23CS22P2 - DATABASE MANAGEMENT SYSTEMS LAB

(Common to CSE, CSE(DS), CSE (AI&ML), and IT)

Course Category:	Professional Core	Credits:	1.5
Course Type:	Practical	Lecture-Tutorial-Practical:	0-0-3
Prerequisite:	Database Management Systems Concepts, Relational Algebra and Calculus.	Sessional Evaluation: Univ. Exam Evaluation: Total Marks:	30 70 100

	Students undergoing this course are expected:
Objectives:	• Populate and query a database using SQL DDL/DML Commands • Declare and enforce integrity constraints on a database • Writing Queries using advanced concepts of SQL • Programming PL/SQL including procedures, functions, cursors and triggers.

		Upon successful completion of the course, the students will be able to:
Course Outcomes	CO1	Utilizing Data Definition Language (DDL), Data Manipulation Language (DML) and Data Control Language (DCL) commands effectively within a database environment (L3)
	CO2	Constructing and execute queries to manipulate and retrieve data from databases.(L3)
	CO3	Develop application programs using PL/SQL. (L3)
	CO4	Analyze requirements and design custom Procedures, Functions, Cursors, and Triggers, leveraging their capabilities to automate tasks and optimize database functionality (L4)
	CO5	Establish database connectivity through JDBC (Java Database Connectivity) (L3)
Course Content		**Sample Experiments** 1. Creation, altering and droping of tables and inserting rows into a table (use constraints while creating tables) examples using SELECT command. 2. Queries (along with sub Queries) using ANY, ALL, IN, EXISTS, NOT EXISTS, UNION, INTERSET, Constraints. Example:- Select the roll number and name of the student who secured fourth rank in the class. 3. Queries using Aggregate functions (COUNT, SUM, AVG, MAX and MIN), GROUP BY, HAVING, and Creation and dropping of Views. 4. Queries using Conversion functions (to_char, to_number and to_date), string functions (Concatenation, lpad, rpad, ltrim, rtrim, lower, upper, initcap, length, substr and instr), date functions (Sysdate, next_day, add_months, last_day, months_between, least, greatest, trunc, round, to_char, to_date) 5. i. Create a simple PL/SQL program which includes declaration section,

	executable section and exception –Handling section (Ex. Student marks can be selected from the table and printed for those who secured first class and an exception can be raised if no records were found) ii. Insert data into student table and use COMMIT, ROLLBACK and SAVEPOINT in PL/SQL block. 6. Develop a program that includes the features NESTED IF, CASE and CASE expression. The program can be extended using the NULLIF and COALESCE functions. 7. Program development using WHILE LOOPS, numeric FOR LOOPS, nested loops using ERROR Handling, BUILT –IN Exceptions, USE defined Exceptions, RAISEAPPLICATION ERROR. 8. Programs development using creation of procedures, passing parameters IN and OUT of PROCEDURES. 9. Program development using creation of stored functions, invoke functions in SQL Statements and write complex functions. 10. Develop programs using features parameters in a CURSOR, FOR UPDATE CURSOR, WHERE CURRENT of clause and CURSOR variables. 11. Develop Programs using BEFORE and AFTER Triggers, Row and Statement Triggers and INSTEAD OF Triggers 12. Create a table and perform the search operation on table using indexing and non-indexing techniques. 13. Write a Java program that connects to a database using JDBC 14. Write a Java program to connect to a database using JDBC and insert values into it. 15. Write a Java program to connect to a database using JDBC and delete values from it

Text Books & References Books	**TEXT BOOKS:**
	  1. Oracle: The Complete Reference by Oracle Press
	  2. Nilesh Shah, "Database Systems Using Oracle", PHI, 2007
	  3. Rick F Vander Lans, "Introduction to SQL", Fourth Edition, Pearson Education, 2007
	
	REFERENCES BOOKS:
	1. Oracle for Professionals, The X Team, S.Shah and V. Shah, SPD.
	2. Database Systems Using Oracle: A Simplified guide to SQL and PL/SQL,Shah, PHI.
	3. Fundamentals of Database Management Systems, M. L. Gillenson, Wiley Student Edition

E-Resources	1.https://onlinecourses.nptel.ac.in/noc18_cs15/preview 2.http://nptel.ac.in/courses/106106093/ 3.http://nptel.ac.in/courses/106106095/