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 This includes incorporating published and unpublished material, whether in manuscript, printed, or electronic form into your work without acknowledging the source (the person and the work).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 **31st October (Thursday)**.

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)
- Marking Rubric

E. Evaluation Breakdown

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

- **Group Report (20%) = 80 Marks (Group)**
- **Peer Evaluation (5%) = 20 Marks (Individual)**

F. Task(s)

All the tasks must be done in a group. Distribute the task to the team members accordingly.

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) – 35 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. **(10 marks)**

- What the database should contain? Show how you form models of the entities and their interrelationships.

c) Logical Database Design/ Model **(10 marks)**

- How does the structure of data elements look like and how is the relationship between the entities?

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.

You may refer to sample of similar visualization needed in this link for sub-task 2, 3 and 4 above. https://www.visual paradigm.com/support/documents/vpuserguide/3563/3564/85378_conceptual,l.html

Task 2 **(CLO3, C3) – 25 Marks**

1. 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. *You may use Chen's Model to represent this diagram.* **(15 marks)**

2. Show the **relational database schema** based on the Enhanced ERD provided above. **(10 marks)**

Task 3 **(CLO4, C3) – 10 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. **(10 marks)**

Task 4 **(CLO2, A3) – 10 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. **(10 marks)**

Task 5 **(CLO3, C3) – 10 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) – 10 Marks**

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