WELCOME!

B.Tech CSE II

DATABASE MANAGEMENT SYSTEM
BCSC0003

AGENDA

Introduction

Objective

Syllabus

Outcome

Application Areas

Hands On

Reference Books

INTRODUCTION

INTRODUCTION

INTRODUCTION

Database Management System (DBMS)

A database management system (DBMS) is a software package designed to define, manipulate, retrieve and manage data in a database.

Some DBMS examples include:
- MySQL
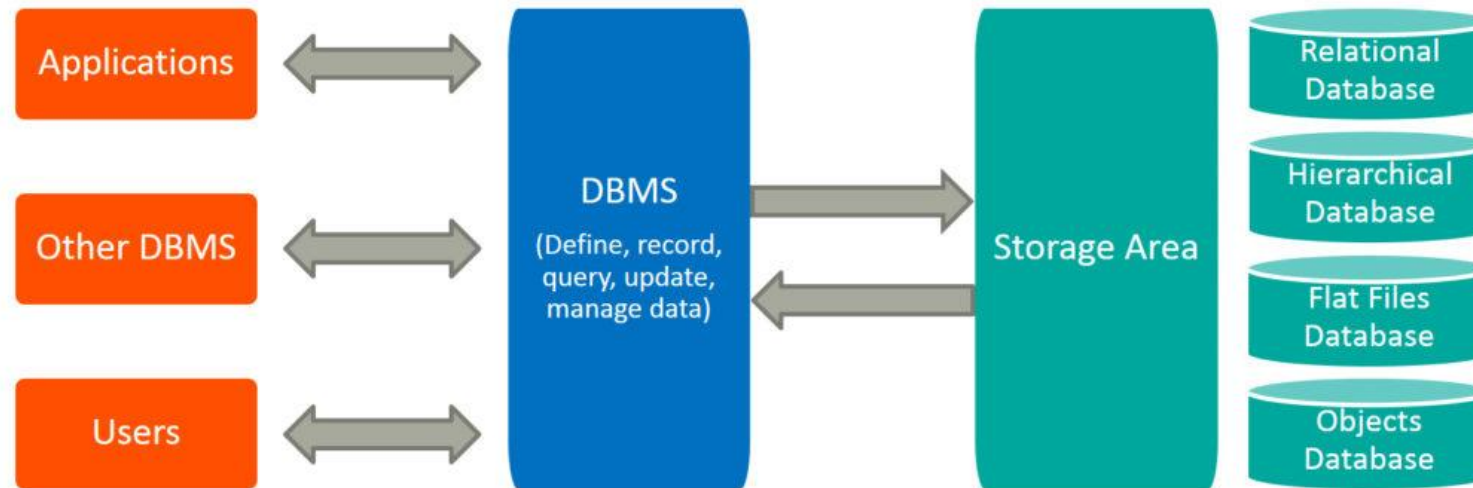- SQL Server
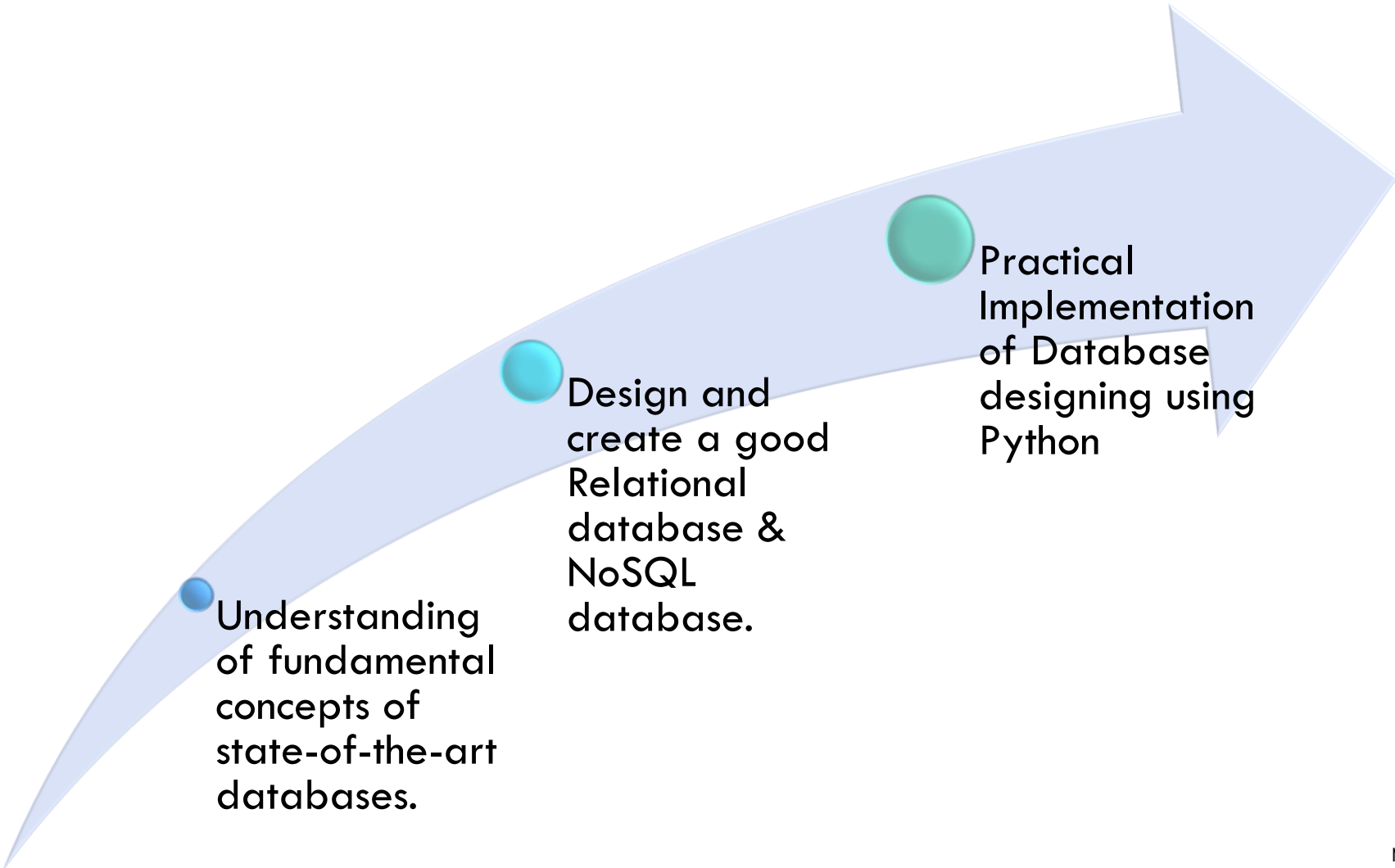- Oracle
- dBASE
- FoxPro

INTRODUCTION

INTRODUCTION

Database Management System

Applications ⟷ DBMS (Define, record, query, update, manage data) → Storage Area → Relational Database, Hierarchical Database, Flat Files Database, Objects Database

Other DBMS ⟷

Users ⟷

OBJECTIVE

Understanding of fundamental concepts of state-of-the-art databases.

Design and create a good Relational database & NoSQL database.

Practical Implementation of Database designing using Python

SYLLABUS

Module I	**Introduction:** An Overview of Database Management System, Database System Vs File System, Database System Concept and Architecture, Data Model Schema and Instances, Data Independence, Database Language and Interfaces (DDL, DML, DCL), Database Development Life Cycle (DDLC) with Case Studies.
	Data Modeling Using the Entity-Relationship Model: ER Model Concepts, Notation for ER Diagram, Mapping Constraints, Keys, Specialization, Generalization, Aggregation, Reduction of an ER Diagram to Tables, Extended ER Model.
	Relational Data Model and Language: Relational Data Model Concepts, Integrity Constraints, Entity Integrity, Referential Integrity, Keys Constraints, Domain Constraints, Relational Algebra.
	Database Design & Normalization I: Functional Dependencies, Primary Key, Foreign Key, Candidate Key, Super Key, Normal Forms, First, Second, Third Normal Forms, BCNF, Non-Redundant Cover, Canonical Cover

SYLLABUS

Module II	**Database Design & Normalization II:** 4th Normal Form, 5th Normal Form, Lossless Join Decompositions, , MVD and JDs, Inclusion Dependence.
	File Organization: Indexing, Structure of Index files and Types, Dense and Sparse Indexing
	Transaction Processing Concept: Transaction System, Testing of Serializability, Serializability of Schedules, Conflict & View Serializable Schedule, Recoverability, Recovery from Transaction Failures, Log Based Recovery, Deadlock Handling.
	Concurrency Control Techniques: Concurrency Control, Locking Techniques for Concurrency Control, 2PL, Time Stamping Protocols for Concurrency Control, Validation Based Protocol.
	Distributed Database: Introduction of Distributed Database, Data Fragmentation and Replication.

OUTCOME

Identify the basic concepts

Apply relational database theory and be able
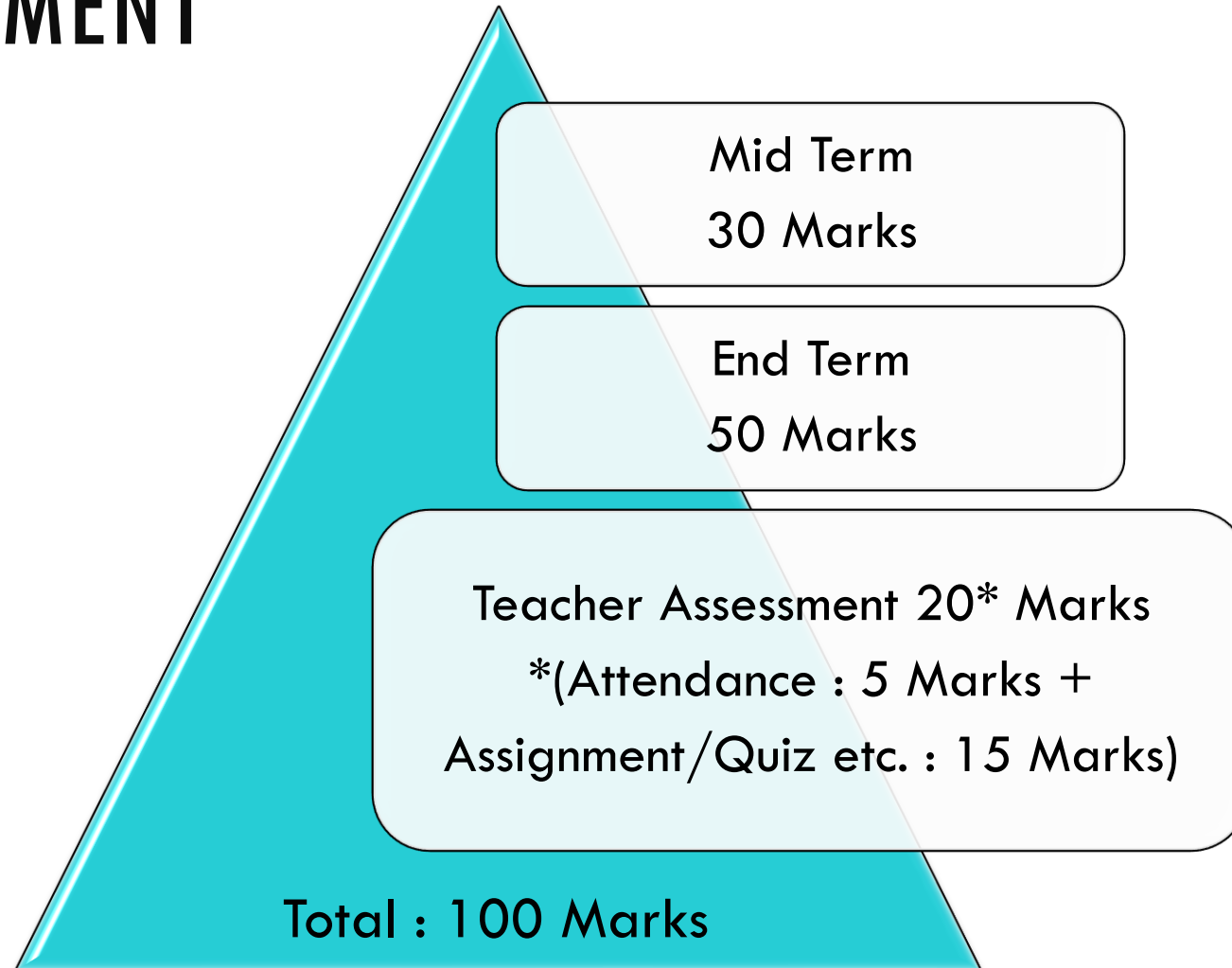to **describe** relational algebra expression for queries.

Recognize and **identify** the use of normalization and
functional dependency technique used in database design

Understand file organization concepts

Apply and **relate** the concept of transaction, concurrency
control and recovery in database.

Understand the concept of Distributed Database

ASSESSMENT

Mid Term
30 Marks

End Term
50 Marks

Teacher Assessment 20* Marks
*(Attendance : 5 Marks +
Assignment/Quiz etc. : 15 Marks)

Total : 100 Marks

APPLICATION AREAS

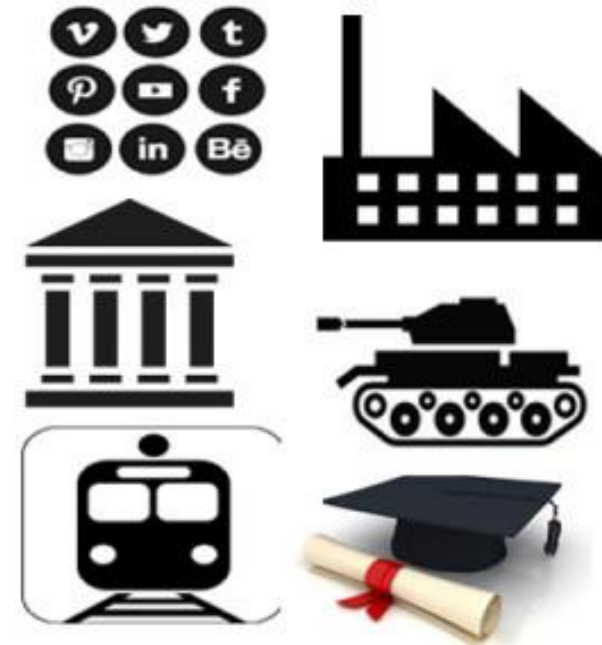**Railway Reservation System**

Banking

Universities and colleges

Credit card transactions

Social Media Sites

Telecommunications

Online Shopping

Manufacturing

HANDS ON

DBMS

NoSQL Databases

REFERENCE BOOKS
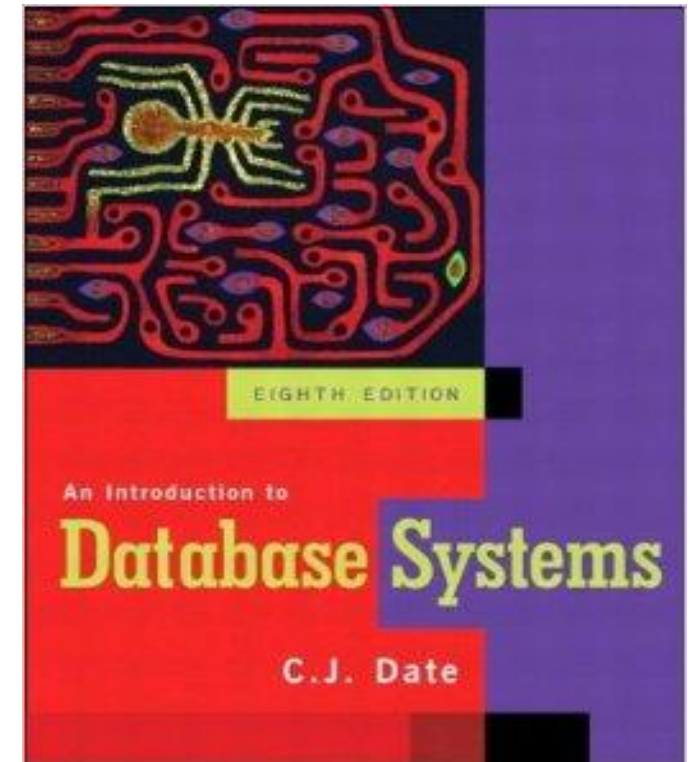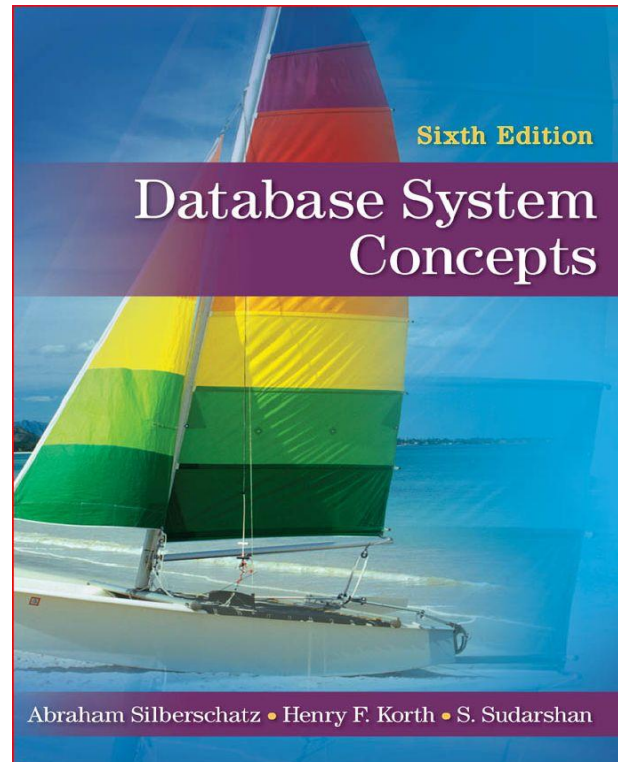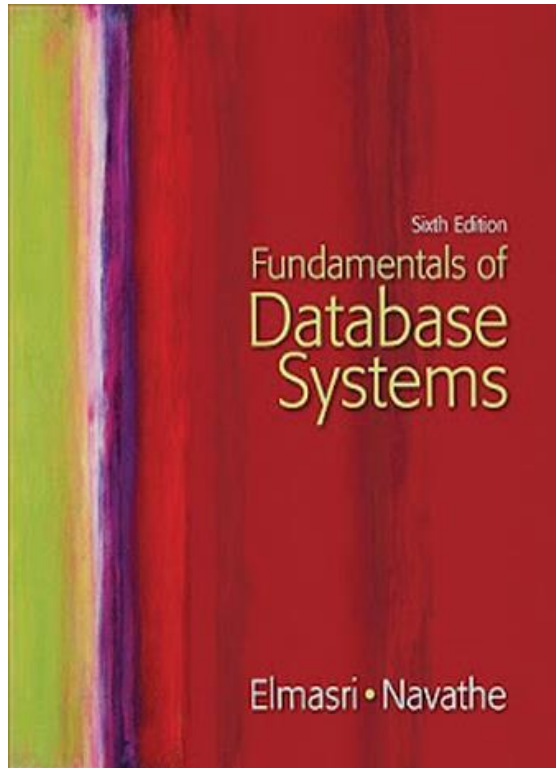
Keep Learning
Keep Growing