
MS SQL Server, MySQL, Oracle Database, IBM DB2, SQL Developer, MySQL Workbench, basic database administration tools, and LMS portal for assessments and resources.

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Course Outline (Modules & Topics)

Module 1: Introduction to Databases

Database concepts, types of databases (relational vs non-relational), RDBMS architecture, SQL overview, and database lifecycle. Lab includes setting up database environments and exploring sample databases.

Module 2: SQL Basics

Data types, DDL (CREATE, ALTER, DROP), DML (INSERT, UPDATE, DELETE), SELECT queries, filtering, sorting, and basic joins. Lab includes writing queries on sample databases in MS SQL and MySQL.

Module 3: Advanced SQL Queries

Complex joins, subqueries, set operations, aggregations, grouping, window functions, and indexing. Lab includes real-world query exercises.

Module 4: Database Design & Normalization

ER diagrams, relational schema design, primary & foreign keys, normalization (1NF, 2NF, 3NF, BCNF), and denormalization concepts. Lab includes designing a sample database for an application.

Module 5: Stored Procedures, Functions & Triggers

Creating and using stored procedures, user-defined functions, triggers, cursors, and error handling. Lab includes writing reusable database routines.

Module 6: Transactions & Concurrency Control

ACID properties, transaction management, isolation levels, locking mechanisms, rollback, commit, and deadlock handling. Lab includes transaction exercises in multiple RDBMS.

Module 7: Database Administration & Security

User management, roles and privileges, backup & recovery, database monitoring, performance tuning basics, and security best practices. Lab includes creating users, assigning roles, and performing backup/restoration tasks.

Module 8: Capstone Project & Certification Preparation

End-to-end database project integrating database design, query development, stored procedures, and transactions. Includes mock assessments, interview preparation, and final evaluation.

Assessment & Evaluation

Assessment includes quizzes, SQL assignments, database lab tasks, project evaluation, and mock certification exams to ensure industry readiness.