POSITIVE QUADRANT
TECHNOLOGIES
SERVING INFORMATION WORLDWIDE

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COMPUTER ENGINEERING

SEM IV

DATABASE MANAGEMENT SYSTEM

Programming & development

Course Curriculum

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DATABASE MANAGEMENT SYSTEM SEM IV

Module 1 : Introduction Database Concepts

- Introduction to Database
- Characteristics of databases
- File system v/s Database system
- Data abstraction and data Independence
- DBMS system architecture
- Database Administrator

Module 2 : Entity-Relationship Data Model

- Entity-Relationship (ER) Model
  - Entity types
    - Weak and Strong entity sets
    - Entity sets
    - Types of Attributes
    - Keys
- Relationship constraints
  - Cardinality and Participation
- Extended Entity-Relationship (EER) Model
  - Generalization
  - Specialization
  - Aggregation

Module 3 : Relational Model and Relational Algebra

- Introduction to the Relational Model
- Relational schema and concept of keys
- Mapping the ER and EER Model to the Relational Model
- Relational Algebra-operators
- Relational Algebra Queries

Module 4 : Structured Query Language (SQL)

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- Overview of SQL
- Data Definition Commands
- Integrity constraints
  - Key constraints
  - Domain constraints
  - Referential integrity
  - Check constraints
- Data Manipulation commands
- Data Control commands
- Set and String operations
- Aggregate function
  - Group by
  - Having
- Views in SQL
- Joins
- Nested and Complex queries
- Triggers

Module 5 : Relational-Database Design

- Pitfalls in Relational-Database designs
- Concept of normalization
- Function Dependencies
- First Normal form
- 2NF
- 3NF
- BCNF

Module 6 : Transactions Management and Concurrency and Recovery

- Transaction concept
- Transaction states
- ACID properties
- Transaction control commands
- Concurrent Executions
- Serializability-Conflict and View
- Concurrency control
  - Lock-based
  - Timestamp-based protocols

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- Recovery System
    - Log based recovery
    - Deadlock handling