Database concepts for Data Science Lab

CA- 20 Marks (Lab Assignments + Hackerrank)

ESE - 30 Marks (Project Phase 1+ Project Phase 2 + Quiz)

Sr. No.	Component	CO	Max marks	Weight	Tentative date
1	Lab Assignment and Submission + Viva	CO1 ,CO2,CO3,CO4	10	20%	July -Nov 2024 (continuous activity)
	Hackerrank	CO2,CO3	10	20%	July -Nov 2024 (continuous activity)
2	Project Phase 1(Basic/Advanced Queries)	CO1,CO2	15	30%	1st Oct -12th Oct 2024
3	Project Phase 2 (Python Desktop /Web Application)	CO3	10	20%	11th -16th Nov 2024
4	Quiz	CO4	5	10%	28-31 Oct 2024

Lab Assignment Rubrics

Criteria	Description	Marks
Timely Submission	Assignment submitted on or before the deadline.	2
Query Clarity	The SQL queries are clearly written and easy to understand.	3
Query Correctness	The SQL queries produce the correct and expected results.	3

| Viva | Understanding and explanation of the concepts during the viva. | 2 |

Detailed Component Description

Criteria	Marks	Description
Timely Submission	2	**2 marks**: Submitted on or before the deadline.
		1 Mark: Submitted within 48 hours after the deadline.
		0 Marks: Submitted more than 48 hours after the deadline.
Query Clarity	3	**3 marks:** Queries are exceptionally clear, well-structured, and easy to understand.
		2 marks: Queries are mostly clear but may have minor issues in structure or clarity.
		1 mark: Queries are unclear and poorly structured, making them difficult to understand.
		0 marks: Queries are unintelligible or not provided.
Query Correctness	3	**3 marks:** All queries are correct and return the expected results.
		2 marks: Most queries are correct, but there are minor mistakes.
		1 mark: Some queries are correct, but several have significant errors.
		0 marks: Queries are incorrect or missing.
Viva	2	**2 marks**: Demonstrates thorough understanding and can answer all questions confidently.
		1 Mark: Shows basic understanding but struggles with some questions.

		0 Marks: Unable to answer questions satisfactorily.

Lab Assignment Content

Assignment Writeup

1. Title -

2. Objectives

3. Theory

4. Conclusion

5. Attached Queries with output

[Faculty Name]
 [Student PRN]

[Student Name]
 [Date]

Hackerrank Submission Rubrics: (10 Marks)

Level	Number of Queries	Marks
Low Level	40 Queries	2
Medium Level	30 Queries	3
Hard level	10 Queries	5

Project Rubrics

Project Phase 1 Submission Rubrics (15 Marks)

Component	Description	Marks
Problem Statement Identification	Select a problem for which you would like to design and simulate a database.	2
ER Diagram	Prepare an E-R diagram for choosed problem statement	3
ER Diagram to Relational Schema Conversion	Convert E-R diagram into relational schema	3
Database table creation and insertion of data	Implement the tables in mysql.	3
Basic and Advanced Queries	Execute the queries, functions, procedures, and triggers	4

Detailed Rubrics for Project Phase 1

Component	Marks	Description
Problem Statement Identification	2	2 marks: Problem statement is clear, well-defined, and appropriately scoped for database design.
		1 mark: Problem statement is somewhat clear but lacks details or appropriate scope.
		0 marks: Problem statement is unclear, poorly defined, or inappropriate for database design.
ER Diagram	3	3 marks: ER diagram is comprehensive, correctly represents all entities, attributes, and relationships, and includes cardinalities.

		2 marks: ER diagram is mostly accurate but may have minor issues or omissions.
		1 mark: ER diagram has several significant errors or omissions.
		0 marks: ER diagram is incorrect or missing.
ER Diagram to Relational Schema Conversion	3	3 marks: Conversion is accurate, all entities and relationships are correctly translated into tables with appropriate keys
		2 marks: Conversion is mostly accurate but may have minor issues with keys or relationships.
		1 mark: Conversion has several significant errors in keys or relationships.
		0 marks: Conversion is incorrect or not done.
Database table Creation and data Insertion	3	3 marks: All tables are correctly created and populated with relevant data in MySQL, ensuring data integrity.
		2 marks: Tables are created and populated but may have minor issues with data integrity or completeness.
		1 mark: Tables are created but have significant issues with data integrity or are incomplete.
		0 marks: Tables are not created or data is not inserted.
Basic and Advanced Queries implementation	4	4 marks: All queries, functions, procedures, and triggers are correctly executed and demonstrate advanced database operations.

		3 marks: Most queries, functions, procedures, and triggers are correctly executed with minor issues.
		2 marks: Basic queries are correctly executed, but advanced operations have several issues.
		1 mark: Queries and operations have significant errors or are incomplete.
		0 marks: Queries and operations are not executed or are incorrect.

Project Phase 2 Submission Rubrics (10 Marks)

Component	Description	Marks
Python Desktop /Web Application	Development of desktop / web application for your problem statement .	6
Report	Prepare a project report which will contain details of all the above steps	4

Detailed rubrics for Python Desktop /Web Application

Criteria	Marks	Description
GUI Design & Usability	3	3 marks: The GUI is visually appealing, and user-friendly. All functionalities are easily accessible and well-implemented. 2 marks: The GUI is generally good but may have minor usability issues or lack some visual appeal. 1 mark: The GUI is functional but has significant usability or design issues. 0 marks: The GUI is poorly designed or not implemented.

Database Connectivity	2	2 marks: The application connects to the database seamlessly, performs CRUD operations efficiently, and maintains data integrity. 1 mark: The application connects to the database but may have issues with some operations or data integrity. 0 marks: The application fails to connect to the database or perform CRUD operations.
Error Handling	1	- 1 mark: The application includes error handling for both the GUI and database operations, providing informative error messages. 0 marks: The application lacks proper error handling, leading to potential crashes or user confusion.

Report Rubrics

Criteria	Marks	Description
Problem Statement & Objectives	1	1 mark: Clearly defines the problem and objectives, demonstrating relevance and scope. 0.5 marks: Problem and objectives are defined but may lack some clarity or relevance. 0 marks: Problem and objectives are unclear or poorly defined.
Database Design & Schema	1	1 mark: Provides a comprehensive database design, including an accurate ER diagram and relational schema. 0.5 marks: Design is mostly accurate but may have minor issues or omissions. 0 marks: Design is incorrect or incomplete.
Implementation & Results	1	1 mark: Demonstrates complete implementation of the database with results showing correct functionality and performance. 0.5 marks: Implementation is mostly complete with some issues in functionality or performance. 0 marks: Implementation is incomplete or does not work as intended.
Report Quality & Presentation	1	- 1 mark: The report is well-organized, clearly written, and professionally presented with all required sections and formatting. 0.5 marks: The report is generally well-organized and presented but may have minor issues in clarity or formatting. 0 marks: The report lacks organization, clarity, or professional presentation.