Course Code	Course Title	L	T	P	C
MCSE506P	Database Systems Lab	0	0	2	1
Pre-requisite	NIL	Syllabus version			
		1.0			

Course Objectives

1. To understand the underlying principles of Relational Database Management System.
2. To focus on the modeling and design of secure databases and usage of advanced data models.
3. To implement and maintain the structured, semi structured and unstructured data.

Course Outcome

1. Construct database queries using Structured Query Language (SQL)
2. Design and implement applications that make use of distributed fault-tolerant databases.
3. Apply Spatial and Multimedia Database concepts to solve real-world problems.
4. Implement applications that work with structured, semi-structured, and unstructured databases
5. Create applications that use cloud storage technologies and relevant distributed file systems

Indicative Experiments

1.	Study of Basic SQL Commands. Model any given scenario into ER/EER Model
2.	Table creation with constraints, alter schema, insert values, aggregate functions, simple and complex queries with joins, Views, Subqueries.
3.	PL/SQL-Procedures, Cursors, Functions, Triggers
4.	Partition a given database based on the type of query and compares the execution speed of the query with/without parallelism.
5.	Create a distributed database scenario, insert values, fragment and replicate the database Query the distributed database
6.	Consider a schema that contains the following table with the key underlined: Employee (Eno, Ename, Desg, Dno). Assume that we horizontally fragment the table as follows: Employee1(Eno; Ename; Desg; Dno), where 1<= Dno <=10 Employee2(Eno; Ename; Desg; Dno), where 11 <= Dno <=20 Employee3(Eno; Ename; Desg; Dno), where 21 <= Dno <=30 In addition, assume we have 4 sites that contain the following fragments: • Site1 has Employee1 • Site2 has Employee2 • Site3 has Employee2 and Employee3 • Site4 has Employee1 Implement at least 5 suitable queries on Employee fragments. Add relations to the database as per your requirements.
7.	Plot points, lines, and polygons using Spatial Databases such as Oracle Spatial, PostgreSQL, Microsoft SQL Server etc
8.	• Use Spatial Databases to store data using Latitude and Longitude, find the distance between two spatial objects, find the area of a polygon • Store and retrieve images from a multimedia database
9.	Create an XML document and validate it against an XML Schema/DTD. Use XQuery to query and view the contents of the database

10.	Execute XPATH expressions on a database.			
11.	Perform the following using a MongoDB Database • Create an Employee Collection and insert a few documents (sample document given below for reference) { "name" : "Satish", "salary" : 30000, "address" : "Vellore", "school" : "SCOPE“ } • Display all employees whose address is vellore and salary is greater than 30000 • Update the salary for an employee by name ‘Ram’ as 40000 • Display only name and salary for all employees in the collection • Display all employees who are not from ‘SCOPE’ school • Display only documents that contains the address property			
12.	Create an application that interacts with a cloud database.			
			Total Laboratory Hours	**30 hours**
Text Book(s)				
1.	D Abraham Silberschatz, Henry F. Korth, S. Sudarshan “Database System Concepts” 7th Edition McGraw Hill, 2021			
Reference Books				
1.	Elmasri and Navathe “Fundamentals of Database Systems”, 7th Edition Addison Wesley, 2014			
2.	Thomas Connolly, Carolyn Begg “Database Systems: A Practical Approach to Design, Implementation and Management” 6th Edition, Pearson India, 2015			
3.	Mishra, Sanjay, and Alan Beaulieu. Mastering Oracle SQL: Putting Oracle SQL to Work. O'Reilly Media, Inc., 2004.			
Mode of Evaluation: CAT / Mid-Term Lab/ FAT				
Recommended by Board of Studies	26-07-2022			
Approved by Academic Council	No. 67	Date	08-08-2022	