

Ref No:

SKIT, BANGALORE



COURSE PLAN

Academic Year 2019-20

Program:	B E – Information Science & Engineering
Semester :	5
Course Code:	17CSL58
Course Title:	DATABASE MANAGEMENT SYSTEM LAB
Credit / L-T-P:	2 /1-0-2
Total Contact Hours:	40
Course Plan Author:	Mrs. Veena M. Naik

Academic Evaluation and Monitoring Cell

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## INSTRUCTIONS TO TEACHERS

- Classroom / Lab activity shall be started after taking attendance.
- Attendance shall only be signed in the classroom by students.
- Three hours attendance should be given to each Lab.
- Use only Blue or Black Pen to fill the attendance.
- Attendance shall be updated on-line & status discussed in DUGC.
- No attendance should be added to late comers.
- Modification of any attendance, over writings, etc is strictly prohibited.
- Updated register is to be brought to every academic review meeting as per the COE.

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Note : Remove "Table of Content" before including in CP Book

Each Laboratory Plan shall be printed and made into a book with cover page

Blooms Level in all sections match with A.2, only if you plan to teach / learn at higher levels

## A. LABORATORY INFORMATION

### 1. Laboratory Overview

Degree:	B.E	Program:	IS
Year / Semester :	5	Academic Year:	2019-20
Course Title:	Database base management lab with mini project	Course Code:	17CSL58
Credit / L-T-P:	2/1-0-2	SEE Duration:	180 Minutes
Total Contact Hours:	40 Hrs	SEE Marks:	80 Marks
CIA Marks:	40	Assignment	
-Lab. Plan Author:	Veena M. Naik	Sign	Dt : 03/08/19
Checked By:		Sign	Dt :

### 2. Laboratory Content

Expt.	Title of the Experiments	Lab Hours	Concept	Blooms Level
1	<p>Consider the following schema for a Library Database:</p> <p>BOOK(Book_id, Title, Publisher_Name, Pub_Year)            BOOK_AUTHORS(Book_id, Author_Name)            PUBLISHER(Name, Address, Phone)            BOOK_COPIES(Book_id, Branch_id, No-of_Copies)            BOOK_LENDING(Book_id, Branch_id, Card_No, Date_Out, Due_Date)            LIBRARY_BRANCH(Branch_id, Branch_Name, Address)</p> <p>Write SQL queries to</p> <ol style="list-style-type: none"> <li>1. Retrieve details of all books in the library – id, title, name of publisher, authors, number of copies in each branch, etc.</li> <li>2. Get the particulars of borrowers who have borrowed more than 3 books, but from Jan 2017 to Jun 2017.</li> <li>3. Delete a book in BOOK table. Update the contents of other tables to reflect this data manipulation operation.</li> <li>4. Partition the BOOK table based on year of publication. Demonstrate its working with a simple query.</li> <li>5. Create a view of all books and its number of copies that are currently available in the Library.</li> </ol>	06	Entity relationship	L5
2	<p>Consider the following schema for Order Database:</p> <p>SALESMAN(Salesman_id, Name, City, Commission)            CUSTOMER(Customer_id, Cust_Name, City, Grade, Salesman_id)            ORDERS(Ord_No, Purchase_Amt, Ord_Date, Customer_id, Salesman_id)</p> <p>Write SQL queries to</p> <ol style="list-style-type: none"> <li>1. Count the customers with grades above Bangalore's average.</li> <li>2. Find the name and numbers of all salesman who had more than one customer.</li> <li>3. List all the salesman and indicate those who have and don't have customers in their cities (Use UNION operation.)</li> <li>4. Create a view that finds the salesman who has the customer with the highest order of a day.</li> <li>5. Demonstrate the DELETE operation by removing salesman with id 1000. All his orders must also be deleted.</li> </ol>	06	Relational algebra	L5
3	<p>Consider the schema for Movie Database:</p> <p>ACTOR(Act_id, Act_Name, Act_Gender)            DIRECTOR(Dir_id, Dir_Name, Dir_Phone)            MOVIES(Mov_id, Mov_Title, Mov_Year, Mov_Lang, Dir_id)            MOVIE_CAST(Act_id, Mov_id, Role)            RATING(Mov_id, Rev_Stars)</p> <p>Write SQL queries to</p> <ol style="list-style-type: none"> <li>1. List the titles of all movies directed by 'Hitchcock'.</li> </ol>	06	View creation	L5

	<p>2. Find the movie names where one or more actors acted in two or more movies.</p> <p>3. List all actors who acted in a movie before 2000 and also in a movie after 2015 (use JOIN operation).</p> <p>4. Find the title of movies and number of stars for each movie that has at least one rating and find the highest number of stars that movie received. Sort the result by movie title.</p> <p>5. Update rating of all movies directed by 'Steven Spielberg' to 5.</p>			
4	<p>Consider the schema for College Database:</p> <p>STUDENT(USN, SName, Address, Phone, Gender)</p> <p>SEMSEC(SSID, Sem, Sec)</p> <p>CLASS(USN, SSID)</p> <p>SUBJECT(Subcode, Title, Sem, Credits)</p> <p>IAMARKS(USN, Subcode, SSID, Test1, Test2, Test3, FinallA)</p> <p>Write SQL queries to</p> <ol style="list-style-type: none"> <li>1. List all the student details studying in fourth semester 'C' section.</li> <li>2. Compute the total number of male and female students in each semester and in each section.</li> <li>3. Create a view of Test1 marks of student USN '1Bl15CS101' in all subjects.</li> <li>4. Calculate the FinallA (average of best two test marks) and update the corresponding table for all students.</li> <li>5. Categorize students based on the following criterion: If FinallA = 17 to 20 then CAT = 'Outstanding' If FinallA = 12 to 16 then CAT = 'Average' If FinallA &lt; 12 then CAT = 'Weak'</li> </ol> <p>Give these details only for 8 th semester A, B, and C section students.</p>	06	Stored procedure	L5
5	<p>Consider the schema for Company Database:</p> <p>EMPLOYEE(SSN, Name, Address, Sex, Salary, SuperSSN, DNo)</p> <p>DEPARTMENT(DNo, DName, MgrSSN, MgrStartDate)</p> <p>DLOCATION(DNo, DLoc)</p> <p>PROJECT(PNo, PName, PLocation, DNo)</p> <p>WORKS_ON(SSN, PNo, Hours)</p> <p>Write SQL queries to</p> <ol style="list-style-type: none"> <li>1. Make a list of all project numbers for projects that involve an employee whose last name is 'Scott', either as a worker or as a manager of the department that controls the project.</li> <li>2. Show the resulting salaries if every employee working on the 'IoT' project is given a 10 percent raise.</li> <li>3. Find the sum of the salaries of all employees of the 'Accounts' department, as well as the maximum salary, the minimum salary, and the average salary in this department</li> <li>4. Retrieve the name of each employee who works on all the projects controlled by department number 5 (use NOT EXISTS operator).</li> <li>5. For each department that has more than five employees, retrieve the department number and the number of its employees who are making more than Rs. 6,00,000.</li> </ol>	06	Advanced SQL queries	L5
6	<p>Mini project</p> <ul style="list-style-type: none"> <li>• For any problem selected, write the ER Diagram, apply ER-mapping rules, normalize the relations, and follow the application development process.</li> <li>• Make sure that the application should have five or more tables, at least one trigger and one stored procedure, using suitable frontend tool.</li> <li>• Indicative areas include; health care, education, industry,</li> </ul>	10	Database creation using front end tools.	L6

	transport, supply chain, etc.			

### 3. Laboratory Material

Books & other material as recommended by university (A, B) and additional resources used by Laboratory teacher (C).

Expt.	Details	Expt. in book	Availability
1	Text books		
	1.Database systems Models, Languages, Design and Application Programming, RamezElmasri and Shamkant B. Navathe, 7th Edition, 2017, Pearson.	1,2,3,4,5	In dept
	2. Database management systems, Ramakrishnan, and Gehrke, 3 rd Edition, 2014, McGraw Hill	1,2,3,4,5	In dept
2	Reference books		
	1.Silberschatz Korth and Sudharshan, Database System Concepts, 6 th Edition, Mc-GrawHill, 2013.	1,2,3,4,5	In dept
	2. Coronel, Morris, and Rob, Database Principles Fundamentals of Design, Implementation and Management, Cengage Learning 2012.	1,2,3,4,5	In Library
3	Others (Web, Video, Simulation, Notes etc.)		Available
<b>D</b>	<b>Software Tools for Design</b>	-	Available
	Oracle 11g		
<b>E</b>	<b>Recent Developments for Research</b>	-	-
1	Data space and developments of data space environment		
2	Database systems: a practical approach to design, implementation, and management		
		-	In lib
<b>F</b>	<b>Others (Web, Video, Simulation, Notes etc.)</b>	-	-
1	ER - Diagram explanation <a href="https://www.youtube.com/watch?v=obb7SLUmKQE">https://www.youtube.com/watch?v=obb7SLUmKQE</a>		
2	SQL- insert ,delete operations <a href="https://www.techonthenet.com/sql/insert.php">https://www.techonthenet.com/sql/insert.php</a> <a href="https://www.techonthenet.com/sql/delete.php">https://www.techonthenet.com/sql/delete.php</a>		

### 4. Laboratory Prerequisites:

Refer to GL01. If prerequisites are not taught earlier, GAP in curriculum needs to be addressed. Include in Remarks and implement in B.5.

Students must have learnt the following Courses / Topics with described Content . . .

Expt.	Lab. Code	Lab. Name	Topic / Description	Sem	Remarks	Blooms Level
1,2,3,4,5	17CSL58	Database Management system lab with mini project	Knowledge on SQL queries, Advanced Sql queries, relational algebra	5	Learned as part of theory subject in the current semester	L3
6	17CSL58	Database Management system lab with mini project	Knowledge on software engineering concepts	5	Learned as part of theory subject in the IV semester	L6

## 5. Content for Placement, Profession, HE and GATE

The content is not included in this course, but required to meet industry & profession requirements and help students for Placement, GATE, Higher Education, Entrepreneurship, etc. Identifying Area / Content requires experts consultation in the area.

Topics included are like, a. Advanced Topics, b. Recent Developments, c. Certificate Courses, d. Course Projects, e. New Software Tools, f. GATE Topics, g. NPTEL Videos, h. Swayam videos etc.

Expt.	Topic / Description	Area	Remarks	Blooms Level
1,2,3,4,5	Distributed database concept, Data mining, ware housing	Higher Study	Seminar will be conducted to discuss these topics	Understand L2

## B. Laboratory Instructions

### 1. General Instructions

SNo	Instructions	Remarks
1	Observation book and Lab record are compulsory.	Instructed to students
2	Students should report to the concerned lab as per the time table.	Instructed to students
3	After completion of the program, certification of the concerned staff in-charge in the observation book is necessary.	Instructed to students
4	Student should bring a notebook of 100 pages and should enter the readings /observations into the notebook while performing the experiment.	Instructed to students
5	The record of observations along with the detailed experimental procedure of the experiment in the Immediate last session should be submitted and certified staff member in-charge.	Instructed to students
6	Should attempt all problems / assignments given in the list session wise.	Instructed to students
7	It is responsibility to create a separate directory to store all the programs, so that nobody else can read or copy.	Instructed to students
8	When the experiment is completed, should disconnect the setup made by them, and should return all the components/instruments taken for the purpose.	Instructed to students
9	Any damage of the equipment or burn-out components will be viewed seriously either by putting penalty or by dismissing the total group of students from the lab for the semester/year	Instructed to students
10	Completed lab assignments should be submitted in the form of a Lab Record in which you have to write the algorithm, program code along with comments and output for various inputs given	Instructed to students

### 2. Laboratory Specific Instructions

SNo	Specific Instructions	Remarks
1	Start computer	Guided
2	Open oracle	Guided
3	Connect SQL user using Username and password	Guided
4	Creating the relations for specific database	Guided
5	Inserting the values into database	Guided
6	Executing the queries	Guided
7	Project: using front end as visual basic VB 6.0 or Netbeans,Eclipse,xamp server	Guided

## C. OBE PARAMETERS

### 1. Laboratory Outcomes

Expt.	Lab Code #	COs / Experiment Outcome	Teach. Hours	Concept	Instr Method	Assessment Method	Blooms' Level

-	-	<b>At the end of the experiment, the student should be able to . . .</b>	-	-	-	-	-
1	17CSL58.1	Identify methodology of conceptual modeling through entity relationship for creating the tables in database.	06	Entity relationship	Demonstrate	Slip Test, viva	L5
2	17CSL58.2	Apply the relational model concepts and operations for optimizing queries in RDBMS	06	Relational algebra	Demonstrate	Assignment, viva	L5
3	17CSL58.3	Apply the views in a database schema	06	View creation	Demonstrate	Assignment and Slip Test, viva	L5
4	17CSL58.4	Evaluate the database for given query using stored procedures	06	Stored procedure	Demonstrate	Assignment, viva	L5
5	17CSL58.5	Analyze the access methods to store the data through Internet application	06	Advanced SQL queries	Demonstrate	Slip test , viva	L5
6	17CSL58.6	Develop stand-alone or web based applications using database as backend	10	Database creation using front end tools.	Tutorial	project	L6
	-	<b>Total</b>	<b>40</b>	-	-	-	-

Note: Identify a max of 2 Concepts per unit. Write 1 CO per concept.

## 2. Laboratory Applications

Expt.	Application Area	CO	Level
1	Usage of database in different areas like banking , e commerce, organization	CO1	L2
2	Understand and apply the concept of conceptual modeling to design a database	CO2	L3
3	Use relational model for optimizing queries	CO3	L3
4	Usage of structured query language commands in creating database tables.	CO4	L5
5	Apply the characterizing schedules for transaction processing.	CO5	L3
6	Developing web-based application using database for business requirements.	CO6	L3

Note: Write 1 or 2 applications per CO.

## 3. Mapping And Justification

CO – PO Mapping with mapping Level along with justification for each CO-PO pair.

To attain competency required (as defined in POs) in a specified area and the knowledge & ability required to accomplish it.

Expt.	Mapping	Mapping Level	Justification for each CO-PO pair	Level	
	<b>CO</b>	<b>PO</b>	<b>-</b>	<b>'Area': 'Competency' and 'Knowledge' for specified 'Accomplishment'</b>	<b>-</b>
1	CO1	PO1	L2	Knowledge of relational modeling concepts is required to understand different database problems.	L2
		PO2	L4	Analyzing problem of retrieving different data based on condition requires knowledge of relational model concepts.	L4
		PO3	L4	knowledge of optimizing queries is required to design/develop solution to complex queries of data retrieval.	L4
		PO4	L3	Research based knowledge is required to analyze query statement and for decision making.	L3
		PO5	L5	Knowledge of optimizing queries is required to use modern tools which handle related data like SQL.	L5
		PO9	L6	To design/develop solution to complex database problems as an individual, knowledge of conceptual modeling is in need.	L6
		PO11	L6	To design/develop solution to complex database problems as a team ,knowledge of conceptual modeling is in need.	L6
		PO12	L6	Learning in the context of technology changes	L6
1.2	CO2	PO1	L2	Knowledge of views is required to understand different database	L2



				problems.	
		PO2	L4	Analyzing problem of retrieving different data based on condition requires knowledge of views.	L4
		PO3	L3	knowledge of views is required to design/develop solution to complex queries of data retrieval.	L3
		PO4	L3	Research based knowledge is required to analyze query statement and for decision making.	L3
		PO5	L5	Knowledge of views is required to use modern tools which handle related data like SQL.	L5
		PO9	L6	To design/develop solution to complex database problems as an individual,knowledge of conceptual modeling is in need.	L6
		PO11	L6	To design/develop solution to complex database problems as a team ,knowledge of conceptual modeling is in need.	L6
		PO12	L6	Learning in the context of technology changes	L6
1,2,3	CO3	PO1	L2	Knowledge of relational modeling concepts is required to understand different database problems.	L2
		PO2	L4	Analyzing problem of retrieving different data based on condition requires knowledge of relational model concepts.	L4
		PO3	L4	knowledge of optimizing queries is required to design/develop solution to complex queries of data retrieval.	L4
		PO4	L3	Research based knowledge is required to analyze query statement and for decision making.	L3
		PO5	L5	The students will be able to model and design a relational database following the design principles	L6
		PO9	L6	To design/develop solution to complex database problems as an individual,knowledge of DBMS is in need.	L6
		PO11	L6	To design/develop solution to complex database problems as a team ,knowledge of DBMS is in need.	L6
		PO12	L6	Learning in the context of technology changes	L6
1,2,3,4	CO4	PO1	L2	Knowledge of stored procedure is required to understand different database problems in DBMS course.	L2
		PO3	L3	Knowledge of stored procedure is required to to design/develop solution to complex queries of data retrieval.	L3
		PO4	L3	Research based knowledge is required to analyze query statement and for decision making.	L3
		PO5	L5	Knowledge of stored procedure is required to use modern tools which handle related data like SQL.	L5
		PO9	L6	To design/develop solution to complex database problems as an individual,knowledge of conceptual modeling is in need.	L6
		PO11	L6	To design/develop solution to complex database problems as a team ,knowledge of conceptual modeling is in need.	L6
		PO12	L6	Learning in the context of technology changes	L6
1,2,3,4,5	CO5	PO1	L2	Knowledge of database management system is required to understand complex database problems.	L2
		PO2	L4	Analyzing problem of retrieving different data based on condition requires knowledge of dbms features.	L4
		PO3	L3	knowledge of different concepts available in DBMS is required to design/develop solution to complex queries of data retrieval.	L3
		PO4	L3	Research based knowledge is required to analyze query statement and for decision making.	L3
		PO5	L6	The students will be able to model and design a relational database following the design principles	L6
		PO9	L6	To design/develop solution to complex database problems as an individual,knowledge of DBMS is in need.	L6
		PO11	L6	To design/develop solution to complex database problems as a team ,knowledge of DBMS is in need.	L6
		PO12	L6	Learning in the context of technology changes	L6
1,2,3,4,5,6	CO6	PO1	L2	Knowledge of stored procedure is required to understand different database problems in DBMS course.	L2

		PO2	L4	Knowledge of stored procedure is required to to design/develop solution to complex queries of data retrieval.	L4
		PO3	L3	Research based knowledge is required to analyze query statement and for decision making.	L3
		PO4	L3	The students will be able to model and design a relational database following the design principles	L3
		PO5	L6	The students will be able to model and design a relational database following the design principles	L6
		PO9	L6	To design/develop solution to complex database problems as an individual,knowledge of DBMS is in need.	L6
		PO11	L6	To design/develop solution to complex database problems as a team ,knowledge of DBMS is in need.	L6
		PO12	L6	Learning in the context of technology changes	L6

#### 4. Articulation Matrix

CO – PO Mapping with mapping level for each CO-PO pair, with course average attainment.

Expt.	CO.#	Experiment Outcomes At the end of the experiment student should be able to ...	Program Outcomes												PS O1	PS O2	PS O3	Level
			PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12				
1	17CSL58.1	Identify methodology of conceptual modeling through entity relationship for creating the tables in database.	2.5	2.5	2.5	2.5	2.5	-	-	-	2.5	-	2.5	2.5	-	-	-	L5
2	17CSL58.2	Apply the relational model concepts and operations for optimizing queries in RDBMS	2.5	2.5	2.5	2	2	-	-	-	2.5	-	2.5	2.5	-	-	-	L5
3	17CSL58.3	Apply the views in a database schema	2.5	2.5	2.5	2	2	-	-	-	2.5	-	2.5	2.5	-	-	-	L5
4	17CSL58.4	Analyze the access methods to store the data through internet application	2.5	2.5	2.5	2	2.5	-	-	-	2	-	2.5	2.5	-	-	-	L5
5	17CSL58.5	Evaluate the database for given query using stored procedures	2.5	2.5	2.5	2	2.5	-	-	-	2	-	2.5	2.5	-	-	-	L5
6	17CSL58.6	Develop stand-alone or web based applications using database as backend	2.5	2.5	2.5	2.5	2.5	-	-	-	2.5	-	2.5	2.5	-	-	-	L6
-	<b>17CSL58</b>	<b>Average attainment (1, 2, or 3)</b>	2.5	2.5	2.5	2	2.5	-	-	-	2	-	2.5	2.5	-	-	-	-
-	PO, PSO	<i>1.Engineering Knowledge; 2.Problem Analysis; 3.Design / Development of Solutions; 4.Conduct Investigations of Complex Problems; 5.Modern Tool Usage; 6.The Engineer and Society; 7.Environment and Sustainability; 8.Ethics; 9.Individual and Teamwork; 10.Communication; 11.Project Management and Finance; 12.Life-long Learning; S1.Software Engineering; S2.Data Base Management; S3.Web Design</i>																

#### 5. Curricular Gap and Experiments

Topics & contents not covered (from A.4), but essential for the course to address POs and PSOs.

Expt	Gap Topic	Actions Planned	Schedule Planned	Resources Person	PO Mapping
1-5	Distributed database concept, Data mining, ware housing	Extra class	2 <sup>nd</sup> week of November 2019	Mrs. Veena M Naik	PO1,PO2,PO3
1-5	Knowledge on operating system	Extra class	2 <sup>nd</sup> week of November 2019	Mrs. Veena M Naik	PO1,PO2

Note: Write Gap topics from A.4 and add others also.

## 6. Experiments Beyond Syllabus

Topics & contents required (from A.5) not addressed, but help students for Placement, GATE, Higher Education, Entrepreneurship, etc.

Expt	Gap Topic	Actions Planned	Schedule Planned	Resources Person	PO Mapping
1-5	Distributed Database concept	Extra class	2 <sup>nd</sup> week of November 2019	Mrs. Veena M Naik	PO1,PO2,PO3
1-5	Programming knowledge on web app development may be helpful in project element	Extra class	2 <sup>nd</sup> week of November 2019	Mrs. Veena M Naik	PO1,PO2

## D. COURSE ASSESSMENT

### 1. Laboratory Coverage

Assessment of learning outcomes for Internal and end semester evaluation. Distinct assignment for each student. 1 Assignment per chapter per student. 1 seminar per test per student.

Unit	Title	Teaching Hours	No. of question in Exam							CO	Levels	
			CIA-1	CIA-2	CIA-3	Asg-1	Asg-2	Asg-3	SEE			
1	Library data base	05	1	-	-	-	-	-	-	1	CO1	L5
2	Order database	05	1	-	-	-	-	-	-	1	CO2	L5
3	Movie database	05		1	-	-	-	-	-	1	CO3	L5
4	College database	05		1	-	-	-	-	-	1	CO4	L5
5	Company database	05		-	1	-	-	-	-	1	CO5	L5
6.	Mini project	15			1					1	CO 6	L6
-	<b>Total</b>	<b>40</b>	<b>10</b>	<b>10</b>	<b>20</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>80</b>	<b>-</b>	<b>-</b>	<b>-</b>

### 2. Continuous Internal Assessment (CIA)

Assessment of learning outcomes for Internal exams. Blooms Level in last column shall match with A.2.

Evaluation	Weightage in Marks	CO	Levels
CIA Exam - 1	40	CO1, CO2	L5
CIA Exam - 2	40	CO3, CO4	L5
CIA Exam - 3	40	CO5,CO6	L5,L6
Assignment - 1	-	-	-
Assignment - 2	-	-	-
Assignment - 3	-	-	-
Seminar - 1	-	-	-
Seminar - 2	-	-	-
Seminar - 3	-	-	-
Other Activities - define - Slip test			
<b>Final CIA Marks</b>	<b>40</b>	<b>-</b>	<b>-</b>

SNo	Description	Marks
1	Observation and Weekly Laboratory Activities	05 Marks
2	Record Writing	10 Marks for each experiment
3	Internal Exam Assessment	15 Marks
4	Internal Assessment	40 Marks
5	SEE	80 Marks

-	<b>Total</b>						<b>80 Marks</b>
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## E. EXPERIMENTS

### Experiment 01 : Library Management System

-	Experiment No.:	1	Marks	10	Date Planned		Date Conducted
1	Title	Library Management system					
2	Course Outcomes	Identify methodology of conceptual modeling through entity relationship for creating the tables in database.					
3	Aim	Design, develop, and implement the specified queries for Library database					
4	Material Equipment Required	/ Lab Manual					
5	Theory, Formula, Principle, Concept	Entity relationship, primary and foreign key					
6	Procedure, Program, Activity, Algorithm, Pseudo Code	<ul style="list-style-type: none"> <li>• step 1: start</li> <li>• step 2: design an ER diagram Scheme diagram and create an appropriate tables and write a queries of the given database</li> <li>• step 3: save the database</li> <li>• step 4: execute and validate the queries</li> <li>• step 5: if error then correct the errors</li> <li>• step 6:run</li> <li>• step 7:stop</li> </ul>					
7	Block, Circuit, Model Diagram, Reaction Equation, Expected Graph	<ul style="list-style-type: none"> <li>• -</li> <li>• -</li> <li>• -</li> </ul>					
8	Observation Table, Look-up Table, Output	<ul style="list-style-type: none"> <li>• the output of the queries is retrieved from the database</li> <li>•</li> </ul>					
9	Sample Calculations	<ul style="list-style-type: none"> <li>• -</li> <li>• -</li> <li>• -</li> </ul>					
10	Graphs, Outputs	<ul style="list-style-type: none"> <li>• -</li> <li>• -</li> </ul>					
11	Results & Analysis	<ul style="list-style-type: none"> <li>• -</li> <li>• -</li> </ul>					
12	Application Areas	<ul style="list-style-type: none"> <li>• Usage of database in different areas like banking , e commerce, organization</li> </ul>					
13	Remarks						
14	Faculty Signature with Date						

### Experiment 02 : Order Database

-	Experiment No.:	1	Marks	10	Date Planned		Date Conducted
1	Title	Order database					
2	Course Outcomes	Apply the relational model concepts and operations for optimizing queries in RDBMS					
3	Aim	Queries using SQL statements					
4	Material Equipment Required	/ Lab Manual					
5	Theory, Formula, Principle, Concept	Understand the SQL query statement to solve the database queires					

6	Procedure, Program, Activity, Algorithm, Pseudo Code	<ul style="list-style-type: none"> <li>step 1: start</li> <li>step 2: design an ER diagram Scheme diagram and create an appropriate tables and write a queries of the given database</li> <li>step 3: save the database</li> <li>step 4: execute and validate the queries</li> <li>step 5: if error then correct the errors</li> <li>step 6:run</li> <li>step 7:stop</li> </ul>
7	Block, Circuit, Model Diagram, Reaction Equation, Expected Graph	
8	Observation Table, Look-up Table, Output	retrieve the data from the tables based on the queries
9	Sample Calculations	
10	Graphs, Outputs	
11	Results & Analysis	
12	Application Areas	Understand and apply the concept of conceptual modeling to design a database
13	Remarks	
14	Faculty Signature with Date	

### Experiment 03 : Movie Database

-	Experiment No.:	3	Marks	10	Date Planned		Date Conducted	
1	Title	Movie database						
2	Course Outcomes	Apply the views in a database schema						
3	Aim	Creating views in SQL						
4	Material Equipment Required	/Lab Manual						
5	Theory, Formula, Principle, Concept	Create view table to solve the database queries						
6	Procedure, Program, Activity, Algorithm, Pseudo Code	<ul style="list-style-type: none"> <li>step 1: start</li> <li>step 2: design an ER diagram Scheme diagram and create an appropriate tables, create a view table and write a queries of the given database</li> <li>step 3: save the database</li> <li>step 4: execute and validate the queries</li> <li>step 5: if error then correct the errors</li> <li>step 6:run</li> <li>step 7:stop</li> </ul>						
7	Block, Circuit, Model Diagram, Reaction Equation, Expected Graph							
8	Observation Table, Look-up Table, Output	retrieve the data from the tables based on the queries						
9	Sample Calculations							
10	Graphs, Outputs							

11	Results & Analysis	
12	Application Areas	Use relational model for optimizing queries
13	Remarks	
14	Faculty Signature with Date	

### Experiment 04 : College Database

-	Experiment No.:	4	Marks		Date Planned		Date Conducted	
1	Title	College database						
2	Course Outcomes	Analyze the access methods to store the data through internet application						
3	Aim	Creating views in SQL and write a queries using additional relational operations.						
4	Material Equipment Required	/Lab Manual						
5	Theory, Formula, Principle, Concept	Create view table to solve the database queries using the advances SQL queries statements						
6	Procedure, Program, Activity, Algorithm, Pseudo Code	<ul style="list-style-type: none"> <li>• step 1: start</li> <li>• step 2: design an ER diagram Scheme diagram and create an appropriate tables, create a view table and write a queries of the given database</li> <li>• step 3: save the database</li> <li>• step 4: execute and validate the queries</li> <li>• step 5: if error then correct the errors</li> <li>• step 6:run</li> <li>• step 7:stop</li> </ul>						
7	Block, Circuit, Model Diagram, Reaction Equation, Expected Graph							
8	Observation Table, Look-up Table, Output	retrieve the data from the tables based on the queries						
9	Sample Calculations							
10	Graphs, Outputs							
11	Results & Analysis							
12	Application Areas	Usage of structured query language commands in creating database tables, views.						
13	Remarks							
14	Faculty Signature with Date							

### Experiment 05 : Company Database

-	Experiment No.:	5	Marks	10	Date Planned		Date Conducted	
1	Title	Company database						
2	Course Outcomes	Evaluate the database for given query using stored procedures						
3	Aim	Creating stored procedure						
4	Material Equipment Required	/Lab Manual						
5	Theory, Formula, Principle, Concept	Create Stored Procedure to solve the database queries						
6	Procedure,	<ul style="list-style-type: none"> <li>• step 1: start</li> </ul>						

	Program, Activity, Algorithm, Pseudo Code	<ul style="list-style-type: none"> <li>step 2: design an ER diagram Scheme diagram and create an appropriate tables, write a Stored procedure and write a queries of the given database</li> <li>step 3: save the database</li> <li>step 4: execute and validate the queries</li> <li>step 5: if error then correct the errors</li> <li>step 6:run</li> <li>step 7:stop</li> </ul>
7	Block, Circuit, Model Diagram, Reaction Equation, Expected Graph	
8	Observation Table, Look-up Table, Output	retrieve the data from the tables based on the queries
9	Sample Calculations	
10	Graphs, Outputs	
11	Results & Analysis	
12	Application Areas	apply the characterizing schedules for transaction processing.
13	Remarks	
14	Faculty Signature with Date	

Add required experiments

### Experiment 06 : PART-B: Mini Project (Max. Exam Mks. 30)

• Use Java, C#, PHP, Python, or any other similar front-end tool. All applications must be demonstrated on desktop/laptop as a stand-alone or web based application (Mobile apps on Android/IOS are not permitted.)

-	Experiment No.:	6	Marks	10	Date Planned		Date Conducted	
1	Title	Mini project						
2	Course Outcomes	Develop stand-alone or web based applications using database as back end						
3	Aim	Developing the mini project						
4	Material Equipment Required	/ Knowledge of DBMS and system requirement according to project.						
5	Theory, Formula, Principle, Concept	Create Stored Procedure to solve the database queries						
6	Procedure, Program, Activity, Algorithm, Pseudo Code	<ul style="list-style-type: none"> <li>step 1: start</li> <li>step 2: design an ER diagram Scheme diagram and create an appropriate tables, write a Stored procedure and write a queries of the given database</li> <li>step 3: save the database</li> <li>step 4: execute and validate the queries</li> <li>step 5: if error then correct the errors</li> <li>step 6:run</li> <li>step 7:stop</li> </ul>						
7	Block, Circuit, Model Diagram, Reaction Equation, Expected Graph							
8	Observation Table, Look-up Table, Output	retrieve the data from the tables based on the queries						

9	Sample Calculations	
10	Graphs, Outputs	
11	Results & Analysis	
12	Application Areas	apply the characterizing schedules for transaction processing.
13	Remarks	
14	Faculty Signature with Date	

Add required experiments

## F. Content to Experiment Outcomes

### 1. TPLA Parameters

**Table 1: TPLA – DBMS LAB Course**

Expt-#	Course Content or Syllabus (Split module content into 2 parts which have similar concepts)	Content Teaching Hours	Blooms' Learning Levels for Content	Final Blooms' Level	Identified Action Verbs for Learning	Instruction on Methods for Learning	Assessment Methods to Measure Learning
A	B	C	D	E	F	G	H
1	Consider the following schema for a Library Database: BOOK(Book_id, Title, Publisher_Name, Pub_Year) BOOK_AUTHORS(Book_id, Author_Name) PUBLISHER(Name, Address, Phone) BOOK_COPIES(Book_id, Branch_id, No-of_Copies) BOOK_LENDING(Book_id, Branch_id, Card_No, Date_Out, Due_Date) LIBRARY_BRANCH(Branch_id, Branch_Name, Address) Write SQL queries to 1. Retrieve details of all books in the library – id, title, name of publisher, authors, number of copies in each branch, etc. 2. Get the particulars of borrowers who have borrowed more than 3 books, but from Jan 2017 to Jun 2017. 3. Delete a book in BOOK table. Update the contents of other tables to reflect this data manipulation operation. 4. Partition the BOOK table based on year of publication. Demonstrate its working with a simple query. 5. Create a view of all books and its number of copies that are currently available in the Library.	3	L5 Evaluate	L5 Evaluate	Identify	Demonstrate process for evaluating the database	Small group discussions. Q & A
2	Consider the following schema for Order Database: SALESMAN(Salesman_id, Name, City, Commission) CUSTOMER(Customer_id, Cust_Name, City, Grade, Salesman_id) ORDERS(Ord_No, Purchase_Amt, Ord_Date, Customer_id, Salesman_id) Write SQL queries to 1. Count the customers with grades above Bangalore's average.	3	L5 Evaluate	L5 Evaluate	Apply	Demonstrate process for evaluating the database	Small group discussions. Q & A



	<p>2. Find the name and numbers of all salesman who had more than one customer.</p> <p>3. List all the salesman and indicate those who have and don't have customers in their cities (Use UNION operation.)</p> <p>4. Create a view that finds the salesman who has the customer with the highest order of a day.</p> <p>5. Demonstrate the DELETE operation by removing salesman with id 1000. All his orders must also be deleted.</p>						
3	<p>Consider the schema for Movie Database:          ACTOR(Act_id, Act_Name, Act_Gender)          DIRECTOR(Dir_id, Dir_Name, Dir_Phone)          MOVIES(Mov_id, Mov_Title, Mov_Year, Mov_Lang, Dir_id)          MOVIE_CAST(Act_id, Mov_id, Role)          RATING(Mov_id, Rev_Stars)          Write SQL queries to</p> <ol style="list-style-type: none"> <li>List the titles of all movies directed by 'Hitchcock'.</li> <li>Find the movie names where one or more actors acted in two or more movies.</li> <li>List all actors who acted in a movie before 2000 and also in a movie after 2015 (use JOIN operation).</li> <li>Find the title of movies and number of stars for each movie that has at least one rating and find the highest number of stars that movie received. Sort the result by movie title.</li> <li>Update rating of all movies directed by 'Steven Spielberg' to 5.</li> </ol>	3	L5 Evaluate	L5 Evaluate	Apply	Demonstrate process for evaluating the database	Small group discussions. Q & A
4	<p>Consider the schema for College Database:          STUDENT(USN, SName, Address, Phone, Gender)          SEMSEC(SSID, Sem, Sec)          CLASS(USN, SSID)          SUBJECT(Subcode, Title, Sem, Credits)          IAMARKS(USN, Subcode, SSID, Test1, Test2, Test3, FinalIA)          Write SQL queries to</p> <ol style="list-style-type: none"> <li>List all the student details studying in fourth semester 'C' section.</li> <li>Compute the total number of male and female students in each semester and in each section.</li> <li>Create a view of Test1 marks of student USN '1B15CS101' in all subjects.</li> <li>Calculate the FinalIA (average of best two test marks) and update the corresponding table for all students.</li> <li>Categorize students based on the following criterion:              If FinalIA = 17 to 20 then CAT = 'Outstanding'              If FinalIA = 12 to 16 then CAT = 'Average'              If FinalIA &lt; 12 then CAT = 'Weak'              Give these details only for 8th semester A, B, and C section students.</li> </ol>	3	L5 Evaluate	L5 Evaluate	Evaluate	Demonstrate process for evaluating the database	Small group discussions. Q & A
5	Consider the schema for Company	3	L5	L5	Analyze	Demonstrate	Small group

	<p>Database:                  EMPLOYEE(SSN, Name, Address, Sex, Salary, SuperSSN, DNo)                  DEPARTMENT(DNo, DName, MgrSSN, MgrStartDate)                  DLOCATION(DNo,DLoc)                  PROJECT(PNo, PName, PLocation, DNo)                  WORKS_ON(SSN, PNo, Hours)                  Write SQL queries to                  1. Make a list of all project numbers for projects that involve an employee whose last name is 'Scott', either as a worker or as a manager of the department that controls the project.                  2. Show the resulting salaries if every employee working on the 'IoT' project is given a 10 percent raise.                  3. Find the sum of the salaries of all employees of the 'Accounts' department, as well as the maximum salary, the minimum salary, and the average salary in this department.                  4. Retrieve the name of each employee who works on all the projects controlled by department number 5 (use NOT EXISTS operator).                  5. For each department that has more than five employees, retrieve the department number and the number of its employees who are making more than Rs. 6,00,000.</p>		Evaluate	Eval uate		trate process for evaluati ng the databas e	discussions. Q & A
6	<p><b>Mini project:</b></p> <ul style="list-style-type: none"> <li>For any problem selected, write the ER Diagram, apply ER-mapping rules, normalize the relations, and follow the application development process.</li> <li>Make sure that the application should have five or more tables, at least one trigger and one stored procedure, using suitable frontend tool.</li> <li>Indicative areas include; health care, education, industry, transport, supply chain, etc.</li> </ul> <p><b>Use Java, C#, PHP, Python, or any other similar front-end tool. All applications must be demonstrated on desktop/laptop as a stand-alone or web based application (Mobile apps on Android/IOS are not permitted.)</b></p>	25	L6 Create	L6 Creat e	Develop	Labs, Plan develop ment	Student Presentatio ns in small groups

2. Concepts and Outcomes:

**Table 2: Concept to Outcome – DBMS Course**

Expt - #	Learning or Outcome from study	Identified Concepts from	Final Concept	Concept Justification (What all Learning	CO Components (1.Action Verb, 2.Knowledge,	Course Outcome
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	of the Content or Syllabus	Content		Happened from the study of Content / Syllabus. A short word for learning or outcome)	3.Condition / Methodology, 4.Benchmark)	Student Should be able to ...
A	I	J	K	L	M	N
1	E-R Diagrams, SQL Commands	E-R Diagrams, SQL Commands	E-R Diagrams, SQL Commands	Database creation & retrieval of data using SQL commands	- Identify - conceptual modeling - entity relationship	Identify methodology of conceptual modeling through entity relationship for creating the tables in database.
2	SQL Commands, Relational Algebra	SQL Commands, Relational Algebra	SQL Commands, Relational Algebra	Database creation & retrieval of data using SQL commands	- Apply - model concepts - RDBMS	Apply the relational model concepts and operations for optimizing queries in RDBMS
3	Advance SQL Queries, Views	Advance SQL Queries, Views	Advance SQL Queries, Views	Database creation & retrieval of data from multiple tables using view	- Apply - views - database	Apply the views in a database schema
4	Advance SQL Queries stored procedure	Advance SQL Queries	Advance SQL Queries	Stored procedure & embedded SQL	- Analyze - Database queries	Evaluate the database for given query using stored procedures
5	Relational Algebra, Stored Procedures	Relational Algebra, Stored Procedures	Relational Algebra, Stored Procedures	Database creation & retrieval of data using SQL commands like JOIN, NOT EXIST.	- Evaluate - Database query	Analyze the access methods to store the data through Internet application
6	E-R Diagrams, Normalization, Programming Languages (Java, C#, PHP, Python)	E-R Diagrams, Normalization, Programming Languages (Java, C#, PHP, Python)	E-R Diagrams, Normalization, Programming Languages (Java, C#, PHP, Python)	Creation of stand alone application using database & front tools.	- Develop - stand alone application	Develop stand-alone or web based applications using database as backend