DESCRIPTION OF COURSEWORK

Course Code	SOF202
Course Name	Database
Lecturer	Subashini A/P Ganapathy
Academic Session	**2024/09**
Assessment Title	**Assignment**

A. Introduction/ Situation/ Background Information

The assignment uses a problem-based approach to learning with knowledge of data modeling with visualizing Entity-Relationship Model, database transaction features, define as well as manage queries while working in a team. The assignment also covers the recovery and concurrency control of the database.

B. Course Learning Outcomes (CLO) covered

At the end of this assessment, students can:

CLO2	Demonstrate teamwork for solving problems using database concepts.
CLO3	Use an E-R diagram to model the database, transaction features, and DBMS to achieve fault recovery and concurrency control.
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 This includes incorporating published and unpublished material, whether in manuscript, printed, or electronic form into your work without acknowledging the source (the person and the work).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 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 the assessments submitted must be the outcome of the student. Any form of academic misconduct is a serious offense that will be penalized by being given a zero mark for the entire assessment in question or part of the assessment in question. If there is more than one guilty party as in the case of collusion, both you and your collusion partner(s) will be subjected to the same penalty.

D. Instruction to Students

This is a **grouping** assignment assessment (4 to 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 assignment submission is by **8th November 2024 (Friday).**

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)
- Turnitin Similarity Report (Only the percentage page) t3, 4, 5, 6
- Marking Rubric

E. Evaluation Breakdown

The weightage of this **assignment** is **25%** overall. Evaluations are based on the criteria below:-

- **Group Report (22%) = 88 Marks (Group)**
- **Peer Evaluation (3%) = 12 Marks (Individual)**

No.	Component Title	Percentage (%)
1.	Task 1: Relational Database Design **(CLO3, C3)**	**28**
2.	Task 2: Enhanced Entity Relationship Diagram and Relational Database Schema **(CLO3, C3)**	**18**
3.	Task 3: Role and access control. **(CLO4, C3)**	**10.5**
4.	Task 4: Database integrity	**10.5**
5.	Task 5: Time-stamp control protocol	**10.5**
6.	Task 6: Recovery strategies & technologies of Database	**10.5**

7.	Peer Evaluation **(CLO2, A3)**	**12**
	TOTAL	**100**

F. Task(s)

- All the tasks must be done in a group. Distribute the task to the team members accordingly.
- Task 3 to Task 6 need to be checked to the Turnitin. The similarity for each task shall be 4% and below. In overall, similarity percentage fot all task 3 to 6 should be below 20%. Details of the Turnitin checking as follows:
    - Class ID: 46107172
    - Enrollment Key: SOF102Sept24

Scenario 1

You've been tasked with creating a database to keep track of employees' details and their job scope related to the department.

- There are several departments inside a firm.
- Each department has one or more staff and a supervisor.
- The staff must be allocated to at least one department, but maybe more. At least one staff is allocated to a project.
- The names of the departments, projects, supervisors, and staff, as well as the supervisor and staff numbers, and a unique project number, are the most crucial data fields.
- We must keep note of the following for each match:
    - The day on which the employee takes charge of the specific project.
    - How long does the duration of the project assign?

Scenario 2

You have been entrusted with building the traveling agency's database with all of the information needed regarding their journey, clients, and reservations.

The travel agency database ought to have the following information:

- The travel company offers a range of journeys.
- Each journey that the travel agency arranges has a unique ID, a start and end date, and a cost.
- Clients book journey reservations. The booking number for each customer's journey reservation is unique.
- Every customer has their name, address, phone number, and passport number.
- Customers may book the same journey and bring additional attendees.
- The names and passport information of the next two join guests who are part of the same reservation need to be entered into the system.
- Information on the flight and hotel schedules for each journey.

Task 1 **(CLO3, C3) – 32 Marks**

You can choose any **ONE (1)** of the scenarios above for Task 1. Try to explore and use Visual Paradigm software to draw conceptual, logical and physical Model for the sub tasks (b, c, and d) below. *Use Crow's Foot Model to show the answer*.

Based on the chosen scenario, answer the following questions:-

a) Gathering information. **(5 marks)**

- Briefly explain the focus (objectives) of your selected scenario's database design.
- Define the scope and boundaries of your database design.
- You may enhance the scenario selected by adding relevant entities and attributes.

b) Conceptual Database Design/ Model. **(8 marks)**

- What the database should contain? Show how you form models of the entities and their interrelationships.
  - Focuses on high-level concepts and relationships.
  - Does not include technical details; instead, it conveys business needs in general.
  - Seek to bring every stakeholder involved to a shared understanding.

c) Logical Database Design/ Model **(9 marks)**

- How does the structure of data elements look like and how is the relationship between the entities?
  - Gives the conceptual model more specificity.
  - Defines keys, relationships, entities, and attributes.
  - Data element representation that is independent of technology.

d) Physical Database Design/ Model. **(10 marks)**

- How the database will be implemented? Visualize detailed database structure in terms of keys, constraints, indexes, triggers, or any other features.
    - converts the technical specifications from the logical model.
    - outlines the constraints, data types, and database-specific information.
    - All set to go into a specific database system.

You may refer to sample of similar visualization needed in this link for sub-task b, c and d above. https://www.visual paradigm.com/support/documents/vpuserguide/3563/3564/85378_conceptual,l.html

Task 2 (CLO3, C3) – 20 Marks

a) Sketch an Enhanced ERD based on the data modeling that you have provided above. Show appropriate entities with the relevant attributes, relationship and types of relationship being used. Do include generalization and specialization criteria in this diagram.
Use Chen's Model to represent this diagram. **(12 marks)**

b) Show the **relational database schema** based on the Enhanced ERD provided above. Show the interaction between the Primary and Foreign Key across the relations.
(8 marks)

Task 3 **(CLO4, C3) – 12 Marks**

What is access control? How can you apply role and access control features in your Database design? Relate your explanation with the scenario chosen above.

Task 4 **(CLO2, A3) – 12 Marks**

Propose how would you apply Database integrity in your selected scenario. Explain how reference integrity, entity integrity and user defined integrity can be applied. Relate your explanation with the scenario selected above.

Task 5 **(CLO3, C3) – 12 Marks**

Discuss in detail how timestamp-based protocol can be applied in Database? Relate your explanation with the scenario selected above.

Task 6 **(CLO3, C3) – 12 Marks**

What are the recovery technologies and strategies that can be applied in case of preventing loss of database system? Discuss in detail.

MARKING RUBRICS

Component Title	Assignment (Group)				Percentage (%)	22%	
Criteria	Score and Descriptors					Weight (%)	Marks
	5	3 - 4		0 - 2			
	Excellent (5)	Good (4)	Average (3)	Need mprove ment (2)	Poor (1)		
TASK 1 (32 Marks)							
Gathering information	Demonstrate a very high level of understanding of the scenario given. Entities and relationship descriptions were explained with logic and detail.		Show high-level ability to comprehend the scenario. Entities and relationship descriptions were explained with less logic.		Demonstrate an adequate level of understanding. Entities and relationship descriptions were explained in a poor/ adequate manner.	5	
Conceptual Database Design/ Model	Demonstrate ability to perform the task to the highest standard.		Demonstrate a consistent ability to complete the task.		Demonstrate ability to perform the task	8	
Logical Database Design/ Model	Demonstrate ability to perform the task to the highest standard.		Demonstrate a consistent ability to complete the task.		Show poor/ adequate development	9	
Physical Database Design/ Model	Show innovative and highly appropriate development. Proper data types were assigned. Correctly choose all primary and foreign keys respecting the naming convention.		Show sound and appropriate development. Correctly choose most of the primary and foreign keys respecting the naming convention.		Show poor/ adequate development. Incorrectly choose most of the primary and foreign Keys, and somehow respected the naming convention.	10	

TASK 2 (20 Marks)							
Enhanced ERD	Show innovative and highly appropriate Enhanced ERD diagram was shown. Diagram captures all attributes and primary keys necessary for a database. Diagram captures all cardinality and participation constraints. Logically designed the database design exhibiting a firm understanding of ERD notation Completely and accurately explained design usage and purpose.		The tone of the diagram is primarily professional. Diagram captures most attributes and primary keys necessary for a database. Diagram captures most of the cardinality and participation constraints. Exhibited a partial understanding of database design using ERD Some minor innaccuracy when explaining design usage and purpose.		The diagram appears to be unprofessional. Diagram captures none or few of the attributes and primary keys necessary for a database. Diagram captures none or few of the cardinality and participation constraints. Exhibited minimal understanding of database design using ERD Inaccurate design explanation in regard to design usage and purpose.	12	
Relational database schema	All entity sets and relationships from the team's E-R diagram are captured concerning schemas. Any suggested revisions that are not accepted, as well as any deviations from the original design, are accompanied by a convincing explanation.		Most entity sets and relationships from the team's E-R diagram are captured concerning schemas, which also account for the majority of suggested diagram revisions.		Relation schemas are used to capture a limited number of entity sets and relationships from a team's E-R diagram.	8	
TASK 3 (12 Marks)							
Role and access control	Detail roles and access control were provided with clear		Role and access control were discussed moderately. Lack		There is no clear explanation were given based on role and access	12	

	examples. Related to the scenario selected.		of example provided. Lack of relation to the scenario selected.		control. No examples / not a clear examples provided. Doesn't much related to the scenario selected.		
TASK 4 (12 Marks)							
Database integrity	Detail Database integrity were provided with clear examples. Related to the scenario selected.		Database integrity were discussed moderately. Lack of example provided. Lack of relation to the scenario selected.		There is no clear explanation were given based on Database integrity. No examples / not a clear examples provided. Doesn't much related to the scenario selected.	12	
TASK 5 (12 Marks)							
Time-stamp Protocol	Details of the time-stamp protocol concepts were provided with clear examples. Related to the scenario selected.		Details of the time-stamp protocol concepts were discussed moderately. Lack of example provided. Lack of relation to the scenario selected.		There is no clear explanation were given based on the time-stamp protocol concepts were less/ not a clear examples provided. Doesn't much related to the scenario selected.	12	
TASK 6 (12 Marks)							
Recovery strategies & technologies of Database	Details of the recovery strategies & technologies concepts were provided with clear examples. Related to the scenario selected.		Details of the recovery strategies & technologies concepts were discussed moderately. Lack of example		There is no clear explanation were given based on the recovery strategies & technologies concepts. No examples / not a	12	

			provided. Lack of relation to the scenario selected.		clear examples provided. Doesn't much related to the scenario selected.		
					TOTAL	88	

Component Title	Peer Evaluation (Individual) – CLO2, PLO4		Percentage (%)	3%	
Criteria	Score and Descriptors				
	Highly Professional (9 - 10)	Professional (6 - 8)	Participating (3 - 5)	Unprofessional (0 - 2)	
Contributions & Attitude	• Always cooperative. • Routinely offers useful ideas. • Always displays positive attitude.	• Usually cooperative. Usually offers useful ideas. • Generally displays positive attitude.	• Sometimes cooperative. • Sometimes offers useful ideas. • Rarely displays positive attitude.	• Seldom cooperative. • Rarely offers useful ideas. • Is disruptive.	M1: (Name) ___ M2: (Name) ___ M3: (Name) ___ M4: (Name) ___ M5: (Name) ___
Cooperation with Others	• Did more than others. • Highly productive. • Works extremely well with others.	• Did own part of workload. • Cooperative. • Works well with others.	• Could have shared more of the workload. • Has difficulty. • Requires structure, directions, & leadership.	• Did not do any work. • Does not contribute. • Does not work well with others.	M1: (Name) ___ M2: (Name) ___ M3: (Name) ___ M4: (Name) ___ M5: (Name) ___
Focus, Commitments	• Tries to keep people working together. • Almost always focused on the task. • Is very self-directed.	• Does not cause problems in the group. • Focuses on the task most of the time. • Can count on this person.	• Sometimes focuses on the task. • Not always a good team member. • Must be prodded & reminded to keep on task.	• Often is not a good team member. • Does not focus on the task. • Lets others do the work.	M1: (Name) ___ M2: (Name) ___ M3: (Name) ___ M4: (Name) ___ M5: (Name) ____

Team Role Fulfillment	• Participates in all group meetings. • Assumes leadership role. • Does the work that is assigned by the group.	• Participates in most group meetings. • Provides leadership when asked. • Does most of the work assigned by the group.	• Participates in some group meetings. • Provides some leadership. • Does some of the work assigned by the group.	• Participates in few or no group meetings. • Provides no leadership. • Does little or no work assigned by the group.	M1: (Name) ___ M2: (Name) ___ M3: (Name) ___ M4: (Name) ___ M5: (Name) ____
Ability to Communicate	• Always listens to, shares with, & supports the efforts of others. • Provides effective feedback. • Relays a lot of relevant information.	• Usually listens to, shares with, & supports the efforts of others. • Provides some effective feedback. • Relays some basic information that relates to the topic.	• Often listens to, shares with, & supports the efforts of others. • Rarely listens to others. Provides little feedback. • Relays very little information that relates to the topic.	• Rarely listens to, shares with, or supports the efforts of others. • Less talking & never listens to others. • Provides no feedback. • Does not relay any information to teammates.	M1: (Name) ___ M2: (Name) ___ M3: (Name) ___ M4: (Name) ___ M5: (Name) ____
Accuracy	• Work is complete, well-organized, error-free, & done on time or early.	• Work is generally complete, meets the requirements of the task, & is mostly done on time.	• Work tends to be disorderly, incomplete, inaccurate, & is usually late.	• Work is generally sloppy & incomplete, contains excessive errors, & is mostly late.	M1: (Name) ___ M2: (Name) ___ M3: (Name) ___ M4: (Name) ___ M5: (Name) ____
			TOTAL	12	

*** Refer to the excel Peer evaluation form for submission.