



# DATA BASE MANAGEMENT SYSTEM

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**PRE-REQUISITES** : Procedural and / or Object-Oriented Programming (C / C++ / Java / Python), Data Structures, Algorithms

**INTENDED AUDIENCE** : Students from all disciplines can enroll for this course.

**INDUSTRIES APPLICABLE TO** : DBMS is so fundamental that all companies dealing with systems as well as application development (including web, IoT, embedded systems, data mining, machine learning) have a need for the same. These include – Microsoft, Samsung, Xerox, Yahoo, Google, IBM, TCS, Infosys, Amazon, Flipkart, etc.

## **COURSE OUTLINE :**

Databases form the backbone of all major applications today – tightly or loosely coupled, intranet or internet based, financial, social, administrative, and so on. Structured Database Management Systems (DBMS) based on relational and other models have long formed the basis for such databases. Consequently, Oracle, Microsoft SQL Server, Sybase etc. have emerged as leading commercial systems while MySQL, PostgreSQL etc. lead in open source and free domain. While DBMS's differ in details, they share a common set of models, design paradigms and a Structured Query Language (SQL).

## **ABOUT INSTRUCTOR :**

Prof. Partha Pratim Das received his BTech, MTech and PhD degrees in 1984, 1985 and 1988 respectively from IIT Kharagpur. He served as a faculty in Department of Computer Science and Engineering, IIT Kharagpur from 1988 to 1998. In 1998, he joined Alumnus Software Ltd as a Business Development Manager. From 2001 to 2011, he worked for Interra Systems, Inc. as a Senior Director and headed its Kolkata Center. In 2011, he joined back to Department of Computer Science and Engineering, IIT Kharagpur as Professor. Prof. Das has also served as a Visiting Professor with Institute of Radio Physics and Electronics, Calcutta University from 2003 to 2013.

Prof. Samiran Chattopadhyay received his B.Tech and M.Tech degrees in 1987, and 1989 respectively from IIT Kharagpur. He received his PhD in 1993 from Jadavpur University. He served as a faculty in Department of Computer Science and Engineering, Jadavpur University from 1989 to 1993 and 1997 to 2001 before joining the department of Information Technology. He has two decades of experience in serving reputed Industry houses such as Computer Associates, Interra Systems India, Agilent, Motorola as Technical consultants. Prof. Chattopadhyay has also served as an Adjunct faculty at IIT Kharagpur.

## **COURSE PLAN :**

**Week 1:** Course Overview, Introduction to RDBMS

**Week 2:** Structured Query Language (SQL)

**Week 3:** Relational Algebra, Entity-Relationship Model

**Week 4:** Relational Database Design

**Week 5:** Application Development, Case Studies, Storage and File Structure

**Week 6:** Indexing and Hashing, Query Processing

**Week 7:** Query Optimization, Transactions (Serializability and Recoverability)

**Week 8:** Concurrency Control, Recovery Systems, Course Summarization