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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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