II B.Tech II Sem

15ACS12-DATABASE MANAGEMENT SYSTEMS

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Course Objective:

- To create database and query it using SQL queries, design forms and generate reports.
- Learn to use integrity constraints, referential integrity constraints, triggers, assertions

Course Outcomes

- Design databases
- Retrieve information from data bases
- Use procedures to program the data access and manipulation

Create user interfaces and generate reports

UNIT I

The Worlds of Database Systems – file system VS a DBMS – Advantages of DBMS – Levels of abstraction in DBMS, Data Independency, Queries in DBMS

The Entity-Relationship Model – Database design and ER diagrams – Elements of ER models –Additional features ER models.

The Relational Data Model – Basics of the Relational Model –Integrity constraints over relations, From E/R Diagrams to Relational Designs – Introduction to views.

UNIT II

Relational Algebra and Calculus – Preliminaries, Relational algebra: Selection and Projection, Set Operations, Renaming, Joins, Division - Relational Calculus – Expressive power of Algebra and Calculus.

The Database Language SQL – Simple Queries in SQL –UNION, INTERSECT, EXCEPT– Nested queries, Aggregate operators.

UNIT III

Constraints and Triggers – Keys and Foreign keys – Constraints on Attributes and Tuples, Schema level Constraints and Triggers.

Functional Dependencies – Rules about Functional Dependencies- Normal Forms based on FDs – 1NF, 2NF, 3NF, BCNF, Multivalve Dependencies, 4NF, 5NF.

UNIT IV

Transaction Management: Transactions, ACID properties, Serializability, Other isolation levels.
Concurrency Control – Serializability and Recoverability, Introduction to Lock management- Concurrency Control without Locking.

UNIT V

Index Structures – Indexes on Sequential Files – Secondary Indexes – B-Trees, B+ Trees – Hash Based Indexing.
Introduction to Query Optimization.
Crash Recovery: Introduction to ARIES- The Log- other Recovery- Related Structures- Checkpoints-Recovery from a System Crash.

Text Books:

1. **"Data base Management Systems"**, Raghu Rama Krishnan, Johannes Gehrke, 3rd Edition, McGraw Hill Education (Indian) Edition 2014.
2. **"Database Systems, The Complete Book"**, Hector Garcia-Molina, Jeffrey D. Ullman and Jennifer Widom, 6th impression, 2011, Pearson.

Reference Books:

1. "Fundamentals of Database Systems", Elmasri Navrate, 6th edition, 2013, Pearson.
2. "Data base Systems design", Implementation, and Management, Peter Rob & Carlos Coronel 7th Edition.
3. "Introduction to Database Systems", C.J.Date, Pearson Education.
4. "Data base System Concepts", Silberschatz, Korth, McGraw Hill, V edition.

(refer Raghu Rama Krishnan text book latest version and frame new syllabus)