**Database Management Systems Lab**

**Course Code:**  L T P C

**Course Outcomes:** At the end of the course the student shall be able to

CO1: Provide hands on skills on SQL and ER Diagrams..(L3)

CO2: Apply nested queries and sub queries.(L3)

CO3: Demonstrate database applications with joins and views. (L3)

CO4: Apply different operations on database using PLSQL (L3)

CO5: To get hands on exposure on NOSQL(Mongo) DB and Big data Hadoop. (L3)

**LIST OF PROGRAMS:**

1. Design sample database, draw ER diagram and Study of MySQL Database Management System.
2. Draw an ER diagram for the following application from the hospital:

* A doctor has one or more patients to treat
* Each doctor has an unique Doctor ID
* Each patient has a name, phone number, address and date of birth
* Patient entity is a weak entity
* Age is a derived attribute

1. Draw an ER diagram for the following application from the manufacturing industry:

* Each supplier has a unique name.
* More than one supplier can be located in the same city.
* Each part has a unique part number.
* Each part has a colour.
* A supplier can supply more than one part.
* A part can be supplied by more than one supplier.

1. Draw an ER diagram for the following application from the ABC Company:

* Employees work for many projects and each project has many employees
* Each employee has an unique Emp\_No
* Each employee has a name and name consists of first name, middle name and last name
* Each project has an unique number and name

1. Data Definition Commands for creating database and tables (relations)
2. Create a Table for Manufacturing industry / Hospital/ Company with min 5 columns add primary key.
3. Alter any one column from the above table.
4. Rename two columns from the above table
5. Truncate the table
6. Drop the table.
7. Data Manipulation Commands for updating and retrieving of data from Tables and Transaction Control statements
8. Insert 5 values in the Table for Manufacturing industry / Hospital/ Company.
9. Update the values from the tables Manufacturing industry / Hospital/ Company.
10. Delete minimum 2 values from Manufacturing industry / Hospital/ Company table
11. Database Querying – Simple queries, Queries using aggregate functions, GROUP BY, and HAVING clauses. (https://learnsql.com/blog/examples-of-sql-group-by/)
12. Write a Group-by query for one/two columns in Manufacturing industry / Hospital/ Company table
13. Write a Having clause query for Manufacturing industry / Hospital/ Company table
14. Write a queries to make use of aggregate functions Count(),Sum(),Avg(),Min(),Max()
15. Write a Database Query for Joins, Nested queries, Sub-queries of Manufacturing industry / Hospital/ Company table.
16. PL/SQL: Procedures and Functions.
17. Write a function to square the number taken from user.
18. Write a procedure to display the records from Manufacturing industry / Hospital/ Company table
19. PL/SQL: Implicit and Explicit Cursors and Triggers.
20. Write a Trigger for purchase table where total will be calculated when value is inserted in the table.
21. 1. Use the table prodution.products with Product\_id, Product\_name, Brand\_id, Category\_id, model\_year,list\_price,

2. Declare two variables to hold product name and list price, and a cursor to hold the result of a query that retrieves product name and list price from the production.products table

3. fetch each row from the cursor and print out the product name and list price

1. Basic operations (CRUD operation) on some NoSQL databases like MongoDB, Cassandra Graph, Database (NEO4j).
2. Implement MapReduce example in MongoDB with suitable dataset.
3. Create a sample collection orders with 10 documents.
4. Perform the map-reduce operation on the orders collection to group by the cust\_id, and calculate the sum of the price for each cust\_id.
5. Hadoop and HBase installation on single node.
6. Use HBase to perform following operations

1.Create a table

2.Add, Retrieve, Modify, and delete the record(s)

3.Drop the table

TEXT BOOKS:

1. Raghurama Krishnan, Johannes Gehrke, Database Management Systems, 3rd Edition, Tata McGraw-Hill, 2014.
2. Silberschatz, Korth, Database System Concepts,6th Edition, TataMcGraw Hill, 2013
3. Dan Sullivan, NoSQL for Mere Mortals, 1st Edition, Pearson Education, 2015.
4. “Principles of Distributed Database Systems”, by M. Tamer Özsu, Patrick Valduriez, Springer
5. Big Data: Understanding How Data Powers Big Business, Bill Schmarzo, Wiley
6. Hadoop: The Definitive Guide, Fourth Edition, Tom White, O’Reilly
7. HBase: The Definitive Guide, Fourth Edition, Lars George, O’Reilly