BSc in Computing
COMP211 Database Design
Project: <u>Group Work</u> on DB Design (2023/2024)

Important notice:
- This project is for **<u>a group of 3 to 5 students</u>** to work together. Group size not following this requirement needs to obtain prior approval from module teacher.
- This project comprises 15% of the total mark of this course.
- **Late submission will NOT be marked.**
- To deal with plagiarism, a zero mark will be given if you copy someone else's work or you let someone copy your work.

Database Design Project

The objective of this group project is to familiarize you with the design and implementation concepts discussed in class throughout the semester. The project involves developing and documenting the conceptual, logical and physical database design, and implementing the design in Microsoft Access based on the ==**Creative Art** case study== (**<u>read DB design project_Part2.pdf</u>**). Table 1 shows the summary of this project by phases.

Table 1. Summary of database design project by phases

Phase	Description	Output	Due
Phase 0 (5%)	**Project Initiation** ○ Form project group ○ Plan your project	A word file to be submitted via email (cc copy to each member)	Group: Sept 13 Submission: Sept 25 (Monday)
Phase I: Ch. 16 (30%)	**Conceptual Database Design** ○ 3 data dictionaries ○ ER modeling	Documentation to be submitted in class	Oct 30 (Monday) (the first 15 minutes of official class time)
Phase II: Ch. 17 (15%)	**Logical Database Design** ○ Deriving Relations	Documentation to be submitted in class	Nov 13 (Monday) (the first 15 minutes of official class time)
Phase III (30%)	**Physical Database Design / Implementation** ○ Create Tables ○ Input Data ○ Formulate the queries	Access database file & Documentation to be submitted through email (cc copy to each member)	Nov 24 (Friday)
Peer Review (20%)	**Peer Review of Project** ○ Evaluate your team member	Peer Review Form	Nov 24 (Friday) (the first 15 minutes of official class time)

Stages of the Project

Phase 0 [5%]: Project Initiation

Step 1: Form Project Group

This is a group project. Students should form groups of 3 to 5. After you form the group, each group should email to **calanachan@mpu.edu.mo** (and c.c. to each group member) about members including name and student ID by **Sept 13 (Wednesday).** If I didn't receive any group member list email from you by the deadline, I will randomly form groups for you.

Step 2: Formulate transaction requirements in English -- Sept 25 (Monday).

Study the user requirements of **Creative Art** case study carefully and then formulate **3 more cases** for each type of the transaction requirements, namely, data entry, date update / deletion, data queries. The queries would be useful to somebody using the data. The queries must be realistic and you should have a few complex queries. Note, the queries that the database system is able to answer ultimately determine what information needs to be maintained in the database. In the last phase of the project, you need to write the SQL statements for these queries.

[Submission guideline for Phase 0]

You should submit a written report with a cover page that includes student number and names of all members. The body of Phase 0 documentation should include sufficient detail to describe Step 2.

Phase I [30%]: Conceptual Database Design

Create a conceptual data model for the **Creative Art** case study.

Step 3: ER / EER modeling

Conceptual database design is an iterative process. Based on the notes of Ch. 16 on Conceptual Database Design, you have to show the step-by-step development (up to Step 1.6) of the conceptual data model supported by documentation, **including ER diagrams and data dictionary.**

Step 4: Specify ANY assumptions you have about the database in English

Here you talk about attributes, keys, the nature of relationships between entities, etc. Do not discuss something that is obvious (e.g., that a student can take several courses). In addition, do not make too many simplifying assumptions.

[Submission guideline for Phase I]

You should submit a written report with a cover page that includes student number and names

of all members. The body of Phase II documentation should include sufficient detail to describe Steps 3 and 4.

Phase II [15%]: Logical Database Design

The objective of logical database design is to translate the conceptual data model into a logical data model by deriving a set of relations from the conceptual data model.

Step 5: Deriving Relations from conceptual data model

You should convert the ER / EER diagram from Step 4 above into relations using the mapping steps discussed in Ch. 17. Make sure the conversion identifies **the primary key and foreign keys in all the relations, including the integrity constraints as well.**

Step 6: Normalization

Make sure that the relations derived in Step 5 are in BCNF. (You don't have to submit documentation for this step to me.)

[Submission guideline for Phase II]

You should submit a written report with a cover page that includes student number and names of all members. The body of Phase III documentation should include sufficient detail to describe the derived relational schema.

Phase III [30%]: Physical Database Design / Implementation

In this phase, you should use Microsoft Access to build and implement the database tables from the normalized set of relations created in the previous phase. Sample data should be supplied for each table. Each table should contain at least (i.e., a minimum of) 8 rows.

[Submission guideline for Phase III]

Create a compressed file (.zip or .rar) containing the followings and then send to my email address (calanachan@mpu.edu.mo):

1. Microsoft Access database file (named using your group number) with the necessary data and your queries;

2. A Microsoft Word file (named using your group number) listing your SQL queries, together with the screen capture of the result from running each of your queries.

You are responsible for the followings, or you will risk getting zero marks for this phase of the project:

■ Typing my email address correctly when sending it to me (I would suggest you

       c.c. copy to yourself and each member to double check the correctness of my email address)

■   You have attached the necessary files in the email

Peer Review [20%]

The purpose of peer review is to assess the contributions made by each group member to complete the project. For each group member, excluding yourself, rate each of the other group members in each category on a scale of 1 to 4. A rating of 3 should represent that a member has contributed adequately and/or proportionately in that category. Ratings of 4 should represent higher contributions and 1 and 2 represent lesser contributions. A rating of 0 may be used to indicate that a group member did not contribute in any manner. If a group member receives a 0 from all of his group members, then that group member will not get credit for the project. The peer evaluations impacts 20% of entire project. The average value of your peer review is used to calculate part of your total score.

Groups

Group membership is the responsibility of the individual. To ensure fairness in grading, a peer evaluation component will be required of everyone participating in a group and can be used to adjust an individual's grade. The peer evaluation form will be posted as a separate document on a later date.

Learning Objectives of the Group

Group activities offer several invaluable professional development experiences. During this project, please be aware of the following cognitive activities you will be exposed to and develop yourself to become a better professional person:

- The *art* of listening (i.e., listening to what others have to say)

- Negotiation, persuasion, tolerance and humility (i.e., resolving differences and accepting the outcomes in a professional manner)

- Time management and coordination (i.e., working together through the assignment of tasks)

- Creative thought activity through parallel human processing (i.e., developing synergies through meaningful interactions among all group members)

- Leadership (i.e., taking responsibility for your actions and those of the group, promoting meaningful actions, setting an example for work actions and quality, bringing out the best among all group members)