

Relational Database Management System

Semester III	Subject Code: BC31601	Lectures: 60
---------------------	------------------------------	---------------------

Objectives:

The syllabus aims in equipping students with,

- Understanding relational database concepts
- Learning transaction management concepts in database system
- Writing programs in PL/SQL that use procedure, function, package, cursor and trigger

Unit 1: Introduction to RDBMS and PL/SQL	14
<ul style="list-style-type: none"> • Introduction to RDBMS • Difference Between DBMS and RDBMS • Relationship among application programs and RDBMS • Overview of PL/SQL • Data types: %type, %rowtype, numeric, character, date • Operators and Control Statements • Exception Handling: Predefined, User-defined • Functions, Procedures • Cursor: Definition, types (Implicit, Explicit, Parameterized) • Trigger • Package 	

Unit 2: Transaction Management	06
<ul style="list-style-type: none"> • Transaction Concept • Transaction Properties • Transaction States • Concurrent Execution • Serializability: Types: Conflict and View Serializability • Recoverability • Recoverable Schedule • Cascadeless Schedule 	



Unit 3: Concurrency Control	12
<ul style="list-style-type: none"> • Lock Based Protocol : Locks, Granting of Locks, Two Phase locking Protocol • Timestamp Based Protocol : Timestamp, Timestamp Ordering Protocol , Thomas Write Rule • Validation Based Protocol • Deadlock Handling: <ul style="list-style-type: none"> ➤ Deadlock Prevention ➤ Deadlock Detection ➤ Deadlock Recovery 	

Unit 4: Recovery System	08
<ul style="list-style-type: none"> • Failure Classification : Transaction Failure, System Crash, Disk Failure • Storage Structures: Storage Types, Data Access • Recovery and Atomicity <ul style="list-style-type: none"> ➤ Log based Recovery ➤ Deferred Database Modification ➤ Immediate Database Modification ➤ Checkpoints • Recovery with Concurrent Transaction : Transaction Rollback, Restart Recovery • Remote Backup System 	

Unit 5: Database Security and Authorization	08
<ul style="list-style-type: none"> • Introduction to Database Security and Issues : Types of Security, Database Security and the DBA, Access Protection, User accounts and Database Audit • Discretionary Access Control Based on Granting and Revoking Privileges: Types of Discretionary Privileges, Specifying Privileges using views, Revoking Privileges, Propagation of Privileges using GRANT option, Specifying limits on Propagation of Privileges 	



- Mandatory Access Control and Role-Based Access Control for Multilevel security: Comparing Discretionary Access Control and Mandatory Access Control, Role-Based Access Control, Access Control Policies for E-commerce and the Web

***Contact hours – 12 hours**

Recommended Text Book:

- ✓ 1. *Relational Database Management Systems*, Prof Sheetal Takale , Prof Abhijeet Mankar
Nirali Prakashan Publication 2014
- ✓ 2. *Relational Database Management Systems*, Prof Gautam Kudale , Prof Pawar Vision
Publication 2014

Reference Books:

1. Henry korth and A. Silberschatz, *Database System Concepts*, 5th edition; 2006
2. Ivan Bayross, *SQL, PL/SQL The Programming Language Oracle*, BPB Publication.
3. RamezElmasri, ShamkantNavathe, *Fundamentals of Database system*, 5th edition; 2008

