0944 - DIPLOMA IN INFORMATION TECHNOLOGY & ENGINEERING
SEMESTER -IV
094443 - RELATIONAL DATABASE MANAGEMENT SYSTEM (RDBMS)

RATIONALE

Database and database systems have become an essential component of everyday life in modern society. This course will acquaint the students with the knowledge of fundamental concepts of DBMS and its application in different areas, storage, manipulation and retrieval of data using query languages.

DETAILED CONTENTS

1. Introduction

1.1 Database Systems
  - Database and its purpose
  - Characteristics of the database approach
  - Advantages and disadvantages of database systems

1.2 Classification of DBMS Users
  - Actors on the scene
  - Database Administrators, Database Designers, End Users, System Analysts and Application Programmers
  - Workers behind the scene (DBMS system designers and implementers, tool developers, operator and maintenance personnel)

2. Database System Concepts and Architecture

2.1 Data models, schemas, instances, data base state

2.2 DBMS Architecture
  - The External level
  - The conceptual level
  - The internal level
  - Mappings

2.3 Data Independence
  - Logical data Independence
  - Physical data Independence

2.4 Database Languages and Interfaces
  - DBMS Language
  - DBMS Interfaces

2.5 Classification of Database Management Systems

3. Data Modeling using E.R. Model (Entity Relationship Model)

3.1 Data Models Classification : File based or primitive models, traditional data models, semantic data models.

3.2 Entities and Attributes

3.3 Entity types and Entity sets

3.4 Key attribute and domain of attributes

3.5 Relationship among entities

4. Relational Model: ()

4.1 Relational Model Concepts: Domain, Attributes, Tuples and Relations

4.2 Relational constraints and relational database schemes
    - Domain constraints
    - Key constraints and constraints on Null
    - Relational databases and relational database schemes
    - Entity integrity, referential integrity and foreign key

5. Functional Dependencies and Normalization (6 hrs)

5.1 Functional Dependencies
    - Trivial and Non-trivial dependencies
    - Closure of a set of dependencies and attributes
    - Irreducible set of dependencies

5.2 Normalization
    - Non-loss decomposition and functional dependencies
    - First, Second and Third normal forms.
    - Boyce/Codd normal form

6. Structured Query Language

Data definition language : Create, Alter, Drop commands

- Data Manipulation Language (DML)
- Select command with where clause using conditional expressions and Boolean operators, group by clause, like operator.
- Insert, Update and Delete commands
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LIST OF PRACTICALS

1. Overview, Features and functionality, Application development in MS-Access
2. Exercises on different forms of select statement
3. Exercises on creation of tables, altering of table and dropping of table
4. Exercises on insertion of data into tables
5. Exercises on deletion of data using different conditions
6. Exercises on UPDATE statement

INSTRUCTIONAL STRATEGIES

Explanation of concepts using real time examples, diagrams etc. For practical sessions books along with CDs or learning materials with specified activities are required. Various exercises and small applications should be given along with theoretical explanation of concepts.

RECOMMENDED BOOKS

1) Fundamentals of Database Management Systems by Dr Renu Vig and Ekta Walia, - an ISTE, Publication, New Delhi
2) Database Management Systems by Alexis Leon and Mathews Leon; Vikas Publishing House Pvt. Ltd., New Delhi
3) An introduction to database systems by Date C.J. Adison Wesley
4) Fundamentals of Database Systems by Elmasri/Navathe/Adison Wesley
5) An Introduction to database systems by Bipin C. Desai, Galgotia Publications Pvt. Ltd., Daryaganj, New Delhi 110 002
6) SQL Unleashed by Hans Ladanyi Techmedia Publications, New Delhi
7) Oracle 8, The complete reference by Koch and Loney, Tata McGraw Hill Publications New Delhi