Semester - V

Subject Name: Advance Database Management System

Subject Code: 09CE1502

Objective: This subject is related with the composition of database for business and engineering application. After the finish of this course the students will most likely compose simple and advanced PL/SQL code blocks, use advanced features such as ref cursors and bulk fetches and database designing with normalization. Thus students will be able to design database for their projects in upcoming semester.

Credits Earned: 3 Credits

Course Outcomes: End of this course will help to understand following aspects.

- Apply different Normalization methods.
- Execute different advance SQL queries link with Transaction Processing and Locking using approach of Concurrency control.
- Perform PL/SQL programming utilizing idea of Database Object, Cursor Management, Package and Triggers.
- Determine usage of Privileges, Indexes.
- Know Functional Dependency and Functional Decomposition.

Pre-requisite of course: Database Management system

Teaching and Examination Scheme

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE	IA	CSE	Viva	Term work	
2	0	2	3	50	30	20	25	25	150

Contents:

Unit	Topics	Contact Hours
1	**Functional Dependency and Decomposition:** Introduction to functional dependency, key terms for functional dependency, rules of functional dependency, types of functional dependency: Multivalued dependency, trivial functional dependency, non-trivial functional dependency, transitive dependency Decomposition, types of decomposition: Lossy decomposition, Lossless decomposition, Dependency-Preserving decomposition	8
2	**Normalization:** Introduction to normalization, Normal Form: First Normal Form(1NF), Second Normal Form(2NF), Third Normal Form(3NF), Boyce Codd Normal Form(BCNF)	4
3	**Transaction and Concurrency :** Transaction concept, ACID property, basics of Concurrency, method of Concurrency control: Locking method, Timestamp method, Optimistic method	5
4	**Advanced SQL:** Index: types of Index, creation of Index View: Creating view, update view Sequence: Creating sequence, Altering sequence, Dropping sequence Privileges: Grant and Revoke	5
5	**PL/SQL:** Advantages of PL/SQL, datatypes, variables, control structure: condition control, iterative control, sequential control, PL/SQL Transactions: Commit, Rollback, Savepoint, Cursor: basics of cursor, type of cursor PL/SQL Security: Locks, types of locks, levels of lock PL/SQL Database Objects: Procedures and Functions, Package: Components of Package, need of Package, Package Specification Introduction to database Trigger, usage, types of Trigger	6
	Total Hours	**28**

References:

1. Ivan Bayross, “SQL, PL/SQL”, BPB Publication, fourth edition
2. P. S. Deshpande, “SQL & PL/SQL for Oracle 10g”, dreamtech press
3. C. J. Date, “An Introduction to Database System” , Pearson Education, eighth edition

List of Experiments:

1. Practice on Normalization – utilizing following table perform different types of normalization form.

PET ID	PET NAME	PET TYPE	PET AGE	OWNER	VISIT DATE	PROCEDURE
246	ROVER	DOG	12	SAM COOK	JAN 13/2002 MAR 27/2002 APR 02/2002	01 - RABIES VACCINATION 10 - EXAMINE and TREAT WOUND 05 - HEART WORM TEST
298	SOPT	DOG	2	TERRY KIM	JAN 21/2002 MAR 10/2002	08 - TETANUS VACCINATION 05 - HEART WORM TEST
341	MORRIS	CATE	4	SAM COOK	JAN 23/2001 JAN 13/2002	01 - RABIES VACCINATION 01 - RABIES VACCINATION
519	TWEEDY	BIRD	2	TERRY KIM	APR 30/2002 APR 30/2002	20 - ANNUAL CHECK UP 12 - EYE WASH

2. Perform transaction process on databases.
3. Practice on functional dependencies.
4. Perform queries for Grant and Revoke privileges.
5. Perform queries for creating, altering sequence.
6. Perform queries for creating index.
7. Perform queries for views.
8. Perform PL/SQL programme to check whether given number is prime or not.
9. Perform PL/SQL programme to swap two numbers.
10. Perform PL/SQL programmes on procedures and functions.
11. Perform PL/SQL programmes using cursors.
12. Create triggers for insertion and updation.
13. Create a trigger that does not allow insert, update and delete operation on table.
14. Perform and implement the programmes on database packages.
15. Implement concurrency control using lock operation.

Instructional Method:

a) The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, also need to use ICT tools and facilities.
b) The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.
c) Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory.

Supplementary Resources:

Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory.

a) https://onlinecourses.nptel.ac.in/noc18_cs15/preview