

Business Database Systems

Course Objectives

The primary objective of this course is to deliver the fundamentals of database. A variety of topics will be covered that are important for modern databases in order to prepare the students for real life applications of databases.

Syllabus

DBMS concepts- Components- classification-file organization-indexing- ER model- DDL and DML- Use of SQL-Normalization- distributed databases- database security and integrity aspects and privileges.

Expected Outcomes

Student must be able to master the basic concepts and understand the applications of database systems, construct an Entity-Relationship (E-R) model from specifications and to transform to relational model. Student also must be conversant with database normalization principles. It is also designed make the student know more about distributed databases and database security aspects.

References

1. C. J. Date, A. Kannan and S. Swamynathan, An Introduction to Database Systems, Pearson Education.
2. Raghu Ramakrishnan, Johannes Gehrke, Database Management Systems, McGraw-Hill Higher Education
3. Abraham Silberschatz, Henry F. Korth and S. Sudarshan, Database System Concepts, McGraw-Hill Education (Asia).
4. Shio Kumar Singh, Database Systems Concepts, Designs and Application, Pearson Education.
5. Peter Rob and Carlos Coronel, Database Systems Design, Implementation and Management, Thomson Learning-Course Technology.
6. Patrick O'Neil and Elizabeth O'Neil, Database Principles, Programming and Performance, Harcourt Asia Pte. Ltd.

COURSE PLAN

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I Database Environment, functioning of a Simple Centralized Database System, Traditional File Systems vs. Modern Database Management Systems, Properties of Database, Types of Database Users, Advantages of DBMS, Applications

2 Data Model, Schemas and Instances, three schema architecture, Languages and Interfaces, DBMS Components, Classification of Database Management Systems, DDL, DML and use of SQL in relational databases and normalization.

First Internal Examination

3 File Organization-Memory Hierarchy, Secondary Storage Devices, Buffering of Blocks, Placing File Records on Disk, Operation on Files, Files of Unordered Records (Heap Files), Files of Ordered Records, Hashing Techniques- primary index and clustering index

4 Conceptual Data model - ER Model Concept using example, Components of an ER Model, Relationships, Roles and Structural constraints, Constraints on Relationship Types

Second Internal Examination

5 Distributed DBMS Concepts, Client-Server Model, Data Fragmentation, Replication, and Allocation Techniques for Distributed Database Design Security and Integrity Violations, Authorization, Granting of Privileges

Final Exam