



## DESCRIPTION OF COURSEWORK

Course Code	SOF202
Course Name	Database
Lecturer	Dr Subashini A/P Ganapathy
Academic Session	2025/09
Assessment Title	Lab Report

### A. Introduction/ Situation/ Background Information

The lab report assesses students' ability to construct and manage relational databases using SQL statements, based on the scenario developed in the earlier group assignment. In that group task, students progressed through the phases of the Database Life Cycle (DBLC), which included information gathering, analysis through the creation of conceptual data models, logical design involving the development of logical models, and physical design through the creation of physical data models.

The database design phase specifies the procedures for creating tables, defining attributes and domains, setting up views, indexes, and security constraints, as well as establishing performance and storage standards. At this stage, students are required to translate the design specifications into an actual implementation. For this second assessment (the lab report), students are expected to implement the database and perform testing to validate its functionality and accuracy.

### B. Course Learning Outcomes (CLO) covered

At the end of this assessment, students are able to:

CLO2	Demonstrate teamwork for solving problems using database concepts.
CLO4	Construct SQL statements to define and manage (query and update) relational databases for a given problem.

### C. University Policy on Academic Misconduct

1. Academic misconduct is a serious offense in Xiamen University Malaysia. It can be defined as any of the following:
  - i. **Plagiarism** is submitting or presenting someone else's work, words, ideas, data or information as your own intentionally or unintentionally. This includes incorporating published and unpublished material, whether in manuscript, printed or electronic form into your work without acknowledging the source (the person and the work).
  - ii. **Collusion** is two or more people collaborating on a piece of work (in part or whole) which is intended to be wholly individual and passed it off as own individual work.
  - iii. **Cheating** is an act of dishonesty or fraud in order to gain an unfair advantage in an assessment. This includes using or attempting to use, or assisting another to use materials that are prohibited or inappropriate, commissioning work from a third party, falsifying data, or breaching any examination rules.
2. All assessments submitted must be the student's own work, without any materials generated by AI tools, including direct copying and pasting of text or paraphrasing. Any form of academic misconduct, including using prohibited materials or inappropriate assistance, is a serious offense and will result in a zero mark for the entire assessment or part of it. If there is more than one guilty party, such as in case of collusion, all parties involved will receive the same penalty.

### D. Instruction to Students

This is a **grouping** lab report assessment (Maximum of 5/6 students in a group). Students are required to use Microsoft Word 2010 onward to prepare the solution (report) and upload the **PDF** softcopy of the group assignment report in Moodle. The **due date** for this lab report submission is by **19<sup>th</sup> December 2025 (Friday) @ 11:59PM.**

Your report shall have:

- Cover Page
- Acknowledgement page (Signed by all group members)
- Table of Content
- Gantt Chart and Milestones (showing task distribution by members in the group)
- Answer for all task
- References (Follow APA/ Harvard style)
- Marking Rubric

## E. Evaluation Breakdown

The weightage of this **Lab Report** is **30%** overall. Evaluations are based on the criteria below: -

- **Lab Report (24%) = 80 Marks (Group)**
- **Individual Presentation (6%) = 20 Marks (Individual)**

No.	Component Title	Percentage (%)
1.	Task 1: Database Integrity ( <b>CLO2, A3</b> ) <ul style="list-style-type: none"><li>• Domain Integrity</li><li>• Entity Integrity</li><li>• Referential Integrity</li></ul>	5 5 5 5
2.	Task 2: SQL ( <b>CLO4, C3</b> ) <ul style="list-style-type: none"><li>• A: Table creation &amp; Insert Data.</li><li>• Database Design and Creativity</li><li>• SQL syntaxes example</li></ul>	10 5 15
3.	Task 3: Trigger ( <b>CLO4, C3</b> ) <ul style="list-style-type: none"><li>• Triggering Procedure 1</li><li>• Triggering Procedure 2</li></ul>	7.5 7.5
4.	Task 4: Apply access control ( <b>CLO4, C3</b> ) <ul style="list-style-type: none"><li>• Access control 1</li><li>• Access control 2</li></ul>	7.5 7.5
5.	Individual Presentation ( <b>CLO2, A3</b> )	20
		<b>TOTAL</b> <b>100</b>

## F. Task(s)

- All tasks in this lab report must be completed as a group (Same group as Assignment).
- Your work must be based on and refer to the group assignment that you completed earlier in the semester.
- Ensure consistency between your previous database design and your current database implementation and testing.

### Task 1 (Database Integrity) – 20%

Data integrity refers to the accuracy, consistency, and reliability of data stored in a database. It ensures that the data remains valid, up-to-date, and free from duplication or inconsistency.

Constraints help maintain data integrity by preventing duplicate entries, invalid values, and broken relationships between tables. They also control operations such as INSERT, UPDATE, and DELETE to ensure the stored data remains accurate and meaningful.

Data integrity can be classified into the following three (3) main types of constraints:

- Domain Integrity Constraints
- Entity Integrity Constraints
- Referential Integrity Constraints

#### Instructions:

- a) Write at least **ONE (1)** sample **CREATE TABLE** statement that includes relevant constraints for each data integrity above.

*Note:*

- \* *Include a screenshot of your CREATE TABLE statement and its successful execution message for Question above.*
- \* *The CREATE TABLE statement must be based on the relational schema from Assignment (Task 3A).*

- b) Explain clearly** how each of the above data integrity constraints above is applied and maintained in your database design.

## Task 2 (SQL) – 30%

This task focuses on the practical implementation of your database system using a Database Management System (DBMS) (e.g., MySQL). You are required to demonstrate the actual database creation and manipulation through SQL statements based on your selected scenario from Assignment (Task 3- Relational Schema). Your implementation should reflect the logical and physical design stages, showcasing how the database structure, relationships, and constraints are applied in practice.

### Instructions:

- a)** Take screenshots of all the remaining CREATE TABLE commands, except for the examples provided above (Task 1A).
- b)** Following the previous tasks, populate every table with a minimum of 6–10 rows of data each.
- c)** Run a variety of SQL commands using different categories of syntax to demonstrate your understanding of data retrieval and manipulation. Using any of your created tables, run three (3) different SQL queries for each category listed below. Include screenshots of each query and its output. Use arithmetic expressions where appropriate.

No.	Category	Syntax
1.	Filtering	<ul style="list-style-type: none"><li>• LIKE</li><li>• BETWEEN</li><li>• IN (or any other filtering operator)</li></ul>
2.	Aggregate Functions	<ul style="list-style-type: none"><li>• SUM</li><li>• COUNT</li><li>• AVG (or MIN / MAX)</li></ul>

3.	Limit/ Sorting	<ul style="list-style-type: none"> <li>• ORDER BY (ASC/DESC)</li> <li>• LIMIT or TOP</li> <li>• Sorting combined with filtering (ORDER BY price DESC with a condition)</li> </ul>
4.	Join operators	<ul style="list-style-type: none"> <li>• INNER JOIN</li> <li>• LEFT JOIN</li> <li>• RIGHT JOIN</li> </ul>
5.	String/ Arithmetic	<ul style="list-style-type: none"> <li>• Arithmetic expression (Example: hours_worked * rate_per_hour, total_amount % 2, or any other...)</li> <li>• String function (UPPER (), CONCAT ())</li> </ul>
6.	Formatting	<ul style="list-style-type: none"> <li>• Column/table renaming using AS</li> <li>• Concatenated output</li> </ul>

### Task 3 (Triggering) – 15%

Triggers can be defined to run automatically BEFORE or AFTER a data-modifying event on a table. The three possible trigger events are:

- INSERT – runs when a new row is added
- UPDATE – runs when an existing row is changed
- DELETE – runs when a row is removed

Each trigger can access special values

NEW.column → the new value (INSERT or UPDATE)

OLD.column → the previous value (UPDATE or DELETE)

Choose any **TWO (2)** of the trigger events above. Write the corresponding MySQL trigger code and provide evidence showing what happens before and after the trigger executes using the same scenario selected from the assignment previously.

### Task 4 (Access Control) – 15%

Implement any **TWO (2)** of the access control mechanisms described in your previous Assignment (Task 5). Include screenshots showing all relevant results, such as the applied access control and the user's ability to edit, delete, or update the selected table.

**APPENDIX 1**  
**MARKING RUBRICS**

Component Title	Lab Report (Grouping)					Percentage (%)	24%
Criteria	Score and Descriptors					Weight	Marks
	Excellent (9.0 – 10.0)	Good (7.0 – 8.5)	Average (5.0 – 6.5)	Need Improvement (3.0 – 4.5)	Poor (0 – 2.5)		
<b>Task 1: Database Integrity (20 Marks)</b>	All CREATE TABLE commands are accurate; all integrity constraints correctly applied. Screenshots complete, clear, and well-organized. Explanations are thorough and show strong understanding.	Most tables and constraints are correctly implemented; minor errors. Screenshots provided and generally clear. Explanations show good understanding but lack depth.	Some tables correctly created; constraints may be incomplete or partially wrong. Screenshots provided. Explanations are basic.	Many constraints incorrect or missing. Screenshots unclear or incomplete. Explanations lack clarity and accuracy.	Incomplete or inaccurate SQL statements. Little or no screenshots. Weak or missing explanations.	20	
<b>Task 2: SQL Implementation (30 Marks)</b>	<ul style="list-style-type: none"> <li>All remaining CREATE TABLE commands are fully correct and clearly shown with screenshots.</li> <li>All tables populated with 6–10 valid rows each.</li> <li>All SQL categories include 3 correct queries each,</li> </ul>	<ul style="list-style-type: none"> <li>CREATE TABLE commands mostly correct with minor errors.</li> <li>Tables filled properly with 6–10 rows each.</li> <li>Most SQL categories include 3 correct queries (some minor mistakes allowed).</li> </ul>	<ul style="list-style-type: none"> <li>Some CREATE TABLE commands incomplete or inaccurate.</li> <li>Tables partially populated (some missing rows or incorrect data).</li> <li>SQL categories include fewer than 3 correct queries or have notable</li> </ul>	<ul style="list-style-type: none"> <li>CREATE TABLE commands contain multiple mistakes or missing screenshots.</li> <li>Many tables not properly populated.</li> <li>Several SQL categories missing or</li> </ul>	<ul style="list-style-type: none"> <li>Missing or incorrect CREATE TABLE commands.</li> <li>Very little or no data inserted. SQL queries missing, incorrect, or not executed.</li> <li>Screenshots mostly missing.</li> </ul>	30	

	<ul style="list-style-type: none"> <li>executed without errors.</li> <li>Screenshots of queries and outputs are complete, clear, and well-organized.</li> <li>Demonstrates excellent understanding of SQL, filtering, joins, arithmetic expressions, and formatting.</li> </ul>	<ul style="list-style-type: none"> <li>Screenshots are provided but may lack full clarity or formatting.</li> <li>Shows good understanding but misses depth in a few areas.</li> </ul>	<ul style="list-style-type: none"> <li>syntax/output issues.</li> <li>Screenshots provided but not consistent or clear.</li> <li>Understanding is present but basic.</li> </ul>	<ul style="list-style-type: none"> <li>incorrectly executed.</li> <li>Screenshots unclear, incomplete, or missing outputs.</li> <li>Limited understanding of SQL syntax and application.</li> </ul>	<ul style="list-style-type: none"> <li>Shows minimal or no understanding of SQL concepts.</li> </ul>	
<b>Task 3: Triggering (15 Marks)</b>	Both triggers fully correct and functional. BEFORE/AFTER results clearly demonstrated with proper screenshots. No syntax errors.	Two triggers implemented with minor mistakes. Evidence provided for BEFORE/AFTER. Screenshots mostly clear.	One trigger corrects, the second partially implemented. Limited or basic BEFORE/AFTER evidence.	Triggers contain multiple errors; screenshots unclear or incomplete. Limited understanding shown.	Triggers missing, non-functional, or incorrect. No valid evidence provided.	<b>15</b>
<b>Task 4: Access Control (15 Marks)</b>	Two access control mechanisms implemented correctly. Permissions tested and verified with clear screenshots. Demonstrates strong security understanding.	Both mechanisms implemented with minor issues. Screenshots provided and mostly clear. Verification mostly correct	One mechanism corrects, the other partially correct. Screenshots basic or incomplete.	Incorrect or incomplete access control commands. Screenshots unclear or missing verification	Access control incorrectly implemented or not attempted. No valid evidence.	<b>15</b>

<b>Component Title</b>	<b>Individual Presentation</b>					<b>Percentage (%)</b>	<b>6%</b>
<b>Criteria</b>	<b>Score and Descriptors</b>					<b>Weight</b>	<b>Marks</b>
	<b>Excellent (9.0 – 10.0)</b>	<b>Good (7.0 – 8.5)</b>	<b>Average (5.0 – 6.5)</b>	<b>Need Improvement (3.0 – 4.5)</b>	<b>Poor (0 – 2.5)</b>		
Thorough mastery, strong confidence, accurate explanations.	Good understanding with minor issues.	Basic understanding, some gaps.	Weak understanding or clarity.	Very limited understanding, unable to explain work that was done.			
<b>Individual Understanding of Content</b>	Shows clear personal understanding of the SQL work and their own contribution to the group task. Can explain their part confidently and accurately.					<b>5</b>	Ali: Mohammed: Xiang: Name: Name:
<b>Explanation &amp; Justification</b>	Provides logical explanations and reasoning behind SQL choices. Able to justify table relationships, constraints, and query selection. Shows critical thinking, not memorization.					<b>5</b>	Ali: Mohammed: Xiang: Name: Name:
<b>Presentation Delivery</b>	Clarity, structure, confidence, appropriate pacing, effective use of screenshots or slides, and professional communication during presentation.					<b>5</b>	Ali: Mohammed: Xiang: Name:

			Name:
<b>Response to Questions (Q&amp;A)</b>	Able to respond to questions independently and accurately, showing genuine personal understanding of their work.	<b>5</b>	Ali: Mohammed: Xiang: Name: Name:
		<b>TOTAL MARKS ( /20)</b>	Ali: Mohammed: Xiang: Name: Name:

