COMP/MIS-302
Database Management Systems

SPRING 2021 **ASSIGNMENT DUE DATE:** 21/4/2021

Introduction:

- This project assignment is worth 15% of the total mark for the course.
- It should be completed on an individual basis or in small groups of 2 persons.
- The project should be implemented using SQL commands that could be issued from Microsoft Access, ORACLE Product SQL*PLUS, MySQL or some other SQL environment.

Deliverables:

The list of delivables to be handed in on or by the hand-in date is as follows:

- The Case Description. In 2-5 pages produce a description of the case under study along with the main user requirements. Expand the given case by suggesting queries and other system requirements which you deem useful to end-users.
- The data model (Entity Relationship Model plus supporting narrative, including any assumptions made). For the design of the ERM you should use an appropriate CASE tool.
- A Relational Schema (database design), which comprises listings of table definitions clearly identifying primary keys and foreign keys and describing data attributes, and minimum cardinality actions' tables for all of the relationships.
- The code and results of data definition and manipulation (i.e. table creation, data insertion and the required SQL queries) including the appropriate test data.

CASE: A Database for a Dairy Company

Business Need: This project is being initiated to implement a database for a dairy company in Cyprus.

Introduction: A local diary company has approached you to assist them with developing a database which will support all of the business operations. You may study the company website https://en.charalambideschristis.com.cy/ (https://petroubros.com.cy/, https://cy.coca-colahellenic.com/en/our-24-7-portfolio/explore-our-brands/lanitis-dairy) to be informed about the company, its operations, facilities, and products.

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Requirements for the case study (deliverables in detail)

1. Expand the case to include the main user requirements. (1 mark)
2. Develop an data model and database design to support the case requirements. You may be required to make some assumptions. Please state and explain these in your documentation. Your deliverables should include:

   I. A data model as an E-R diagram to include all entities and attributes and the maximum and minimum cardinality for each pair of related entities. (4 marks)

   II. A database design being a normalised relational schema derived from the data model which should include all appropriate attributes associated with each relation, clearly showing the primary key of each relation and the foreign key(s) where applicable. A data dictionary describing the type, size and meaning of each data element or field is also required. Minimum cardinality actions should also be described. (4 marks)

Note:

- You may make suitable and intelligent assumptions.
- Anything that is not stated as part of the requirements may be assumed.
- Your assumptions must NOT override any user requirements.
- All assumptions must be clearly stated or explained in your report.

3. Set up tables, including well-designed test data, to implement the database, and identify appropriate integrity constraints to help ensure that data is entered with correct values. You must make sure that your sample data covers all requirements of the queries in section 3 below. *Therefore queries that yield null results/ output will not gain full marks even if the SQL code is correct.* The code for creating and inserting data into the tables/relations must be provided. (4 marks)

4. Suggest meaningful end-user queries to extract information from your database. Set up and test all queries using an SQL product. Describe each query and provide both the SQL code and the output of the query as a screenshot in your report and as part of your database file. (6 marks)

   You are required to describe and then satisfy a minimum of 10 queries extracting data from your database. These queries should vary from simple (single-table, one or more search criteria) to more advanced (multiple-table, using join, subqueries, sorting, functions, views, etc.).

5. Presentation and documentation. The report including parts 1, 2, and 3 should be submitted by the specified deadline along with the database file which proves the implementation of the database requirements. (1 mark)