BC203 DATABASE SYSTEMS

Course Description and Objectives:

The objective of the course is to present an introduction to database management systems, with an emphasis on how to organize, maintain and retrieve - efficiently, and effectively - information from a DBMS.

Course Outcomes: After Completion of the subject student should able to

- Describe the fundamental elements of relational database management systems
- Explain the basic concepts of relational data model, entity-relationship model, relational database design, relational algebra and SQL.
- Design ER-models to represent simple database application scenarios
- Convert the ER-model to relational tables, populate relational database and formulate SQL queries on data.
- Improve the database design by normalization.
- Familiar with basic database storage structures and access techniques: file and page organizations, indexing methods including B tree, and hashing.
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UNIT-1 Database Users

Introduction, characteristics of the database approach, actors of database, advantages of database, History of database applications. Database system concepts & architecture: Data models, schemes, instances,. Database languages interfaces database system environment architectures for DBMS. Classification of DBMS systems.

UNIT-2 Data modeling using the ER model

notations , entity types, entity sets, attributes, keys, relationships, roles, constraints, weak entity types, binary and ternary relationships. EER modeling specialization, generalization. Example university EER schema.

UNIT-3 Relational Model

Relational Model & Relational Database constraints. ER-EER to relational mapping.SQL Basics.

UNIT-4 Functional dependencies

Normalization, Design guidelines. Definition of FD. Normal forms based on primary keys.

UNIT-5 Disk storage

Introduction secondary storage devices placing records on diskR FID technology. Transaction processing, properties of transaction serializabulity two phase locking – recovery concepts.

TEXT BOOK(s):

RamezElmasri and Shamkant B. Navathe, Fundamentals of Database Systems (5/e), Pearson Education, 2008

REFERENCE BOOK(S):

1. Silberschatz, Korth, “Data base System Concepts”, 4th ed., McGraw hill, 2006.
2. Raghu Ramakrishnan and Johannes Gehrke, Database Management Systems (3/e), McGraw Hill, 2003.
3. Peter Rob and Carlos Coronel, Database Systems- Design, Implementation and Management (7/e), Cengage Learning, 2007.