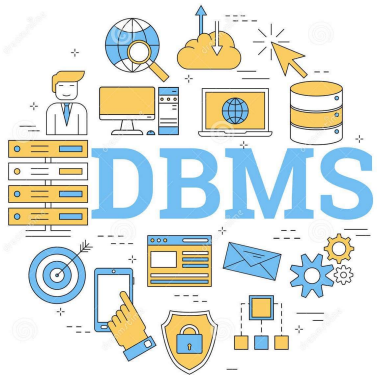
SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
An Autonomous Institution

Department of Information Technology



19CST202 – Database Management System

II B.Tech. AIML/ IV SEMESTER

UNIT I : INTRODUCTION

Topic 1 : Purpose of Database System

Purpose of Database System - Views of data – Data models, Database Management system - Three-schema architecture of DBMS, Components of DBMS. Entity –Relationship Model - Conceptual data modeling - motivation, entities, entity types, attributes, relationships, relationship types, E/R diagram notations, Examples

Introduction

DBMS contains information about a particular enterprise

- Collection of interrelated data
- Set of programs to access the data
- An environment that is both *convenient* and *efficient* to use

Database systems are used to manage collections of data that are:

Highly valuable

Relatively large

Accessed by multiple users and applications, often at the same time.

A modern database system is a complex software system whose task is to manage a large, complex collection of data.

Databases touch all aspects of our lives

Database Applications Examples

- **Enterprise Information**
  - Sales: customers, products, purchases
  - Accounting: payments, receipts, assets
  - Human Resources: Information about employees, salaries, payroll taxes.
- **Manufacturing:** management of production, inventory, orders, supply chain.
- **Banking and finance**
  - customer information, accounts, loans, and banking transactions.
  - Credit card transactions
  - Finance: sales and purchases of financial instruments (e.g., stocks and bonds; storing real-time market data
- **Universities:** registration, grades

Database Applications Examples

- Airlines: reservations, schedules
- Telecommunication: records of calls, texts, and data usage, generating monthly bills, maintaining balances on prepaid calling cards
- Web-based services
  - Online retailers: order tracking, customized recommendations
  - Online advertisements
- Document databases
- Navigation systems: For maintaining the locations of varies places of interest along with the exact routes of roads, train systems, buses, etc.

Purpose of Database Systems

- **Data redundancy and inconsistency**: data is stored in multiple file formats resulting induplication of information in different files
- **Difficulty in accessing data**
  - Need to write a new program to carry out each new task
- **Data isolation**
  - Multiple files and formats
- **Integrity problems**
  - Integrity constraints (e.g., account balance > 0) become “buried” in program code rather than being stated explicitly
  - Hard to add new constraints or change existing ones

Purpose of Database Systems

- **Atomicity of updates**
  - Failures may leave database in an inconsistent state with partial updates carried out
  - Example: Transfer of funds from one account to another should either complete or not happen at all
- **Concurrent access by multiple users**
  - Concurrent access needed for performance
  - Uncontrolled concurrent accesses can lead to inconsistencies
    - Ex: Two people reading a balance (say 100) and updating it by withdrawing money (say 50 each) at the same time
- **Security problems**
  - Hard to provide user access to some, but not all, data

TEXT BOOKS

Abraham Silberschatz, Henry F. Korth, S. Sudharshan, —Database System Concepts, Sixth Edition, Tata McGraw Hill, 2011.

RamezElmasri, Shamkant B. Navathe, —Fundamentals of Database Systems ,Sixth Edition, Pearson Education, 2011.

Tiwari, Shashank. Professional NoSQL. John Wiley& Sons, 2011

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C.J.Date, A.Kannan, S.Swamynathan, —An Introduction to Database Systems, Eighth Edition, Pearson Education, 2006.

Raghu Ramakrishnan, —Database Management Systems ,Fourth Edition, McGraw-Hill College Publications, 2015

G.K.Gupta,"Database Management Systems, Tata McGraw Hill, 2011.

S.K.Singh, "Database Systems Concepts, Design and Applications", First Edition,Pearson Education, 2009.