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| **Lesson Plan****Discipline** : Computer Science and Engineering**Semester** : 5th sem**Subject** : Database management system **Lesson Plan Duration**: 15 weeks **Subject Code**  : CS-301A**Work Load** (Lectutre/Practical) per week (in hours): Lectures 03 hours |
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| **Week** | **Lecture**  | **Topics Covered** |
|
| 1 | 1 | Concept & Overview of DBMS |
| 2 | Data Models-, Network |
| 3 | Hierarchical and Relational Model |
| 2 | 1 | Levels of abstraction. Administrator, Database Users |
| 2 | Three Schema architecture of DBMS |
| 3 | Application |
| 3 | 1 | Entities, Attributes and Entity Sets |
| 2 | Relation and Relationships sets, Mapping Constraints |
| 3 | Keys |
| 4 | 1 | Entity-Relationship Diagram |
| 2 | Weak Entity Sets, Extended E-R features |
| 3 | Structure of relational Databases |
| 5 | 1 | Operations on Relational Algebra |
| 2 | Operations on Relational Calculus |
| 3 | Tuple Relational Calculus, Domain Relational Calculus |
| 6 | 1 | Concept of DDL, DML |
| 2 | DCL, Basic Structure |
| 3 | Revision |
| 7 | **Minor I** |
| 8 | 1 | Set operations, Aggregate Functions |
| 2 | Null Values, Domain Constraints, Referential Integrity Constraintss, assertions |
| 3 | Introduction to views, Querying, Nested Sub queries |
| 9 | 1 | Database security application development using SQL, Stored procedures and triggers.  |
| 2 | Functional Dependency, Different anomalies in designing a Database. |
| 3 | Normalization using functional dependencies, Decomposition |
| 10 | 1 | Boyce-Codd Normal Form, 3NF, Normalization using multi-valued dependencies, 4NF, 5NF |
| 2 | Physical data structures, Query optimization: join algorithm |
| 3 | statistics and cost base optimization. Transaction processin |
| 11 | 1 | Concurrency control |
| 2 | Recovery Management: transaction model properties, state serializability |
| 3 | lock base protocols, two phase locking |
| 12 | 1 | Types of Failures, Recovery Techniques, ARIES |
| 2 | Serial and Serializable Schedule, Conflict Serializability |
| 3 | Enforcing Serializability by Locks-Locking Systems with Several Lock Modes |
| 13 | 1 | Concurrency Control by Timestamps, validation |
| 2 | ACID Properties, Transaction states |
| 3 | Serializability and Recoverability-View, Serializability-Resolving Deadlocks |
| 14 | Minor II |
| 15 | 1 | Distributed Databases: Commit and Lock |
| 2 | Revision |
| 3 | Revision |

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|  **LESSON PLAN****Name of Faculty** : Ms. Divya **Discipline** : Computer Science and Engineering**Semester** : 5th sem **Subject** : Database management System Lab **Subject Code** : PC-CS-309LA **Lesson Plan Duration**: 15 weeks**Work Load** (Lectutre/Practical) per week (in hours): Practical 04 hours |  |
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| **Week** | **Practical** | **Topics Covered** |  |  |  |  |
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| 1 | 1 | Write the queries for Data Definition Language (DDL) in RDBMS  |  |  |  |  |
| 2 | 2 | Write the queries for Data Manipulation Language (DML) in RDBMS. |  |  |  |  |
| 3 | 3 |  Write the queries for Data Control Language (DCL) in RDBMS. |  |  |  |  |
| 4 | 4 | To perform various integrity constraints on relational database. |  |  |  |  |
| 5 | 5 | Create a database and perform the following operations:- a. Arithmetic and Relational operations b. Group by & having clauses c. Like predicate for pattern matching in database |  |  |  |  |
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| 6 | 6 |  Write SQL queries for relational algebra |  |  |  |  |
| 7 | **Minor I** |  |  |  |  |
| 8 | 7 | Write SQL queries for extracting data from more than one table  |  |  |  |  |
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| 9 | 8 | Write SQL queries for sub queries, nested queries |  |  |  |  |
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| 10 | 9 | Concepts for ROLL BACK, COMMIT & CHECK POINTS  |  |  |  |  |
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| 11 | 10 |  Using two tables create a view, which shall perform natural join, equi join, outer joins.  |  |  |  |  |
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| 12 | 11 | Write a procedure for computing income tax of employee on the basic of following conditions:- a. if gross pay<=40,000 then I.T rate is 0%. b. if gross pay>40,000 but <60000 then I.T rate is 10%. c. if gross pay>60,000 but <1,00,0000 then I.T rate is 20%. d. if gross pay>1,00,0000 then I.T rate is 30%. For this purpose create a table with name, ssn, gross salary and income tax of the employee. |  |  |  |  |
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| 13 | 12 |  Write trigger for before and after insertion, deletion and updation process.  |  |  |  |  |
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| 14 | Minor II |  |  |  |  |
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| 15 | 13 | Viva voce |  |  |  |  |
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