PUNE INSTITUTE OF COMPUTER TECHNOLOGY
DHANKAWADI, PUNE –43

LIST OF LAB EXPERIMENTS

ACADEMIC YEAR: 2023- 2024

DEPARTMENT: **COMPUTER ENGINEERING** DATE: **14/07/2023**

CLASS : **T.E** SEMESTER : **I**

SUBJECT : **Database Management System Laboratory**

LAB Expt. No.	PROBLEM STATEMENT	Course Outcome
	Suggested list of Laboratory Experiments/Assignments Assignments from all groups (A, B, C) are compulsory	
	GroupA:SQL and PL/SQL	
1.	**ER Modeling and Normalization:** Decide a case study related to real time application in group of 2-3 students and formulate a problem statement for application to be developed. Propose a Conceptual Design using ER features using tools like ERD plus, ER Win etc. (Identifying entities, relationships between entities, attributes, keys, cardinalities, generalization, specialization etc.) Convert the ER diagram into relational tables and normalize Relational data model. Note: Student groups are required to continue same problem statement throughout all the assignments in order to design and develop an application as a part Mini Project. Further assignments will be useful for students to develop a backend for system. To design front end interface students should use the different concepts learnt in the other subjects also.	CO1
2.	**SQL Queries:** a. Design and Develop SQLDDL statements which demonstrate the use of SQL objects such as Table, View, Index, Sequence, Synonym, different constraints etc. b. Write at least 10 SQL queries on the suitable database application using SQL DML statements. Note: Instructor will design the queries which demonstrate the use of concepts like Insert,Select, Update, Delete with operators, functions, and set operator etc.	CO2
3.	**SQL Queries all types of Join, Sub-Query and View:** Write at least10 SQL queries for suitable database application using SQL DML statements. Note: Instructor will design the queries which demonstrate the use of concepts like all types of Join ,Sub-Query and View	CO2
4.	**Unnamed PL/SQL code block: Use of Control structure and Exception handling is mandatory.** Suggested Problem statement: Consider Tables:	CO2

	1. Borrower(Roll_no, Name, Date of Issue, Name of Book, Status) 2. Fine(Roll_no, Date, Amt) • Accept Roll_no and Name of Book from user. Check the number of days (from date of issue). • If days are between 15 to 30 then fine amount will be Rs 5per day. • If no. of days>30, per day fine will be Rs 50 per day and for days less than 30, Rs. 5 per day. • After submitting the book, status will change from I to R. • If condition of fine is true, then details will be stored into fine table. • Also handles the exception by named exception handler or user define exception handler. **OR** Write a PL/SQL code block to calculate the area of a circle for a value of radius varying from 5 to 9. Store the radius and the corresponding values of calculated area in an empty table named areas, consisting of two columns, radius and area. Note: Instructor will frame the problem statement for writing PL/SQL block in line with above statement.	
5.	**Named PL/SQL Block: PL/SQL Stored Procedure and Stored Function.** Write a Stored Procedure namely proc_Grade for the categorization of student. If marks scored by students in examination is <=1500 and marks>=990 then student will be placed in distinction category if marks scored are between 989 and900 category is first class, if marks899and 825 category is Higher Second Class. Write a PL/SQLblock to use procedure created with above requirement. Stud_Marks(name, total_marks) Result(Roll,Name, Class) Note: Instructor will frame the problem statement for writing stored procedure and Function in line with above statement.	CO2
6.	**Cursors: (All types: Implicit, Explicit, Cursor FOR Loop, Parameterized Cursor)** Write a PL/SQL block of code using parameterized Cursor, that will merge the data available in the newly created table N_EmpId with the data available in the table O_EmpId. If the data in the first table already exist in the second table then that data should be skipped.	CO2
7.	**Database Trigger (All Types: Row level and Statement level triggers, Before and After Triggers).** Write a database trigger on Library table. The System should keep track of the records that are being updated or deleted. The old value of updated or deleted records should be added in Library_Audit table. Note: Instructor will Frame the problem statement for writing PL/SQLblock for all types of Triggers in line with above statement.	CO2
8	**Database Connectivity:** Write a program to implement MySQL/Oracle database connectivity with any front end language to implement Database navigation operations (add, delete, edit etc.)	CO2, CO4

	Group B: NoSQL Databases	
1.	**MongoDB Queries:** DesignandDevelopMongoDBQueriesusingCRUDoperations.(UseCRUDoperations, SAVE method, logical operators etc.).	CO3
2.	**MongoDB Aggregation and Indexing:** Design and Develop MongoDB Queries using aggregation and indexing with suitable example using MongoDB	CO3
3.	**MongoDB Map-reduces operations:** Implement Map reduces operation with suitable example using MongoDB.	CO3
4.	**Database Connectivity:** Write a program to implement Mongo DB database connectivity with any front end language to implement Database navigation operations(add, delete, edit etc.)	CO3, CO4
	Group C Mini Project :	
1.	Using the **database concepts covered in Group A and Group B**, develop an application with following details: 1. Follow the same problem statement decided in Assignment -1 of Group A. 2. Follow the Software Development Life cycle and other concepts learnt in **Software Engineering Course** throughout the implementation. 3. Develop application considering: • Front End: Java/Perl/PHP/Python/Ruby/.net/any other language • Backend : MongoDB/ MySQL/Oracle 4. Test and validate application using Manual/Automation testing. 5. Student should develop application in group of 2-3 students and submit the Project Report which will consist of documentation related to different phases of Software Development Life Cycle: • Title of the Project, Abstract, Introduction • Software Requirement Specification • Conceptual Design using ER features, Relational Model in appropriate Normalize form • Graphical User Interface, Source code • Testing document • Conclusion. **Note:** • Instructor should maintain progress report of mini project throughout the semester from project group. • Practical examination will be on assignments given above in Group A and Group B only • Mini Project in this course should facilitate the Project Based Learning among students	CO4

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