10B17CI372: Database Systems Lab

Course Credit: 1
Semester: III
Objective:
- Develop the ability to design, implement and manipulate databases.
- Introduce students to build database management systems.
- Apply DBMS concepts to various examples and real life applications.

Learning Outcomes:
- Ability to build normalized databases.
- Knowledge of Entity Relationship Modeling.
- Familiarity with SQL, embedded SQL and PLSQL.
- Familiarity with query processing and query optimization techniques.
- Understanding of transaction processing.
- Ability to handle recovery and concurrency issues.
- Familiarity with ODBC, JDBC.

List of Experiments

S NO	Topics	Hrs
1	**ER Model**: An entity-relationship model (ERM) is an abstract and conceptual representation of data. Entity-relationship modeling is a database modeling method, used to produce a type of conceptual schema or semantic data model of a system.	4
2	**EER Model**: In computer science, the enhanced entity-relationship (EER) model is a high-level or conceptual data model incorporating extensions to the original entity-relationship (ER) model, used in the design of databases. It was developed by a need to reflect more precisely properties and constraints that are found in more complex databases.	4
3	**Relational Model**: The relational model for database management is a database model based on first-order predicate logic, first formulated and proposed in 1969 by E.F. Codd. The model uses the concept of a mathematical relation, which looks somewhat like a table of values - as its basic building block, and has its theoretical basis in set theory and first-order predicate logic.	4
4	**1 NF**: First normal form (1NF or Minimal Form) is a normal form used in database normalization. A relational database table that adheres to 1NF is one that meets a certain minimum set of criteria. These criteria are basically concerned with ensuring that the table is a faithful representation of a relation and that it is free of repeating groups.	4
5	**2 NF**: Second normal form (2NF) is a normal form used in database normalization. 2NF was originally defined by E.F. Codd in 1971. A table that is in first normal form (1NF) must	4

	meet additional criteria if it is to qualify for second normal form.	
6	**3 NF**: The Third normal form (3NF) is an important form of database normalization. 3NF is said to hold if and only if both of the following conditions hold: • The relation R (table) is in second normal form (2NF) • Every non-prime attribute of R is non-transitively dependent (i.e. directly dependent) on every candidate key of R.	4
7	**BCNF**: A relation R is in Boyce-Codd normal form (BCNF) if and only if every determinant is a candidate key. The definition of BCNF addresses certain (rather unlikely) situations which 3NF does not handle.	4
8	**SQL-1**: In this lab., we discuss basic SQL operations like creating a table, deleting a table, changing the schema of the table, primary key and foreign key constraints on a table and creating indexes on tables.	4
9	**SQL-2**: Its scope includes efficient data insert, query, update and delete, schema creation and modification, and data access control. In this lab., we discuss SQL operations for populating the tables like inserting into a table, deleting values from a table, and updating the content of the tables.	4
10	**SQL-3**: In this Lab., we discuss SQL operations for viewing the contents of an SQL database, and various operations that we can do using SQL.	4
	Total	40

References

1. "Database Systems: A Practical Approach to design, Implementation and Management". Thomas Connolly, Carolyn Begg; Third Edition, Pearson Education.
2. "Fundamentals of Database Systems"   Elmasri, Navathe, Pearson Education.
3. Bipin C Desai, ?An Introduction to Database Systems?, Galgotia. Publications Pvt Limited, 2001
4. "An Introduction to Database Systems", C.J.Date, Pearson Education.
5. "A first course in Database Systems", Jeffrey D. Ullman, Jennifer Windon, Pearson, Education.
6. "Data Management: databases and organization", Richard T. Watson, Wiley.
7. " Data Modeling Essentials", Graeme C. Simxion, Dreamtech.

8. Introduction to Data Base Management, Naveen Prakash, Tata McGraw Hill
9. "Oracle 8i manuals".

Evaluation Scheme:

1.	Mid Term Exam (Viva and Written Exam)	20
2.	End term Exam (Viva and Written Exam)	30
3.	Lab Records	5
4.	Regular Assessment (Quality and quantity of experiment performed, Learning laboratory skills, Attendance etc.)	30
5.	Project	15

                                             Total   **100**