

B.Sc. (Data Science)
Core Course (CC)
Semester III
BSDB32301T: Data Base Management System

Total Marks: 100
External Marks: 70
Internal Marks: 30
Credits: 4
Pass Percentage: 40%

Objectives

This course explains fundamental elements of relational database management systems and made student familiar with the basic concepts of relational data model, entity-relationship model, relational database design, relational algebra and SQL

Section A

UNIT I: Introduction to DBMS - Overview of DBMS, Basic DBMS terminology, Data independence. Architecture of a DBMS, Disadvantages of Traditional DBMS, Advantages and Characteristics of DBMS.

UNIT II: Introduction to data models –Relational Keys: Primary Key, Foreign Key, Candidate Key, Super Key etc., and Integrity Constraints, Relational model, Relational schema Hierarchical model, and Network model.

UNIT III: Conceptual data modeling using E-R data model -Entities, attributes, relationships, generalization, specialization, specifying constraints, Conversion of ER Models to Tables, Practical problems based on E-R data model.

UNIT IV: Normal Forms - Functional Dependency, Multi valued dependencies and Joined dependencies, 1NF, 2NF, 3NF, BCNF, 4NF, 5NF.

Section B

UNIT V: Structured Query Language - Introduction to SQL, data types, DDL, DML, DCL, querying database tables, Data Definition Language (DDL), Creating Tables, Inserting and updating values into a Table.

UNIT VI: Data Manipulation Language: Various form of SELECT- simple, using special operators, aggregate functions, group by clause, sub query, joins, co-related sub query, union clause, exist operator, Aggregate Functions.

UNIT VII: VIEWS - Introduction to views, data independence, Statements on Join Views, Dropping a VIEW. Database security, Security Techniques, Two Phase Locking Techniques.

UNIT VIII: Data Control Operations - GRANT command, REVOKE command, COMMIT and ROLLBACK. Concurrency Control Techniques, Recovery Control techniques.

Suggested Readings

1. Silverschatz A., Korth F. H. and Sudarshan S., Database System Concepts, Tata McGraw Hill 6th ed., 2019
2. Elmasri R. and Navathe B. S., Fundamentals of Database Systems, Pearson 7th ed, 2016
3. Bayross I., SQL, PL/SQL the Programming Language of Oracle, BPB Publications 4th Ed., 2009