Topic Name: Introduction to DBMS

Relevant Course Name: Database Management Systems

Relevant Department: Computer Science

Relevant Semester: 6th

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Topic Description and Outline:

Database system architecture Data Abstraction, Data Independence, Data Definition and Data Manipulation Languages.Data models Entity-relationship, network, relational and object oriented data models, integrity constraints and data manipulation operations.

Relational query languages Relational algebra, tuple and domain relational calculus, SQL and QBE.

Relational database design Domain and data dependency, Armstrong's axioms, normal forms, dependency preservation, lossless design.

Query processing and optimization Evaluation of relational algebra expressions, query equivalence, join strategies, query optimization algorithms.

Storage strategies Indices, B-trees, hashing.

Transaction processing Recovery and concurrency control, locking and timestamp based schedulers, multiversion and optimistic Concurrency Control schemes.

Advanced topics Object-oriented and object relational databases, logical databases, web databases, distributed databases, data warehousing and data mining.

Pre- requisites: Data Structure and Algorithm