

GUJARAT TECHNOLOGICAL UNIVERSITY

DIPLOMA IN COMPUTER ENGINEERING

Semester: 4

Subject Name Relational Database Management System

Sr. No.	Course content
1.	<p>1. Advanced SQL</p> <p>1.1 Transaction control and DCL</p> <p> 1.1.1 Transaction control</p> <p> 1.1.1.1 COMMIT,SAVEPOINT,ROLLBACK</p> <p> 1.1.2 DCL</p> <p> 1.1.2.1 GRANT AND REVOKE</p> <p>1.2 Locks</p> <p> 1.2.1 Types of locks</p> <p> 1.2.2 Row level locks ,table level ,locks, share LOCK, EXCLUSIVE LOCK, Exclusive lock, deadlock</p> <p>1.3 Database Object</p> <p> 1.3.1 Synonym</p> <p> 1.3.1.1 Create synonym</p> <p> 1.3.2 Sequences</p> <p> 1.3.2.1 Create and alter sequences</p> <p> 1.3.3 Views</p> <p> 1.3.3.1 Create/Replace views, Update and alter views</p> <p> 1.3.4 Index</p> <p> 1.3.4.1 Unique and composite</p>
2.	<p>2. PL/SQL</p> <p>2.1 Introduction</p> <p>2.2 Advantages</p> <p>2.3 Datatypes</p> <p>2.4 Control structures</p> <p> 2.4.1 Conditional, Iterative, Sequential</p> <p>2.5 Concepts of error handling</p> <p> 2.5.1 Predefined Exceptions.</p> <p> 2.5.2 User defined exceptions.</p> <p>2.6 Exception and Cursor Management</p> <p> 2.6.1 Static (Implicit & Explicit)</p> <p> 2.6.2 Dynamic</p> <p>2.7 Sub packages and Packages</p> <p> 2.7.1 Procedures & Functions</p> <p> 2.7.2 Package specification, Package body, Advantage of package.</p>

3.	3. TRIGGERS 3.1 Data base Triggers 3.2 Creating Triggers 3.2.1 Types of Triggers 3.2.1.1 Before, after for each row, for each statement
4.	4. Functional Dependency and Decomposition 4.1 Introduction 4.2 Functional Dependency 4.2.1 Functional dependency diagram and examples 4.2.2 Full function dependency (FFD) 4.2.3 Armstrong's Axioms for functional dependencies 4.2.4 Redundant functional dependencies 4.2.5 Closures of a set of functional dependencies 4.3 Decomposition 4.3.1 Lossy Decomposition 4.3.2 Lossless join decomposition 4.3.3 Dependency-Preserving Decomposition
5.	5. Normalization 5.1 Introduction 5.2 Normalization 5.3 Normal Forms 5.3.1 First Normal Form 5.3.2 Second Normal Form 5.3.3 Third Normal Form 5.4 Boyce-codd Normal Forms (BCNF) 5.5 Multi-valued dependencies and Fourth Normal Form 5.5.1 Properties of MVDs 5.5.2 Fourth Normal Form 5.5.3 Problems with MVDs and 4NF 5.6 Join Dependencies and Fifth Normal Forms (5NF) 5.6.1 Join Dependency 5.6.2 Fifth Normal Form
6.	6. Transaction Processing and Concurrency Control 6.1 Introduction 6.2 Transaction Concepts 6.3 Concurrency 6.4 Locking Methods for concurrency control 6.5 Timestamp methods for concurrency control 6.6 Optimistic methods for concurrency control
7.	7. Database Recovery System 7.1 Introduction 7.2 Database Recovery Concepts 7.2.1 Database backup 7.3 Types of database failures 7.4 Types of database recovery 7.5 Recovery techniques 7.6 Buffer management

8.	8. Database Security 8.1 Introduction 8.2 Goals of Database Security 8.2.1 Threats to database security 8.2.2 Types of database security issues 8.2.3 Authorization and authentication 8.3 Discretionary Access Control 8.3.1 Granting/Revoking Privileges 8.3.2 Audit Trails 8.4 Mandatory Access Control 8.5 Firewalls 8.6 Statistical Database Security 8.7 Data Encryption
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LABORATORY EXPERIENCES :

1. Create synonyms, sequence and index.
2. Create, alter and update views.
3. Create PL/SQL programmes using crushers, control structures, exception handling.
4. Create simple triggers.
5. Create package using procedure and functions.
6. Create users, Grant and revoke privileges.
7. Practice on Normalizations

Reference Books:

1. Database Systems Concepts, design and Applications S. K. Singh Pearson Education
2. Database System Concepts, Henry Korth, MGH
3. Database Systems Design, Implementation And Management Seventh or higher ed. Peter Rob /Carlost Coronel Cengage Learning
4. An Introduction to Database Systems C. J. Date Pearson Education
5. Sql/ Pl/SQL Ivan Bayross BPB
6. Oracle Pl/sql by example Rosenzweig & Rakhimov Pearson

