Project: 30%

Course Identification

Name of programs – Codes:	COMPUTER SCIENCE TECHNOLOGY - PROGRAMMING (420.BP)
	INFORMATION TECHNOLOGY - PROGRAMMER-ANALYST (LEA.3Q)
Course title:	**DATABASES I**
Course number:	420-BD1-AS
Group :	**07210**
Teacher:	Ramiro Guerreiro
Session :	Summer 2023

Mark Breakdown

This evaluation is on 100 points, distributed as follows:

- Item 1   20 points
- Item 2   20 points
- Item 3   10 points
- Item 4   30 points
- Item 5   20 points

TOTAL: 100 POINTS

Project (case study)

In a company we have employees, departments and projects. Each employee belongs to a maximum of one department. To each employee and its corresponding department, we keep the start date (the date the employee joined that department). Each department has an employee who is its manager. Each employee can be assigned to one or more projects. To each assignation we keep the assignation date (the date the employee was assigned to the project). Each project has an employee who is the project manager.

The attributes of the entity employee are:

emp_id : type integer, not accepting "null" and being greater than zero;
nom : type string, having at most 50 characters and not accepting "null";

The attributes of the entity department are:

dept_id : type integer, not accepting "null" and being greater than zero;
dept_nom : type string, having at most 30 characters and not accepting "null";

The attributes of the entity project are :

proj_id : type integer, not accepting "null" and being greater than zero;
proj_nom : type string, having at most 30 characters and not accepting "null";

You must:

1. Correctly identify the entities and the relationships (Abstract Data Model). Correctly identify the multiplicities of each relationship. **Explain clearly your reasoning and your conclusions**.

2. Draw the ER diagram using Chen's notation, clearly indicate in the diagram the attributes and the primary keys. Make sure the diagram is readable.

3. Draw again the ER diagram using the crow's foot notation. Clearly indicate in the diagram the attributes and the primary keys. Make sure the diagram is readable.

4. Determine the Relational Data Model correctly. Determine which should be the association tables, which should be the foreign keys and all required attributes. **Explain clearly your reasoning and your conclusions**. Present the Relational Data Model: list all the tables indicating correctly the columns, the primary keys and the foreign keys.

5. Physical Data Model: Create a MS SQL Server script, containing the Transact-SQL commands to create the database and the tables corresponding to the Relational Data Model. Make sure that in the script you insert some sample data in each table.

The answers to the items above must be in a PDF file, in the following format:

> **Name of the student**:
> **Student number**:
> **Group**:
>
> **Item 1**:
>   your answer to item 1
>
> **Item 2**:
>   your answer to item 2
>
> **Item 3**:
>   your answer to item 3
>
> **Item 4**:
>   your answer to item 4
>
> **Item 5**:
>   your answer to item 5

Important: Before the project deadline, upload the PDF file to LEA.

Compliance with all instructions is essential. If you deviate from the instructions, your grade will be penalized.