

Course Name: Computer Engineering Group

Course Code: CO/CM/IF/CD

Semester : Third

Subject Title : Relational Database Management Systems **Subject Code:** 9038

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme						
TH	TU	PR	Paper Hrs.	TH	Test	PR	OR	TW	Total
04	--	04	03	80	20	--	25#	25@	150

Rationale:

The primary resource that fuels knowledge power is the database. Organizations are employing mechanisms to effectively manage and utilize the data stored in the databases. Relational Database management system has been developed to harness the information stored in the database.

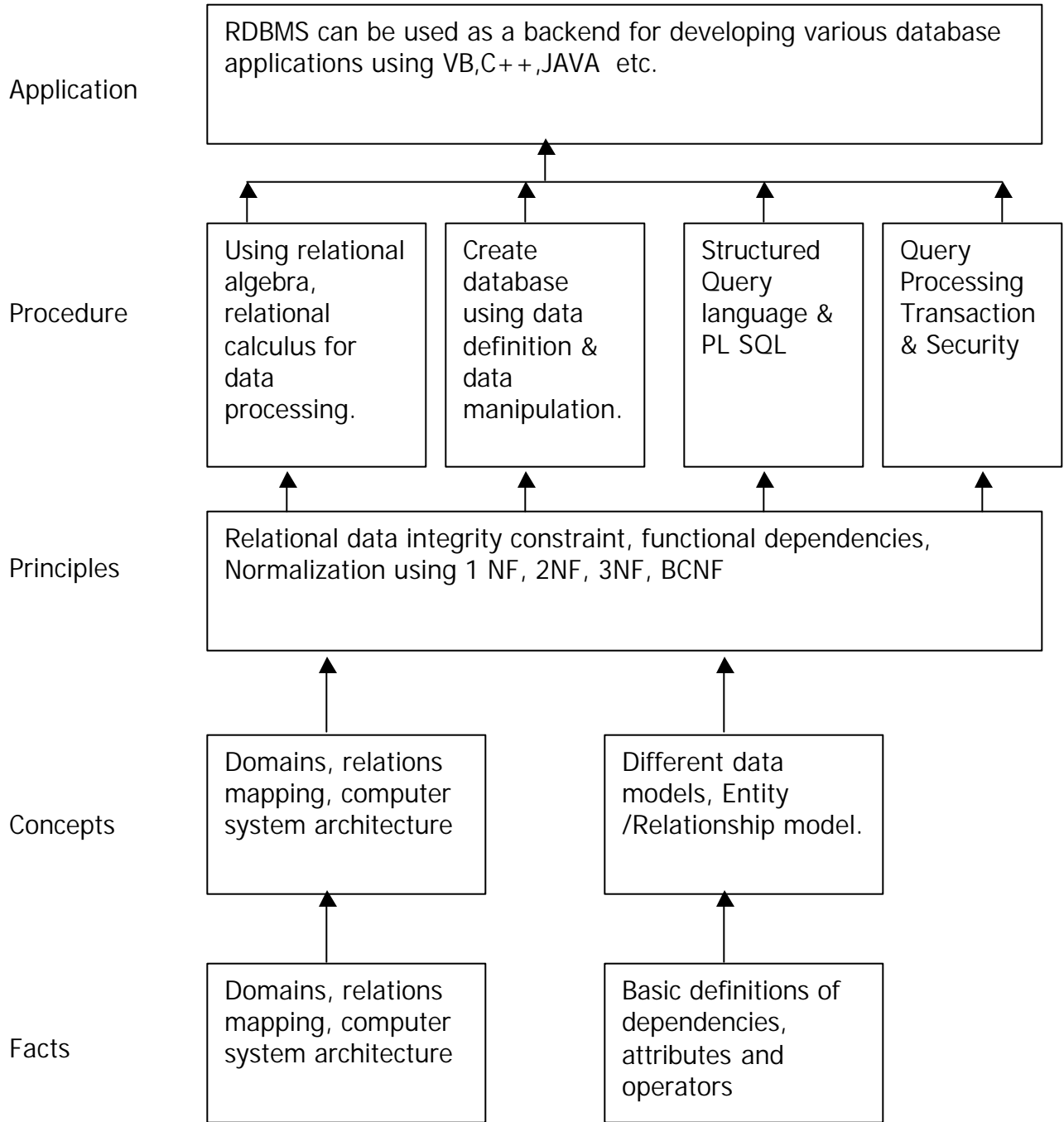
The database management system is a collection of programs that enables to store, modify and extract information from a database. After learning this subject, the students will be able to understand the designing of RDBMS and can use any RDBMS package as a backend for developing database applications.

Objectives:

The student will be able to:

- 1) Understand the concept of Database system and Client Server Architecture
- 2) Understand and develop the concepts of Data Modeling, Security and Integrity.
- 3) Understand and execute different SQL queries and PL / SQL programs.
- 4) Normalize the database using normal forms.
- 5) Understand the concept of query processing and Transaction processing.

Learning Structure:



Contents : Theory

Chapter	Name of the Topic	Hours	Marks
01	Database System Concept & Data Modeling	12	18
	1.1 Basic concepts, Advantages of a DBMS over file processing system, Data Abstraction, Database Languages, Data Independence. 1.2 Components of a DBMS and overall structure of a DBMS. 1.3 Data Models: <ul style="list-style-type: none"> • Network Model • Hierarchical Model • E-R Model 1.4 Client Server Architecture:		
02	Relational Data Model and Security and Integrity Specification	10	12
	2.1 Relational Model: Basic concepts, attributes and domains, Keys concept : Candidate and primary key, Integrity constraints: Domain ,Entity Integrity constraints and On delete cascade. 2.2 Security and Authorization. 2.3 Query Languages: <ul style="list-style-type: none"> • Relational Algebra , Relational Calculus • Views. 		
03	SQL and PL-SQL	18	20
	3.1 Introduction to SQL queries, Creating ,Inserting ,Updating and deleting tables and using constraints, Set operations & operators, Aggregate functions ,string functions and date ,time functions, Null values, Nested sub queries, Complex queries, Join concepts. 3.2 PL/SQL Introduction, PL/SQL block structure ,variables, SQL statements in PL/SQL, PL/SQL control Structures ,Cursors , Triggers , Functions , Packages, procedures. Error handling in PL/ SQL		

04	Relational Database Design, Storage and File systems.	12	16
	4.1 Purpose of Normalization, Data redundancy and updating anomalies, Functional Dependencies and Decomposition, Process of Normalization using 1NF, 2NF, 3NF, multivalued dependencies and BCNF. 4.2 E-R Model details. 4.3 File Organization, Organization of records in files, Storage of Object Oriented databases, Basic concept of Indexing and Hashing.		
05	Query Processing and Transaction Processing	12	14
	5.1 General strategies for query processing, Equivalence expressions, Selection & join operation. 5.2 Concept of transaction, States of transactions, Concurrent Executions, Serializability Recoverability, Transaction Definition in SQL. 5.3 Lock based protocols : share & exclusive models, Protocols: <ul style="list-style-type: none"> • 2 phase locking • Time-Stamp based • Validation based • Multiple granularity 5.4 Deadlock handling, <ul style="list-style-type: none"> • Deadlock prevention, detection & recovery. 		
	Total	64	80

Practical:

Skills to be developed:

Intellectual skills:

1. Develop the fields of data base
2. Decide proper specifications
3. Query Processing and transaction processing

Motor skills:

1. Prepare appropriate data tables
2. Sequential writing of steps

List of Practical:

- 1) Creating & Executing DDL in SQL.
- 2) Creating & Executing Integrity constraints in SQL.
- 3) Creating & Executing DML in SQL.
- 4) Executing relational , logical and mathematical set operators using SQL.
- 5) Executing group functions
- 6) Executing string operators & string functions.
- 7) Executing Date & Time functions.
- 8) Executing Data Conversion functions.
- 9) Executing DCL in SQL.
- 10) Executing Sequences and synonyms in SQL.
- 11) Execute 50 SQL queries (operators, functions, clauses, join concepts)
- 12) Program for declaring and using variables and constant using PL/SQL.
- 13) Program using if then else in PL/SQL
- 14) Program using for loop & while loop in PL/SQL.
- 15) Program using nested loop in PL/SQL.

Learning Resources:**Books:**

Sr .No.	Author	Title	Publisher
01	Korth	Database System Concepts	Sudarshan
02	2006 ISRD Group	Introduction to Database Management Systems	Tata McGrawHill.
03	Bipin Desai	An Introduction to Database System	Galgotia Publication
04	C.J Date	An Introduction to Database System	
05	Allen	Introduction to Relational Databases and SQL programming	Tata McgrawHill