RV College of Engineering®

(Autonomous Institution Affiliated to VTU, Belagavi)

Bengaluru – 560 059

DEPARTMENT OF
COMPUTER SCIENCE & ENGINEERING

Introduction to Database Systems Laboratory

(21CS53)

V SEMESTER - B.E. (CSE)
LABORATORY RECORD

2023

RV College of Engineering®
(Autonomous Institution Affiliated to VTU, Belagavi)
Bengaluru – 560 059

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Laboratory Certificate

This is to certify that Mr./Ms._____ with USN _____ of 5th Semester has satisfactorily completed the course of experiments in **Introduction to Database Systems Laboratory [21CS53]** prescribed by the Department during the year 2023-24.

Marks	
Maximum	**Obtained**
50	

Signature of the Staff in-charge Head of the Department
Date:

External Examination

Name of the Candidate……..……..

USN…….

Date of Practical Examination…….
Examination Centre……..

RV College of Engineering®, Bengaluru- 560 059

(Autonomous Institution Affiliated to VTU, Belagavi)

Department of Computer Science and Engineering

Vision

To achieve leadership in the field of Computer Science & Engineering by strengthening fundamentals and facilitating interdisciplinary sustainable research to meet the ever growing needs of the society.

Mission

- To evolve continually as a centre of excellence in quality education in computers and allied fields.
- To develop state-of-the-art infrastructure and create environment capable for interdisciplinary research and skill enhancement.
- To collaborate with industries and institutions at national and international levels to enhance research in emerging areas.
- To develop professionals having social concern to become leaders in top-notch industries and/or become entrepreneurs with good ethics.

Programme Educational Objectives (PEO's)

PEO1: Develop Graduates capable of applying the principles of mathematics, science, core engineering and Computer Science to solve real-world problems in interdisciplinary domains.

PEO2: To develop the ability among graduates to analyze and understand current pedagogical techniques, industry accepted computing practices and state-of-art technology.

PEO3: To develop graduates who will exhibit cultural awareness, teamwork with professional ethics, effective communication skills and appropriately apply knowledge of societal impacts of computing technology.

PEO4: To prepare graduates with a capability to successfully get employed in the right role / become entrepreneurs to achieve higher career goals or takeup higher education in pursuit of lifelong learning.

Programme Outcomes(PO's)

PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization for the solution of complex engineering problems

PO2: Problem analysis: Identify, formulate, research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.

PO3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for public health and safety, and cultural, societal, and environmental considerations.

PO4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities, with an understanding of the limitations.

PO6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess Societal, health, safety, legal, and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with the society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes (PSOs)

PSO1: System Analysis and Design

The student will be able to:

1. Recognize and appreciate the need of change in computer architecture, data organization and analytical methods in the evolving technology.
2. Learn the applicability of various systems software elements for solving design problems.
3. Identify the various analysis & design methodologies for facilitating development of high quality system software products with focus on performance optimization.
4. Display team participation, good communication, project management and document skills.

PSO2: Product Development

The student will be able to:

1. Demonstrate the use of knowledge and ability to write programs and integrate them with the hardware/software products in the domains of embedded systems, databases /data analytics, network/web systems and mobile products.
2. Participate in planning and implement solutions to cater to business – specific requirements displaying team dynamics and professional ethics.
3. Employ state-of-art methodologies for product development and testing / validation with focus on optimization and quality related aspects.

Course Outcomes (COs)

Course Outcomes: After completing the course, the students will be able to	
CO1:	Understand and explore the needs and concepts of relational, NoSQL database and Distributed Architecture
CO2:	Apply the knowledge of logical database design principles to real time issues.
CO3:	Analyze and design data base systems using relational, NoSQL and Big Data concepts
CO4:	Develop applications using relational and NoSQL database
CO5:	Demonstrate database applications using various technologies.

Do's and Don't in the Laboratory (for the students)

DO …..

- Come prepared to the Lab.
- Students to maintain a separate file containing the weekly update in it.
- Follow the Lab exercise cycles as instructed by the Department. Violating the same will result in deduction of marks.
- Use the same login (if any) assigned to you.
- Put the chairs back to its position before you leave.

DON'T …..

- Move around in the lab during the lab session.
- Tamper System Files or Try to access the Server.
- Write Data Sheets or Records in the Lab.
- Changing system assigned to you without the notice of the Lab Staff.

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Database Design Lab (21CS53)
Mini Project Index

Student Name:			
USN:		**Section**	
Mini Project Title:			

Sl.No.	Submission	Marks	Signature of Lab Faculty
1.	Synopsis (5)		
2.	Requirement Specification(5)		
3.	ER Diagram(10)		
4.	Test(20)		
5.	DFD (Level 0,1,2) (10)		
6.	Normalized tables (up to 3 NF) (10)		
7.	Midterm Report (20)		
8.	Design of Forms, Security & Validation (10)		
9.	Demo & Draft Report(30)		
Total-120 Marks Reduced to 30 Marks			
10.	Innovative Experiment (10)		
11.	CIE- Project Demo & Final Report Submission (10)		
Lab CIE Marks (30 +10+10)			

Component 1: Synopsis Submission (Max: 5 marks)

Activity	Excellent	Good	Poor	
Literature Survey and study of existing system **(2 Marks)**	Demonstrates comprehensive review of literature related to project topic; student identifies limitations of the existing literature (2)	Demonstrates comprehensive review of literature related to student's topic; student identifies sufficiently the limitations of the existing literature (1)	Unable to demonstrate comprehensive review of literature related to project topic; and is not able to identify the limitations of the existing literature. (0)	
Problem Statement (2 Marks)	Student is able define the problem statement clearly (2)	Student is able to define the problem statement inadequately (1)	Student is unable define the problem statement (0)	
File submission(1)	Student submits his file on time with the required documents.(1)	Student submits incomplete file (0.5).	Student do not submit the file(0)	
Signature:			TOTAL	
Observation:				

Component 2: Requirement Specification (Max: 5 marks)

Activity	Excellent	Good	Poor	
Software and Hardware requirements (2 Marks)	Specifications are correct and complete (2)	Specifications are adequately defined. (1)	Specifications are incomplete without any logical sequence. (0)	
Functional and Nonfunctional Requirements (2 Marks)	Listed all the functional and nonfunctional requirements correctly and completely. (2)	Listed few the requirements correctly (1)	Not Listed/incorrect listing of the requirements. (0)	
File Maintenance and updation (1)	Student submits his file on time with all the required documents.(1)	Student submits incomplete file.(0.5)	Student do not submit the file(0)	
Signature:			TOTAL	
Observation:				

Component 3: ER Diagram and Schema (Max: 10 marks (6+4))

Activity	Excellent	Good	Poor	
Understanding of notations of ER model and requirements (2 Marks)	Have a thorough understanding of all ER notations and requirements and assumptions of the project (2).	Have adequate understanding of ER notations and requirements(1)	Unable to provide solutions to simple problems which require basic understanding of ER notations (0).	
Execution (2 Marks)	Able to build ER diagrams according to all application requirements, convert ER diagrams to relational database schemas correctly (2).	Able to build ER diagrams according to most of the application requirements, convert ER diagrams to relational database schemas adequately. (1).	Unable to conduct database designs using ER diagrams and functional dependency analysis(0)	
Documentation (2 Marks)	Complete ER diagram (2).	Adequate ER diagram (1).	Incomplete/incorrect diagram (0).	
Viva rubrics for Synopsis ER Diagram and Schema (Max: 4 marks)				
Conceptual Understanding(2 Marks)	Explains fully notations and related concepts involved in ER diagram (2).	Adequately explains the notations and concepts involved in ER diagram (1)	Unable to explain concepts (0).	
Use of strategies. (1 Marks)	Insightful use of entities and concepts to derive relationship between the entities (1).	Covering few entities (1)	Did not solve problem (0).	
Communication of Ideas (1 Marks)	Communicates all ideas clearly (1)	--	Unable to communicate ideas.	
Signature:			TOTAL	
Observation:				

Component 4: TEST (Max: 20 marks (5+10+5))

Measurement Dimension	Excellent	Good	Poor	Marks
Write-up (5)	Written correct queries in a simply and optimal manner **(<=5>3 M)**	Written correct queries. But in complex structure. **(<=3>=1M)**	Written query which obtains improper results **(0 M)**	
Execution of SQL queries (10)	Student demonstrates the execution of the queries and obtains relevant results **(<=5>3 M)**	Student demonstrates the execution and obtains improper results **(<=3>=1M)**	Student has not executed the query. **(0M)**	
Execution of NOSQL queries (5)	Student demonstrates the execution of the queries and obtains relevant results **(<=5>3 M)**	Student demonstrates the execution and obtains improper results **(<=3>=1M)**	Student has not executed the query. **(0M)**	
Signature:			**TOTAL**	

Component 5: DFD (Max: 10 marks (6+4))

Activity	Excellent	Good	Poor	
Understanding the notations of DFD and requirements (2 Marks)	Labelling and notations are correct and complete(2)	Adequately represents the concepts.(1)	No prescribed format followed(0)	
Design (2 Marks)	Incorporation of all the level of DFD's(up to two and third level is optional) Information is in logical sequence with diagram(2)	Information is in logical sequence without diagrams (1).	Design not acceptable (0).	
Documentation (2 Marks)	Level wise DFD's are in proper format with respect to notations, process flow and labeling (2).	Level wise DFD's are satisfactory with respect to notations, process flow and labeling (1).	Notations used for DFD is not acceptable (0).	
Viva rubrics for DFD (Max: 4 marks)				
Conceptual Understanding (2 Marks)	Explains fully notations of DFDs and related concepts involved.(2)	Adequately explains the notations and concepts (1)	Unable to explain concepts. (0)	
Use of strategies. (1 Marks)	Insightful use of process and concepts to understand the flow of the levels in the project (1)	--	Did not solve problem. (0)	
Communication of Ideas (1 Marks)	Communicates all ideas clearly (1)	--	Unable to communicate ideas.	
Signature: TOTAL				
Observation:				

Component 6: Normalization Rubrics (Max: 10 marks (6+4))

Activity	Excellent	Good	Poor	
1NF and 2NF **(2 Marks)**	Satisfies 2NF constraints in all the relations in the database (2).	Satisfies 1NF constraints in few the relations in the database (1)	Does not satisfy the conditions in database (0).	
3NF **(2 Marks)**	Satisfies 3NF and BCNF constraints in all the relations in the database (2)	Satisfies 3NF and BCNF constraints in few the relations in the database (1)	Does not satisfy the conditions in any of the relations in the database (0)	
File Maintenance and updation (2 Marks)	Student submits his file on time with the required documents.(2)	Student submits incomplete file.(1)	Student do not submit the file(0)	
Viva rubrics for Normalization (Max: 4 marks)				
Conceptual Understanding (2 Marks)	Explains the concepts of the project design phase/schema. (2)	Adequately explains project schema(1)	Unable to explain concepts. (0)	
Mapping of mapping of problem statement to design (1 Marks)	Presents the strategies and concepts to derive solutions to problems.(1)	--	Did not solve problem.(0)	
Communication of Ideas (1 Marks)	Communicates all ideas clearly (1)	--	Unable to communicate ideas. (0)	
Signature: TOTAL				
Observation:				

Component 7: Midterm Report Evaluation (Max: 20 marks)

Activity	Excellent	Acceptable	Partially acceptable	Unacceptable	
Objective and Scope **(5 Marks)**	Objectives are properly identified for the topic Selected. (5)	Objectives are identified but only few objectives are aligned to the topic. (4)	Objectives are not identified properly and most of the objectives are not aligned properly to the topic. (3-2)	Objectives are poorly identified and completely not mapping to the topic. (1)	
Software Requirement Specification **(5 Marks)**	Clearly stating the requirements and specification (5).	Stated the requirements with less adequate data (4-3).	Scope for improvement and correction(2-1)	Incomplete Validation (0)	
ER Diagram and Relational Schema and Normalization **(5 Marks)**	Clear diagram with proper notations and relationship and Generating report for the queries (5).	Clear diagram with proper relationships but lack proper representation of notations (3-4)	Diagram with no proper relationships but with proper representation of notations (2-1)	No Proper representation of relationships (0)	
Detailed Design (**5 Marks)**	Design specifications are complete involving Data flow diagram, design (10-9)	Design specifications are adequately defined involving Data flow diagram (8-6)	Design specifications are incomplete without proper Data flow diagram (5-3)	Design specifications are incomplete without any logical sequence in Data flow diagram (2-1)	
Signature: TOTAL					
Observation:					

Component 8: Design of forms, Security and Validation (Max: 10 marks (6+4))

Activity	Excellent	Good	Poor	
Implementation, Use of modern engineering tools (2 Marks)	Implementation is based on tools and new software used and Have a thorough understanding of security and validation system concepts (2)	Tools and software are not efficiently utilized, effort was put into learning new software and Have a thorough understanding of security and validation system concepts (1)	Tools and software are not utilized, no attempt was made at learning new software (0)	
Front end design (2 Marks)	Excellent, concise, clear and adequate user friendly GUI and security validation (2)	Good, satisfactory (1)	Not satisfactory (0)	
File Maintenance and updating (2 Marks)	Student submits his file on time with the required documents.(2)	Student submits incomplete file.(1)	Student do not submit the file(0)	
Viva rubrics for Synopsis (Max: 4 marks)				
Conceptual Understanding (2 Marks)	Explains the concepts of the project design phase. (2)	Adequately explains the concepts (1)	Unable to explain concepts. (0)	
Mapping of mapping of problem statement to design (1 Marks)	Presents the strategies and concepts to derive solutions to problems.(1)	--	Did not solve problem.(0)	
Communication of Ideas (1 Marks)	Communicates all ideas clearly (1)	--	Unable to communicate ideas. (0)	
Signature:			TOTAL	
Observation:				

Component 9: Demo and Draft Report rubrics (Max: 30 marks)

Activity	Excellent	Acceptable	Partially acceptable	Unacceptable	
Demonstration (5 Marks)	Demonstration with a neat User Interface (5)	Demonstration with a partial user interface >5 and >2	Scope for improvement and correction >=2 and >0	Incomplete user interface (0)	
Objective and Scope **(5 Marks)**	Objectives are properly identified for the topic selected. (5)	Objectives are identified but only few objectives are aligned to the topic. (4)	Objectives are not identified properly and most of the objectives are not aligned properly to the topic. (3-2)	Objectives are poorly identified and completely not mapping to the topic. (1)	
Software Requirement Specification **(5 Marks)**	Clearly stating the requirements and specification (5).	Stated the requirements with less adequate data (4-3).	Scope for improvement and correction(2-1)	Incomplete Validation (0)	
ER Diagram and Schema **(5 Marks)**	Clear diagram with proper notations and relationship (5).	Clear diagram with proper relationships but lack proper representation of notations (3-4)	Diagram with no proper relationships but with proper representation of notations (2-1)	No Proper representation of relationships (0)	
Relational Schema and Normalization **(5 Marks)**	Generating report for the queries (3).	Incomplete execution of report for the necessary query (2).	Scope for improvement and correction (1)	Unable generate report (0)	
Detailed Design and Integration of SQL and NOSQL (**5 Marks)**	Design specifications are complete involving Data flow diagram, design (10-9)	Design specifications are adequately defined involving Data flow diagram (8-6)	Design specifications are incomplete without proper Data flow diagram (5-3)	Design specifications are incomplete without any logical sequence in Data flow diagram (2-1)	
Signature: TOTAL					
Observation:					

Component 10: Innovative Experiment (Max: 10 marks)

Activity	Excellent	Acceptable	Partially acceptable	Unacceptable	
Societal Concern (4 marks)	The project thoroughly implements and addresses societal concern issues (4)	The project adequately identifies, implements and addresses societal concern issues (3-4)	The project minimally identifies, implements and addresses societal concern issues (2-3)	The project inadequately identifies, implements and addresses societal concern issues (1)	
Recent Trends used (3 marks)	The project thoroughly integrates and implements the concepts of recent trends such as Block-chain, AR, VR, AI, ML, NLP etc. (3)	The project adequately integrates and implements the concepts of recent trends such as Block-chain, AR, VR, AI, ML, NLP etc. (2-3)	The project minimally integrates and implements the concepts of recent trends such as Block-chain, AR, VR, AI, ML, NLP etc. (1-2)	The project inadequately integrates and implements the concepts of recent trends such as Block-chain, AR, VR, AI, ML, NLP etc. (1)	
Automation Techniques used (2 marks)	The project thoroughly uses and integrates Automation Techniques used (2)	The project adequately uses and integrates Automation Techniques used (1-2)	The project minimally uses and integrates Automation Techniques used (1)	The project inadequately uses and integrates Automation Techniques used (0.5)	
Presentation and reporting (1 mark)	Project thoroughly demonstrates the above concepts (1)	Project adequately demonstrates the above concepts (0-1)	Project minimally demonstrates the above concepts (0.5)	Project inadequately demonstrates the above concepts (0)	
Signature: TOTAL					
Observation:					

Component 11: Demo and Final Report rubrics (Max: 10 marks)

Activity	Excellent	Acceptable	Partially acceptable	Unacceptable	
Demonstration (5 Marks)	Demonstration with a neat User Interface (5)	Demonstration with a partial user interface >5 and >2	Scope for improvement and correction >=2 and >0	Incomplete user interface (0)	
Formatting of Hardcopy of report (5 Marks)	According to prescribed Format (2).	Formatting not done properly (1).	___	No prescribed format followed(0)	
Signature: TOTAL					
Observation:					

Indicative list of DBMS Projects

1. Software package information database management system
2. Builders database
3. Car Showroom
4. RTO Database
5. Passport Information database
6. IT Consultancy database
7. BESCOM Electricity Power Billing System
8. Agriculture trading system
9. Journal information database management system
10. Jewellery showroom database management system
11. Interior Designers Database management systems
12. Dental clinic management systems
13. Real estate management system
14. Add agency management system
15. Archaeological management system
16. Jail / Prison management system
17. Political campaign system
18. Wild life sanctuary management system
19. Movie Theatre management system
20. Dairy product management system
21. Poultry management system
22. Matrimonial Database Management System
23. Furniture database management system
24. Mobile and sim card showroom management system
25. Sports complex Management system.
26. Mall management system
27. Counselor's student management
28. Health diagnostic system
29. Workshop/conferences attended/presented
30. CIE question papers management
31. Water Supply management System
32. Custom management System
33. E-Library
34. Agriculture management System
35. Employee training scheduling
36. Project Evaluation Management System
37. Publication Management System
38. Workshops/Seminar/Invited Talk attendance Management System
39. Events Management System
40. Online shopping management