Swami Shraddhanand College
(University of Delhi)
Alipur, Delhi- 1100036
www.ss.du.ac.in

Lesson Plan

Name of Teacher	Dr Meera Sharma and Akanksha Gupta	**Department**	Computer Science
Course	B.A.(Programme) Computer Applications	**Semester**	Second
Paper	Database Management System	**Academic Year**	April 2021-July 2022

Learning Objectives

- Fundamentals of database management system.
- Methods to store and retrieve data.
- To enable the student to understand, how data is organized for efficient storage and retrieval.

Learning Outcomes

On successful completion of this course, a student will be able to:

- Differentiate between database systems and file systems.
- Describe the features of database management systems.
- Analyze the problem and arrive at an information model in the form of an ER diagram
- Normalize a database.
- Transform an ER model into a relational database schema.
- Use SQL for query and data update operations.

Lesson Plan

Week No.	Theme/ Curriculum	Any Additional Information
Week 1 and Week 2	Unit 1 Database: Introduction to database and DBMS, DBMS architecture, data independence, components of database systems, front end tools.	Dr. Meera Sharma Akanksha Gupta

Week 3 to Week 5	Unit 2 E-R Modeling: Entity types, entity set, attribute and key, relationships, relation types, ER diagrams, Database design using ER diagrams.	Dr. Meera Sharma Akanksha Gupta
Week 5 to Week 7	Unit 3 Relational Data Model: Relational model concepts, relational constraints, primary key, foreign key, candidate key, alternate key, composite key, super key.	Dr. Meera Sharma Akanksha Gupta
Week 8 to Week 10	Unit 4 Normalization: Functional dependencies, First, Second and Third normal forms	Dr. Meera Sharma Akanksha Gupta
Week 11 and Week 12	Unit 5 Introduction to Structured Query Language: Overview of SQL query language, Data definition and manipulation languages, set operations.	Dr. Meera Sharma Akanksha Gupta
Week 13 to Week 15	Unit 6 SQL: Create database, create table, drop database, drop table, alter table, create relationships between database tables, auto increment, check, Null values, aggregate functions - min, max, count, average, sum, nested sub-queries, insert data into table, modify and manage tables, queries, modify, filter, delete and view data, group by, having, exists, case, order by, Join operations - inner, left join, right join, natural join, Cartesian product.	Dr. Meera Sharma Akanksha Gupta

Suggested Readings

Books	1. Date, C. J, Kanman, A., & Swamynathan, S. (2006). An Introduction to Database Systems (8th edition). Pearson. 2. Silberschatz, A., Korth, H.F., & Sudarshan, S. (2011). Database System Concepts (6th edition). Tata McGraw-Hill Education. 3. Bayross, I. (2010). SQL, Pl/SQL the Programming Language of Oracle (4th edition). BPB Publications. 4. Elmsasri, R., & Navathe, S. (2017). Fundamentals of Database Systems (7th Edition). Pearson Education. 5. Ramakrishnan, R., & Gehrke, J. (2014). Database Management Systems (3rd edition). Tata McGraw Hill Education. 6. Widenius, M., Axmark, D., Cole, J., Lentz, A., & Dubois, P. (2002). MySQL Reference Manual. O'Reilly Community Press.
Online Resources (If Any)	https://www.tutorialspoint.com/dbms/index.htm https://www.w3schools.in/dbms https://www.w3schools.com/sql/

Assignment and Class Test Schedule for Semester

Class Test on 27 June 2022
Assignment given on 23 June 2022

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Lesson Plan(Generic Elective, Semester II, April to July 2022)

Name of Teacher	Dr. Shveta Kundra Bhatia Ms. Akanksha Gupta	**Department**	Computer Science
Course	B.A.(H)/B.Sc.(H)/B.Com(H) Generic Elective	**Semester**	SECOND
Paper	Database Management System	**Academic Year**	2022

Learning Objectives

- Providing a broad understanding of database concepts and database management system software.
- Students shall have understanding of major DBMS components and their functions.
- Students shall be able to model an application's data requirements using conceptual modelling tools like ER diagrams and design database schemas based on the conceptual model.
- Students will be able to write SQL commands to create tables insert/update/delete data, and query data in a relational DBMS.

Learning Outcomes

- Describe the fundamental elements of relational database management systems.
- Explain the basic concepts of relational data model, entity-relationship model, relational database design and SQL.
- Designing of ER-models to represent simple database application scenarios.
- Converting the ER-model to relational tables, populate relational database and formulate SQL queries on data.
- Improvement of the database design by normalization.

Lesson Plan

Week No.	**Theme/ Curriculum**	*Any Additional Information*
1	Introduction to database Relational data model Introduction to SQL, DDL, DML	
2	DBMS architecture Data independence Data abstraction Basic SQL queries - create, insert, delete	
3	Data Base Administrator DatabaseUsers End Users SQL queries - DML : select, update	
4	Frontend tools Entity types Advanced SQL - DDL : drop, alter	
5	Entity set, Attribute and Key Advanced SQL - joining tables, NULL values	
6	Relationships Relation types Advanced SQL - aggregate functions (min, max, count, avg, sum)	
7	ER diagrams, database design using ER diagrams	
8	Relational model concepts Advanced SQL - group by, having clause	
9	Relational constraints Advanced SQL - exists, case statements	
10	Primary and Foreign key Advanced SQL - View creation and updates	
11	Candidate key Advanced SQL - cartesian products on 2 or more tables	CLASS TEST AND ASSIGNMENT DISCUSSION
12	Alternate Key, Composite Key, Super-key Advanced SQL - nested queries using IN	
13	First Normal Form Advanced SQL - nested queries using Or, AND	
14	Second Normal Form Advanced SQL - Triggers	
15	Third Normal Form Advanced SQL - Real life database queries practice	

Books:

1. Elmasri,R.,&Navathe,S.(2017).*FundamentalsofDatabaseSystems.*7thedition.PearsonEducation.
2. Bayross,I.(2010)*SQL,PL/SQLtheProgrammingLanguageofOracle*.4thedition.BPBPublications.
3. Silberschatz,A.,Korth,H.F.,&Sudarshan,S.(2011),*DatabaseSystemConcepts*.6thedition.TataMcGraw-HillEducation.

Online Resources (If Any)	https://www.tutorialspoint.com/dbms/index.htm https://www.w3schools.in/dbms https://www.w3schools.com/sql/
Assignment and Class Test Schedule for Semester	Assignment: ER diagrams allocated to students in groups of two each on different topics. Class Test : 30th June 2022