DATABASE MANAGEMENT SYSTEM

COURSE CODE: MOOCCSE-A10 **DURATION: 06 Weeks**

Course Prerequisites:
Introduction to Computer Science and Engineering, Programming Fundamentals

Course Outcomes:
1. Fundamental elements of relational database management systems and non-relational database
2. Design ER-models to represent simple database application scenarios
3. Able to create SQL queries using multiple tables.
4. Improve the database design by normalization.
5. Database indexing (B and B+ Trees).

Course Description:
The main objective of this course is to provide students with the background to design, implement, and use database management systems. This course offers a good understanding of database systems concepts and prepares the student to be in a position to use and design databases for different applications. Behind the development and design of this course is to know.

1. How to design, manipulate and manage databases.
2. The course participants are exposed to the various forms, types and models of database systems to enable them make viable choices.
3. Supportive and complementary concepts of managing data and documents are thoroughly examined to give a wholesome view of data/information management.

COURSE DETAILS

MODULE 1 (Introduction to Database Systems)

Topic 1: (DBMS and File System)
- Lecture 1.1: (File Systems Versus a DBMS)
- Lecture 1.2: (Advantages of a DBMS)

Topic 2: (Architectures)
- Lecture 2.1: (Components of DBMS)
- Lecture 2.2: (Architecture of DBMS)

Topic 3: (Data Abstraction and Schemas)
- Lecture 3.1: (Database System Architecture)
- Lecture 3.2: (Data Independence and Schemas)

MODULE 2 (Relational Database)

Topic 1: (Types of Databases)
- Lecture 1.1: (CRUD Operations)
- Lecture 1.2: (Types of Databases, Relational Database)

Topic 2: (Non-Relational Database)
- Lecture 2.1: (Non-Relational Database)

Topic 3: (Basics of SQL)
- Lecture 3.1: (Creating Tables, Rows and Keys)
- Lecture 3.2: (What is SQL?, SQL as DML, DDL and DCL)

MODULE 3 (Lets Start SQL)

Topic 1: (SQL Workbench)

Lecture 1.1: (SQL Workbench - Apex)

Topic 2: (Creating Database for SQL)

Lecture 2.1: (Creating Database)

Topic 3: (SQL Clauses and Operations)

Lecture 3.1: (Select Clause)

Lecture 3.2: (Where Clause And Clause)

Lecture 3.3: (Practice SQL Operators on Workbench)

MODULE 4 (Types of File Organization and Practice SQL)

Topic 1: (What is File Organization?)

Lecture 1.1: (File Organization and SQL – OR Operator)

Lecture 1.2: (5 types of File Organization and SQL – IN, Between, Null Clause)

Topic 2: (Different Types of File Organization and SQL hands-on Practice)

Lecture 2.1: (Types of Hashing, SQL – Query Filtering Conditions, Operator Precedence)

Lecture 2.2: (Cluster, B+ Tree file Organization, SQL–Ordering, Concatenation, Aliasing Query)

Topic 3: (Indexing and SQL Functions)

Lecture 3.1: (What is Indexing? , SQL Function – SumThese, Use of Concat, Pipes)

MODULE 5 (Data Models in Database Management System and Practice SQL)

Topic 1: (Hierarchical Model)

Lecture 1.1: (Hierarchical Model , SQL Functions – Upper , Lower , DUAL Table)

Topic 2: (Network Model)

Lecture 2.1: (Network Model , SQL Functions – Using Functions in Where Clause)

Topic 3: (Entity Relationship Model)

Lecture 3.1: (ER Model , SQL Functions – Initcap Function and Length Function)

Resources: PDF:

KEYS & Constraints (Primary Key, Foreign Key, Unique, Not Null, Check)

JOIN Queries

MODULE 6 (Normal Forms, Functional Dependency and ACID Properties)

Topic 1: (Types of Functional Dependencies)

Lecture 1.1: (Functional Dependency and SQL – SUBSTR Function)

Topic 2: (Normal Forms and SQL Functions)

Lecture 2.1: Different Normal Forms, SQL – LPAD, RPAD, LTRIM, RTRIM Functions)

Topic 3: (ACID Properties)

Lecture 3.1: (ACID Properties)