Database Management System
[CORE COURSE]

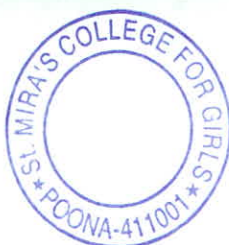| Semester: I	Credits: 3	Subject Code: BC12004	Lectures: 48

Course Outcomes:

At the end of this course the learner will be able to,

- Recognize the basics of SQL queries.
- Relate and gain knowledge of database concepts.
- Design the database by using normalization concepts.
- Apply SQL queries and solve the basic problems related to database.

Unit 1: File Structure and Organization	6

- Introduction
- Physical and logical files
- Basic file operations (opening, closing ,reading, writing, seeking)
- Record types(fixed, variable)
- Types of file Organization (heap, sorted, indexed, hashed)
- Indexing
  - What is an Index
  - Types of Index: Dense index, sparse index

Unit 2: Database Management System:	14

- Introduction
- Basic Concept and Definitions : Data and Information , Data Vs Information, Data Dictionary, Data Item or Field, Record
- Definition of DBMS
- Applications of DBMS
- File processing system Vs DBMS
- Advantages and Disadvantages of DBMS
- Users of DBMS : Database Designers, Application programmer, Sophisticated
  - Users, End Users
- Views of Data
- Data Models : Object Based Logical Model, Entity Relationship Data Model
  - Record Base Logical Model : Relational Model, Network Model, Hierarchical
  - Model
- Entity Relationship Diagram (ERD): Extended features of ERD
- Overall System structure

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Unit 3: Relational Model	8

- Introduction
- Terms: Relation, Tuple, Attribute, Cardinality, . Degree of relationship set, Domain
- Keys : Super Key, Candidate Key, Primary Key, Foreign Key
- Relational Algebra Operations : Select, Project, Union, Difference, Intersection, Cartesian Product, Natural Join

Unit 4: SQL (Structured Query Language)	12

- Introduction
- History Of SQL
- Basic Structure
- DDL Commands
- DML Commands
- Simple Queries
- Nested Queries
- Aggregate functions

Unit 5: Relational Database design	8

- Introduction
- Anomalies of unnormalized database
- Functional Dependency: Decomposition, Multivalued Dependency
- Normalization:
- Normal Form :1 NF, 2 NF, 3 NF, BCNF

#12 hours for Library work, assignments, practical or field work

Recommended Text Books:

- Henry, korth, A Silberschatz, *Database System Concepts*, Tata McGraw-Hill publication fifth edition 2006.
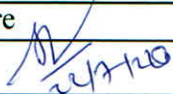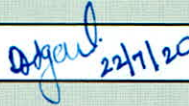- Bayross Ivan, ,*SQL, PL/SQL The Programming Language*, BPB Publication

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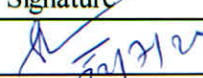- Bayross Ivan, ,*SQL, PL/SQL The Programming Language*, BPB Publication

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- www.w3cschool.com

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