

DATABASE MANAGEMENT SYSTEMS LAB (Common to CSE&IT)

II B. Tech. - II Semester
Course Code: A3CS16

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LABORATORY OVERVIEW:

This course introduces the core principles and techniques required in the design and implementation of database systems. This introductory application-oriented course covers the relational database systems RDBMS - the predominant system for business scientific and engineering applications at present. It includes Entity-Relational model, Normalization, Relational model, Relational algebra, and data access queries as well as an introduction to SQL. It also covers essential DBMS concepts such as: Transaction Processing, Concurrency Control and Recovery. It also provides students with theoretical knowledge and practical skills in the use of databases and database management systems in information technology applications.

COURSE OBJECTIVES:

1. To explain basic database concepts, applications, data models, schemas and instances.
2. To demonstrate the use of constraints and relational algebra operations. IV. **Describe** the basics of SQL and construct queries using SQL.
3. To emphasize the importance of normalization in databases.
4. To facilitate students in Database design
5. To familiarize issues of concurrency control and transaction management.

COURSE OUTCOMES:

At the end of the course the students are able to:

1. Apply the basic concepts of Database Systems and Applications.
2. Use the basics of SQL and construct queries using SQL in database creation and interaction.
3. Design a commercial relational database system (Oracle, MySQL) by writing SQL using the system.
4. Analyze and Select storage and recovery techniques of database system.

SYLLABUS

Experiment 1

Student should decide on a case study and formulate the problem statement.

Experiment 2

Conceptual Designing using ER Diagrams (Identifying entities, attributes, keys and relationships between entities, cardinalities, generalization, specialization etc.)

Note: Student is required to submit a document by drawing ER Diagram to the Lab teacher.

Experiment 3

Converting ER Model to Relational Model (Represent entities and relationships in Tabular form, Represent attributes as columns, identifying keys)

Note: Student is required to submit a document showing the database tables created from ER Model.

Experiment 4

Normalization -To remove the redundancies and anomalies in the above relational tables, Normalize up to Third Normal Form

Experiment 5

Creation of Tables using SQL- Overview of using SQL tool, Data types in SQL, Creating Tables (along with Primary and Foreign keys), Altering Tables and Dropping Tables

Experiment 6

Practicing DML commands- Insert, Select, Update, Delete

Experiment 7

Practicing Queries using ANY, ALL, IN, EXISTS, NOT EXISTS, UNION, INTERSECT, CONSTRAINTS etc.

Experiment 8

Practicing Sub queries (Nested, Correlated) and Joins (Inner, Outer and Equi).

Experiment 9

Practice Queries using COUNT, SUM, AVG, MAX, MIN, GROUP BY, HAVING, VIEWS Creation and Dropping.

Experiment 10

Practicing on Triggers - creation of trigger, Insertion using trigger, Deletion using trigger, Updating using trigger

Experiment 11

Procedures- Creation of Stored Procedures, Execution of Procedure, and Modification of Procedure.

Experiment 12

Cursors- Declaring Cursor, Opening Cursor, Fetching the data, closing the cursor.